# ASSESMENT IN THE CONTEXT OF CLIMATE MIGRATION: HURRICANE KATRINA*

## İKLİM GÖÇÜ BAĞLAMINDA BİR DEĞERLENDİRME: KATRİNA KASIRGASI

**Araştırma Makalesi**
**Research Paper**

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**Abstract:**

Environmental problems, which have increased with the impact of the Industrial Revolution, invite anthropogenic global warming. Dehydration, drought, deforestation, rising ocean and sea water levels due to the melting of glaciers, increased evaporation due to warming, and severe hurricanes resulting from the temperature- pressure difference resulting from the circulation of evaporated water masses in the atmosphere are among the disasters caused by global warming. While the devastations experienced after disasters resulting from global warming reach a level that a single country cannot combat, it creates a need for international cooperation. Thousand of people are displaced in the crisis environment that occurs after disasters, and this displacement brings environmental security threats. In the devastation caused by Hurricane Katrina in the USA in 2005, which is the subject of the study, the impact area of the disaster was wide as a result of the Bush Government and FEMA's failure to make pre-disaster preparations at an optimal level and the dams and breakwaters built during the preliminary preparation process for the possible disaster failed. It has been revealed through information obtained from the US press that the disaster was described as man-made. Qualitative research techniques were used in the study and a literature review was conducted.

**Keywords:** Climate Change, Climate Migration, Climate Securitization, Hurricane Katrina, FEMA.

**Öz:**

1960'lar itibariyle Sanayi Devrimi etkisiyle artış gösteren çevresel sorunlar, antropojen kökenli küresel ısınmaya davetiye çıkarmaktadır. Susuzluk, kuraklık, ormansızlaşma, buzulların erimesine dayalı okyanus ve deniz su seviyelerinin yükselmesi ile ısınmaya bağlı buharlaşmanın artması, buharlaşan su kütlelerinin atmosferdeki dolaşımına bağlı olarak ortaya çıkan sıcaklık-basınç farkının etkisiyle ortaya çıkan şiddetli kasırgalar küresel ısınmanın yarattığı felaketler arasındadır. Küresel ısınma sonucu ortaya çıkan afetler sonrası yaşanan yıkımlar afetlerin tek bir ülkenin mücadele edemeyeceği boyuta ulaşırken, uluslararası işbirliğine ihtiyaç bırakmaktadır. Afetler sonrası oluşan kriz ortamında binlerce insan yerinden edilmekte, bu yerinden edilmişlik çevresel güvenlik tehditlerini beraberinde getirmektedir. Çalışmanın konusu olan 2005 tarihli ABD'de yaşanan Katrina Kasırgası'nın yarattığı yıkım ve tahribatta Bush Hükümeti ve FEMA'nın afet öncesi hazırlıkları optimal düzeyde yapamamasının sonucu

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olarak afetin etki alanının geniş olduğu ve olası afete ön hazırlık sürecinde inşa edilen set ve dalgakıranların başarısız olduğu, afetin insan yapımı olarak nitelendirildiği ABD basınından alınan bilgilerle ortaya konmuştur. Çalışmada nitel araştırma tekniklerinden yararlanılmış, literatür taraması yapılmıştır.

**Anahtar Kelimeler:** İklim Değişikliği, İklim Göçmenliği, İklimin Güvenlikleştirilmesi, Katrina Kasırgası, FEMA.

## INTRODUCTION

The history of environmental problems begins with human beings using the environment for their own purposes in order to sustain their lives. However, since these destructions remained below the capacity of the environment to regenerate itself until the 19th century, their effects were ignored for a long time. In the second half of the 20th century, production and consumption patterns, which started in industrialized countries and spread rapidly throughout the world, further increased these problems and the environment became unable to renew itself. These production and consumption patterns, which are contrary to the essence and structure of nature itself, have led to the deterioration of ecological balances all over the world and, as a result, to a negative change in the ecosystem that forms the basis of the existence of human beings and all other living things worldwide. Increasing ecological destruction at the global level has led to global climate change, and climate disasters are forcing people to leave the areas they live in and, moreover, to migrate.

Droughts due to global warming, access to fresh water and floods due to sea level rise pose a direct threat to human life. Especially in regions where the economy is based on agriculture, the need for water is higher, drought and unfavorable climatic conditions directly affect the communities settled around water resources. In addition, the lack of modern agricultural techniques in underdeveloped and developing countries and the pollution of freshwater resources by anthropogenic factors exacerbate the problem of drought. On the other hand, in the book titled Climate Change and the Mediterranean Region, prepared by Greenpeace in 1998, it is stated that the intensifying drought in the world will negatively affect sustainable development and that there is a danger of epidemic diseases spreading globally with the increase in water scarcity. Therefore, global warming can also be a catalyst that accelerates the occurrence of natural disasters, the negative impact on economies and the spread of epidemics.

According to climate models, an increase of 3 degrees is expected between 1990 and 2100. As a result, melting of glaciers, rise in sea water level, intensification of heat waves, excessive amounts of precipitation, increase in storms and hurricanes or more severe droughts are among the situations expected as a result of global climate change. As a matter of fact, by 2020, the average surface temperature of the earth has increased by 1 degree compared to 1850. This temperature increase caused an increase of 0.4-0.9 degrees in the temperature of the North Atlantic Basin. The question of this study is whether the effects of climate change caused by human-induced (anthropogenic) factors have caused climate migration, and if so, what are its dimensions. In doing so, it will be underlined that ecological degradation and

natural disasters based on global warming constitute a security problem as they threaten environmental security and force people to migrate. In this context, it will be argued that climate change accelerates migration and becomes an environmental security issue in the context of Hurricane Katrina in the USA.

## 1. MAKING CLIMATE CHANGE A POLITICAL AGENDA

In the last century, greenhouse gases in the atmosphere that cause global warming have increased significantly with the spread of industrial production. At the heart of this increase is the widespread use of fossil fuels such as oil, natural gas and coal for industrial purposes. The use of these resources has already caused an unprecedented amount of carbon dioxide (C02) emissions in the atmosphere, leading to an increase in average temperatures (Wall, 2013: 40). The impact of fossil fuels used in industrialization on greenhouse gas emissions increased from 29% in 1990 to 32% by 2000 (Simeonava and Diaz-Bone, 2005: 2541). Climate change can be defined as changes in climatic conditions that occur mostly due to human factors and "anthropogenic factors" and that develop slowly over a long period with significant consequences in terms of large-scale and local effects (Türkeş, 2008).

The transboundary effects of climate change, the increasing interdependence between states and the need to collectively combat climate change problems have made it inevitable to reconcile the independence of states with the interdependence of the environment (Kaya, 2012: 9; Yılmaz Uğur, 2023: 349). Today, it is a result of this interdependence that it is not enough for states to struggle alone to solve climate change problems. Because no country in the world has sufficient economic power or resources to cope with climate change problems. For this reason, a consensus has emerged that absolute adaptation within the framework of the cooperation of other countries and/or organizations is necessary to eliminate existing and potential global hazards (Axelrod et al., 2005; Birnie & Boyle, 2002; Baker, 2006). Indeed, since the complex environmental problematic is composed of interconnected problems that do not recognize borders and nations, the fact that states deal with these problems within the framework of global cooperation has created a situation that will pave the way for both solving problems that they cannot solve alone and finding a fair solution by creating a balance between the conflicting economic and political interests of states. At this point, despite a fragmented and often conflictual international system consisting of a large number of sovereign states, states have created international cooperation and political coordination to solve environmental problems on a global scale that affect them and have the potential to affect them, thus ensuring that environmental issues have become important topics of national and global politics (Vig, 2005: 4).

However, after the 1970s it was argued among states that there was a close relationship between the environment and the economy and that there should be an absolute harmony between environmental protection efforts and development initiatives in order to eliminate the environmental hazards that arose as a result of this relationship, it was not until the 1990s that significant results were achieved. This is, of course, because, as Giddens (2013) points

out, the dangers posed by environmental problems are closely related to the fact that they are not tangible, immediate and visible in everyday life (Giddens, 2013: 12). However, by the 1990s, environmental problems, especially climate change, which emerged at the global level, directly affected the economic, political and social structures of countries and brought about a collapse that could no longer be denied, making it necessary to take environmental issues more seriously.

In this process, global climate change, which has led to the occurrence of many environmental hazards as a direct result of the basic production and consumption system and affects all relevant and irrelevant states and societies, has made it necessary to establish a national and international environmental regime and climate change has become a prominent political issue (Orhan et al., 2017; Axelrod et al., 2005; Susskind, 1994; Bodansky, 2001). In this context, a new process was initiated in the fight against climate change with the signing of the United Nations Framework Convention on Climate Change, which will form the legal and institutional infrastructure of the international climate change regime at the Earth Summit held in Rio in 1992 (Şahin, 2017: 77). In 1997, as a result of intergovernmental negotiations, the Kyoto Protocol was signed, where measures and targets on global warming were discussed, and numerical data on greenhouse gas emission reductions were put forward for the first time at the Third Conference of the Parties. According to the Protocol, it was envisaged to reduce greenhouse gas emissions by at least 5% below the 1990 level between 2008 and 2012 (Baker, 2006: 86), but the United States of America's decision to withdraw from the protocol in the early 2000s led to doubts about the future of the regime (Uğur, 2011: 18). During the 15th Conference of the Parties in Copenhagen in 2009, which took place after Kyoto, the summit failed to achieve the expected results due to the abstentions of the USA and the lack of support from member states due to the economic crisis in the EU (Uğur, 2011:35). Nevertheless, the efforts to prevent global warming have been made at the 17th Conference of the Parties held in Durban, South Africa in 2011 and a road map was put forward by stating that the Kyoto Protocol should continue, albeit to a limited extent, until a new agreement is reached in Paris in 2015 (Şahin, 2017: 89). The 21st Conference of the Parties in Paris in 2015 marked the beginning of a new era for the climate regime (Bodansky & Rajamani, 2016; Strech et al., 2016).

Although the US signed the Paris Agreement in 2017, it is not a party to the agreement until 2021 due to Trump-era non-green policies. However, China, the US, India, Russia and Brazil are the countries that will emit the most greenhouse gases in the world in 2022, and all these countries account for 50.1% of the world's global population and 61.2% of the global gross domestic product, The GHG Emissions of all World Countries Report of 2023 states that China, the US and India increased their emissions in 2022 compared to 2021, while accounting for 63.4% of global fossil fuels (GHG Emissions of all World Countries Report, 2023). The striking data in the report paves the way for explaining why the US refrained from signing Kyoto in 1995 and why it abstained from the Paris Agreement in 2017 and abstained until 2021. The period between 2017 and

2021 continued with Trump's ideas that there is no such phenomenon as global climate change and that climate change is just a Chinese hoax, and his non-green policies that American trade will become stronger with the use of fossil fuels. In 2021, the direction changed when Biden, who took office after Trump, sent a letter to the UN (Denchak, 2021) reaffirming his support for the Paris Agreement. In his letter, Biden pledged to reduce greenhouse gas emissions to zero by 2050 and allocate 2 trillion dollars in financing for renewable energy and climate policies, bringing the US back into the Paris Agreement in 2021 (The Guardian, 2020). According to Deutsche Welle, 2021, Biden's commitment to build 500,000 electric vehicle charging stations and 1.5 million energy-friendly homes summarizes the return to the Paris Agreement (Deliktaş, 2021:316).

## 2. THE CONCEPT OF CLIMATE MIGRATION

### 2.1.Assessment of Climate Change in the Context of "Security"

The issue of security came to the forefront in the world mostly during the Cold War period and wars were the main theme that led to the development of the discipline (Walt, 1991: 22). While the concept was examined within the scope of military security before the Cold War, the political, social, economic and environmental dimensions of security have started to be examined after the Cold War (Kaypak and Yılmaz, 2019: 856). Irregular migration movements in the world and the activities carried out by international terrorist groups were characterized as security threats after the Cold War, and security studies ceased to be nation-state based in this period and gained a global dimension (Köşer Akçapar, 2021: 563-564).

The center of the security approach has shifted from protecting the state administration to protecting the society against all kinds of internal and external threats. This perception of protectiveness has forced state administrations to internalize the concept of security (Kaya, 2016: 9). As in Maslow's hierarchy pyramid, the concept of security is at the top of the physical needs that ensure the continuation of life. Because people whose basic needs are met will want to protect themselves by living in a safe environment (Maslow, 1968: 38-44). The security of the individual will be provided by the state. Where there is no individual security, the discourse of environmental security will remain very baseless.

While the provision of national security by states directly affects relations with other states and social peace, it is insufficient to evaluate the concept of security only in the context of national security today. Because the concept of security is a multidimensional concept that cannot be limited to national security. Today, global climate change and environmental problems in the world have led to the emergence of the concept of environmental security and environmental security has become one of the issues that should be evaluated to the extent that it threatens the national security of states. Therefore, environmental security has become an issue that should be addressed among primary/high politics rather than secondary/low politics (Arı, 2011).

The "securitization of migration" has come to the agenda with the definition of migrants as a security issue in the settlement areas. This process, which started in the 19th century, became evident with the attack on the American Twin Towers on September 11, 2001 and reached its peak with the Arab Spring that erupted in the Middle East in 2010 (Mavi, 2022: 253). The Arab Spring, which started in Tunisia in 2010 with the resistance of Muhammed Buazizi, street vendor against administrative corruption, income inequality and poverty of the broad popular base, became the milestone of the uprisings and security crisis in the Middle Eastern countries (Yılmaz et al., 2020: 290). The evacuations and migrations from the region along with the uprisings have made the concepts of migration and related border security and the securitization of migration important.

Securitization is the urgent security and intervention of a political actor in an issue that is perceived to threaten daily politics (Stivachtis, 2008:14). Migration due to climate change has become a security issue today, and states have to take border protection measures to prevent migration and cross borders illegally. Migrations can be made for climatic reasons such as escaping from the adverse conditions created by climate change, natural disasters, famine, sheltering in a safe area by getting closer to water resources, as well as escaping from war, terrorism and violence. In this sense, security can be both the cause and the consequence of migration. Securitization, on the other hand, comes to the fore as an important concept in the formation of a process that puts uncontrolled migration as a threat and brings it under control. Disruptions or weaknesses in the control of migration reveal a security gap. Global climate change affects national and international security directly or indirectly (Gönenç and Kibaroğlu, 2017:2). According to IPCC (2007), one definition of vulnerability is the vulnerability of a system to adverse impacts, including climate variability and extremes of climatic events, and its inability to cope.

The increase in environmental degradation in the world along with global climate change raises the problem of securitization of the environment. There is a link between climate change and security. Climate change of anthropogenic origin further changes the way people live. People who are displaced due to natural disasters such as drought, tsunami, rising sea and water levels, which are the most important consequences of the effects of climate change, also face a legal protection gap. Disasters caused by anthropogenic climate change hit people who are not prepared for these natural disasters. These climate change-related migrations, whether in developed or developing countries, always make marginalized groups that are socioeconomically unequal vulnerable (Jayawardhan, 2017: 103). The displacement movement caused by climate change is sometimes slow and sometimes fast.

As mentioned above, migration due to climate change creates a situation where people can no longer survive in the region where they live, especially due to droughts, floods and sea level rise due to global warming. This leads to rapid displacement. Indeed, according to (IDMC 2023), 32.6 million people were displaced by disasters by the end of 2022, as stated in the GRID report. This rate increased by 53% compared to 2021. The

report states that 9,980,000 people were displaced due to hurricanes alone. Migrations due to climate change are also considered among the determinant and triggering causes of political instability. Since these migrations will negatively affect the economic and social conditions of the country of migration, it will inevitably lead to a situation that will put the political power in that country in difficulty. In addition, these environmental migrations may lead to an increase in crime rates. This is because it lowers the per capita income level in new migration destinations that become the target of migration, poverty directly affects crime rates (Cömertler and Kar, 2007: 55), and this naturally undermines national security. Therefore, since environmental and climatic problems do not concern only one country, the fact that they lead to consequences that will affect all nations makes it necessary to ensure environmental security (Gürseler, 2022: 249).

The United Kingdom brought the issue of climate change to the United Nations Security Council and presented a report on how global warming would affect "security" (United Kingdom, 2007). In the report, it was stated that with the rise in water levels as a result of global warming, island states may be flooded and coastlines will change (Yılmaz and Navruz, 2019: 4). Anthropogenic factor-induced climate change is not limited to physical changes such as drought, floods, tsunamis, melting of glaciers, loss of coastlines due to the increase in water level, change of seasons, but also leads to the deterioration of social peace, increase in conflicts due to the decrease in resources, spread of diseases and the emergence of resource insecurity (Vural, 2018: 70-71).

Energy and other resource shortages resulting from climate change directly affect human life. In underdeveloped countries where resources are scarce, unfair resource distribution increases poverty and leads to social tensions and humanitarian crises due to the decline in welfare levels. In addition, unfavorable agricultural production and drought problems lead people to migrate from rural to urban areas and even internationally. This situation, although not directly, changes the social order in the places of migration, creates employment problems and increases social tension by leading to the prominence of ethnic elements (Yılmaz and Navruz, 2019: 5).

Displacement due to climate change and environmental problems is not only an ecological problem. It is a multi-causal and multi-level problem, ecological and non-ecological. It is a problem that displaces socio-economic vulnerabilities and marginalized people. For this reason, it is possible to say that security actually constitutes the basis of sustainable social development. Because in the Human Development Report published by UNDP in 1994, it was stated that individuals will ensure their individual security if basic needs such as environment, nutrition, shelter and health are met; it was revealed that factors such as access to drinking water, drought and vegetation destruction lead individuals to migrate (Köşer Akçapar, 2021: 570). This situation has caused 75 to 250 million people to be adversely affected and displaced by 2020 due to the difficulty of access to fresh water due to climate change in the African continent (Tacoli, 2009:108).

The IPCC 5th Assessment Report confirms that extreme weather events mostly affect populations without sufficient resources for planned migration, especially in low-income developing countries. The report also predicts that climate change in combination with poverty or other socio-economic problems may indirectly increase the risks of violent conflict (IPCC, 2014:16). Crises in agricultural areas trigger hunger and poverty in the world and create a food crisis. The emerging environmental threats make the regions where people live unsafe and lead the communities living in these regions to leave the region they live in. All these chain factors that develop due to global warming pave the way for climate-related migration as determinants of migration. Drought caused by climate change affects the social structure in many places, especially in African countries. Global warming can cause social explosions and ethnic conflicts.

The world's water and food shortages are caused by decreasing and irregular rainfall due to global climate change. States compete for these scarce resources. Thirst and famine are the causes of both intra-communal and international conflicts as threats to environmental security, but resorting to war to solve the problem, especially in countries with weak economies and severe drought and famine, will not provide an advantage to both sides, but will cause economic, social and political weakening in the countries where conflicts take place (Toset et al., 2000). Cross-border migration is important in terms of making migration a safe action by making new legal arrangements between cities at the micro scale and between countries at the macro scale and investigating the methods of combating migration in practice (Yılmaz et al, 2020:290). Migration has become an element that needs to be securitized by states in terms of its causes and consequences.

For states to securitize climate-related migration, they need to return to a more inclusive, participatory and ecologically sensitive structure. Ecologically sensitive and green policies include responses to both environmental and humanitarian crises (Özer and Atvur, 2019: 330). States, as the main actors of global cooperation, should conduct environmental and migration policies in line with the policies of local, national and global non-governmental organizations (Özer and Atvur, 2019: 330).

### 2.2. Why Climate Migration? Global Climate Change-Migration Scenarios

The debate on the link between climate change and migration first entered the global agenda in the 2008 negotiations on the United Nations Convention on Climate Change (Warner, 2010:403). While climate change alters the structure of the earth through natural means, anthropogenic factors have been the main determinant of global warming. The human factor is the main factor that both changes the climate and is affected by climate change. Therefore, the effects of climatic changes on human life are important in determining national policies and pursuing a certain policy in international relations. The examination of the migration movement of people on the basis of climate change and the environment has made the concept of climate migration a subject of investigation. According to the International Organization for Migration (IOM), the concept of climate migration is

defined as climate refugees or environmental refugees. Accordingly, a climate refugee is a person who is forced to leave his/her place of residence or cross an international border due to environmental degradation, deterioration or destruction in the country of residence (Perruchoud and Redpath Cross, 2011).

Some of the studies in the field of climate change predict that the rise in sea levels and the increase and frequency of climatic events will force many people to migrate, fleeing bad climatic conditions (Myers, 2005). In these approaches, which evaluate migration in a negative trend, it is stated that a large number of people will become environmental refugees and will be displaced due to the effects of climate change.

Climate migration emerges at the intersection of two conceptually complex and politically contentious issues. The complexity of the concept stems from its multi-causal, multilateral and multidisciplinary nature. Global warming, sea level rise, floods, droughts, melting glaciers and the emergence of extreme weather events are effective both for climate change and for the migration movement that emerges due to these factors (Morrissey, 2009). The problem of using the term migrant or refugee in relation to climate-related migration stems from the definition of refugee in the 1951 United Nations Convention on Refugees and its 1967 amendment. The Convention does not mention the difference between refugees and migrants, nor does it mention environmental problems as a cause of displacement (Bates, 2002: 467-468). Migration is defined here as the voluntary or involuntary movement or departure of people from their usual places of residence. Bates (2002) argues that the decision to migrate is effective in categorizing displaced people who depend on environmental stimuli. In this context, he refers to people who voluntarily leave their homeland as migrants, those who are forced to be displaced or migrate as environmental migrants, and those who are forced to migrate against their will as environmental refugees (Bates, 2002: 468).

Bates (2002) associates the emergence of environmental refugees with environmental destruction. In addition, he argues that natural disasters and the expropriation of land through dams etc. not only pollute but also deplete the environment (Bates, 2002: 469-475). Marshall (2016) diversifies the definition of environmental migration. He argues that creating clearly framed categories of environmental migrants based on individual experiences of displacement would enable the international community to respond appropriately to their needs. Therefore, he argues for categorizing environmental migrants as forced environmental migrants, repressed environmental migrants, temporary environmental migrants and human-environmental migrants.

According to Marshall's (2016) classification, forced environmental migrants are people who have been or will be permanently displaced from their homes and/or livelihoods primarily as a result of environmental factors. Environmental migrants under pressure include people who are unable to achieve their desired standard of living and are therefore under pressure to migrate to countries with milder climatic conditions in the face of the water, food and shelter crisis resulting from climate change. Temporary

environmental migrants are defined as those who migrate for a short period of time as a result of a one-off serious environmental disaster. Human-environmental migrants are defined as residents displaced from their homes and livelihoods as a result of conflicts over environmental resources. Another concept in the migration literature is "climate change migrants". The scope of these migrants is anyone who has the potential to migrate as a result of climate change. Baldwin (2012) argues that migration is always a ready-made dynamic lying dormant as a potential phenomenon that could occur in the present future (Baldwin, 2012: 636).

The change in the global distribution of the relationship between climate change and migration could result in up to two hundred million environmental refugees in the 21st century (Campbell, 2014: 1). Some NGOs working on the environment have stated that environmental migrants may exceed their estimates. Analyzing the IPCC scenarios, Brown stated that even in the least destructive scenario, an increase in migration by 5% and 10% would result in the displacement of more than two hundred million people. The emphasis here is on the worst-case scenarios of unlimited use of fossil fuels and fragmentation (Brown, 2008).

In cases where migration cannot be internationalized, groups with limited mobility may turn to internal migration to escape from the adverse effects of poor climatic conditions. In this way, internal migration mobility due to climate change emerges. In places where the poverty rate is the highest, migration is often seen as a way to escape from unfavorable living conditions. Factors such as food crisis, malnutrition, drought and severe poverty are effective in the origin of migration (Castles and Miller, 2008:197).

Another factor that triggers migration is natural disasters. Today, natural disasters have become more severe with the effect of global warming, affecting the climate-related migration of people and accelerating migration. The increase in greenhouse gases in the atmosphere led to an increase of 3 °C in the period 1990-2100. Since the increase is predicted to be 2-4.5 °C at best, it is important to predict the ecological and sociological disasters that this temperature increase may cause in the world. Because the increase in global warming will change the water cycle in the world, the water level will rise due to the melting of land glaciers and sea glaciers, and the increased water level will cause floods and flood disasters. The increase in temperature will cause an increase in the frequency of droughts and exacerbation of droughts in desert areas and tropical climate areas (Türkeş, 2008: 1). In addition, a 0.5 °C increase in temperature, a 20 cm increase in sea water level and an increase in precipitation in tropical climates are expected by 2100. The destruction of forests by anthropogenic factors and the doubling of carbon dioxide in the atmosphere due to the decrease in agricultural areas reveal an average temperature increase scenario of 2.5 °C (Aksay et al, 2005: 29). According to the climate change scenarios of the IPCC, it is estimated that climate change in the world will cause the earth to warm between 1.5 °C and 5.8 °C on average. It is stated that this warming will mostly affect the Middle East and African countries (UNEP, 2007:2).

Estimates of climate migration suggest that climate-based migration could reach a level that could affect 200 million to 1 billion migrants by 2050 (Aid, 2007). More than 143 million internal migrants are projected for sub-Saharan Africa, South Asia and the Americas alone (Rigaud et all, 2018). By 2015, according to the International Displacement Monitoring Center (IDMC), 19.2 million people had migrated to other settlements as a result of extreme climatic disasters. 8.6 million people had to migrate to escape violence and conflict. Therefore, migration for climatic reasons has doubled the migration due to conflict (Platform on Disaster Displacement, 2023). In 2020, 40.5 million people migrated. Despite the Covid 19 pandemic, environmental problems and natural disasters were the driving factors in these migrations. The impact of conflict and violence remained in the background (IDMC, 2021: 6).

In the IPCC, the direct effects of climate change, especially sea level rise or natural disasters, and indirect migration due to changing livelihoods are mentioned. It is emphasized that high temperature and drought are important determinants of these irregular migrations (Schaik and Bakker,2017: 2).

## 3. CLIMATE CHANGE-MIGRATION AND ITS FUTURE IN THE US AFTER HURRICANE KATRINA

The USA is a state that is considered as a destination point for migration from various countries of the world, where millions of people migrate every year, on the other hand, it is a state that cannot ensure its environmental security as a result of climatic disasters and has difficulty in coping with the consequences of the disaster in environmental and disaster management issues. Due to its geographical location, the US is constantly faced with natural disasters, which cause thousands of casualties, while the socio-economic crises caused by natural disasters deeply affect the country's economy. The climate crises experienced in the US have been managed unsuccessfully as a result of managerial weaknesses experienced from time to time.

The United States, which looks away from environmentalist approaches to global warming (Uğur, et al. 2016: 289), has difficulty in achieving successful results in preventing the climatic disasters it faces and eliminating their damages. It is observed that the US, as a hegemonic power, which seeks democracy in preventing poverty, war and violence in the Middle East and Africa, and which has resorted to regional armaments to ensure peace or intervenes in the resolution processes in inter-country disputes, is insufficient in preventing climatic disasters in its own geography (Çelik Efşan and Yılmaz, 2023: 391).

Although the US is a center of attraction for migration due to its attractive opportunities, it is also a country where many people have to turn to internal migration in terms of natural disasters due to global warming and where displacement is intense. Gutmann and Field (2010:3) attribute migration in the US to 4 types of environmental reasons. The first type is floods, hurricanes, earthquakes and other environmental disasters, the second is favorable

weather conditions due to environmental challenges and their short-term environmental impacts, including both droughts and droughts, the third is environmental amenities, including heat, sun, proximity to water and mountains, and finally environmental barriers and their management, including heat acclimatization, flood control, drainage and irrigation. All these factors have driven migration flows in one way or another in US history. Although population losses in the disaster area after disasters are sometimes compensated by return migration and new internal migration routes (Fussell and Elliott, 2009), it is observed that the destruction and losses experienced in Hurricane Katrina could not be compensated in the long term and the population has not reached its pre-disaster level despite the years that have passed since the disaster.

As Gutmann and Field (2010) cite from The New Orleans Database; 2009, Hurricane Katrina in 2005, as a dramatic example of environmentally induced demographic change, initially reduced the population of New Orleans, and four years after the disaster, the population of the city as a whole is 80 percent smaller and the population of the city center is less than 90 percent of its former population (Greater New Orleans Community Data Center, 2009). According to NATCAT (2012), Hurricane Katrina ranked 2nd in the top 10 costliest disasters that occurred in 1980-2011. Among the top 10 disasters, Katrina is considered to be the costliest disaster after the 210 million dollar loss in the earthquake and tsunami disaster in Japan in 2011. It is important to look at the formation process of Hurricane Katrina in order to picture why the disaster had such a devastating impact. In an average year in the US, 10 tropical storms develop in the Gulf of Mexico, the Caribbean Sea or the Atlantic Ocean in August and mid-October, when hurricane activity is intense, and 6 of them turn into hurricanes. In a 3-year period, five hurricanes hit the US mainland. Of these, Hurricane Katrina, which took place on August 23-31, 2005, has an important place in the history of hurricanes in the US and the world in terms of its devastating impact. In fact, a devastating hurricane that would hit Southeast Louisiana was predicted by many experts. Because most of this region is at or below sea level. In this sense, the Gulf of Mexico coast becomes deadly as hurricanes increase in intensity. Katrina moved through the Bahamas on the first day of the disaster, and after increasing its intensity in the Gulf of Mexico, it crossed the state of Florida with a category 1 speed (119-159 km per hour), causing flooding and related deaths. The hurricane, which flooded New Orleans, where breakwaters and levees were inadequate, hit Louisiana and Mississippi and Alabama in Category 3 (179-209 km per hour). Over a thousand people lost their lives and 125 million dollars of material damage was caused (The White House, 2005b). Since the damages and losses after the hurricane became the focus of the federal government, local governments, decision-makers, national and international researchers, and since a serious pool of information was needed to analyze and interpret the picture created by the disaster, the database created under the name of the New Orleans Index (Greater New Orleans Community Data Centre), which was created in partnership with the Brookings Institution in New Orleans, has become a local authority that follows the actions and recovery steps after Hurricane Katrina (Greater New Orleans Community Data Centre, 2023).

Although more time is needed to precisely measure the scale of migration in the aftermath of Hurricane Katrina, the short- and medium-term effects of the disaster were reported in the media during the hurricane, with 385,000 people, 80 percent of the 480,000 residents of New Orleans, reportedly evacuated. The number of short-term evacuees reached an estimated 1 million (Gutmann and Field, 2010). The extraordinary destruction of homes, businesses and other facilities brought about a slow process of normalization of life in New Orleans. According to the Census Bureau, by July 2006 the city's population had fallen by more than 56 percent from the previous year, from about 210,000 to 239,000 a year later in 2007 (Brookings Institution, 2008). The Brookings Institution even published a book on "Resilience and Opportunity: Lessons from the U.S. Gulf Coast after Katrina and Rita" (Brookings Institution, 2023).

In the US, extreme weather due to climate change displaced more than 1 million people from their homes in 2017. It is predicted that this could affect the entire nation in a short period of time. Hurricane Harvey, which hit Texas and Louisiana in 2017 and caused $125 billion worth of damage, unleashed a mass of extreme rainfall, causing the worst damage ever caused by a storm in US history. This excessive rainfall in Texas reached a level where more than 2.3 million people were affected, and many places that could have been living spaces were flooded (Goodell, 2018). After this extreme rainfall, flooding occurred and more than 30,000 people were displaced. Thousands of people migrated to Dallas. It is known that areas affected by hurricanes are then inundated and flooded.

A series of climate disasters in the US in 2017-six major hurricanes in the Atlantic, wildfires in the West, catastrophic landslides, record high temperatures across the country-caused $306 billion in damage and killed more than 300 people. After Hurricane Maria, 300,000 Puerto Ricans migrated to Florida. Climate experts estimate that more than 1 million Americans were displaced in 2016. This is not just displacement, but also socioeconomic and sociopolitical consequences. In the aftermath of natural disasters, there have also been increases in depression and suicide at the societal level (Goodell, 2018). A study conducted in the region affected by Hurricane Harvey revealed that 30% of those living in flooded areas had problems making rent payments as well as food payments necessary for survival (Goodell, 2018).

In the 20th century, a series of hurricanes motivated the US Government to invest in a number of measures such as protective levees to reduce the risk of storms and floods in the city (McLeman, 2014: 95). However, it is seen that this motivation was taken without fully understanding the dimensions and scope of climate change and that measures were taken by prioritizing cost-benefit analysis against natural disasters (Winterfeldt, 2006: 30). It is also evident that many of the plans prepared against natural disasters have failed to be updated. As a matter of fact, the environmental impact statement prepared for New Orleans in 1974 was last published and approved in 1984. From this point of view, the fact that the struggle against natural disasters is carried out on a cost-benefit basis and the plans are not updated every year according to the current situation of climate change has led to unfair solution

proposals and caused increasing ecological problems. This has made socioeconomically disadvantaged groups more vulnerable (Martinich et all, 2013:175).

The lessons from natural disasters such as Hurricane Katrina show that dramatic environmental disasters are the most talked about but least impactful, while pre-disaster preparation, prevention and environmental management are the least mentioned but most important factors (Gutmann and Field, 2010). In New Orleans, inequity was evident even in post-hurricane damages, and environmental justice was not achieved in low-value housing and ecologically vulnerable areas, where there was a lack of investment and protection against disasters. Low-income groups were negatively affected by not having the same opportunities for post-hurricane returns as higher-income groups and not having housing insurance against floods and other natural disasters. The report assesses that those with solidly built or insured houses are in a more advantageous position in post-disaster returns and that these houses can be considered as location-specific capital. The U.S. Census Bureau Current Population Survey revealed that those who returned after Hurricane Katrina were disproportionately homeowners compared to those who did not (Groen and Polivka, 2009: 18-19).

Curtis et al. (2015) argue that climatic factors are driving changes in migration patterns along the Gulf of Mexico coastline affected by Hurricanes Katrina and Rita, providing an example of how disasters can affect coastal populations. According to environmental observations, extreme weather events such as stronger and more frequent storms and flooding, and longer-term, gradual problems such as severe droughts and rising sea levels are associated with climate change. The consequences of climate change affect some regions more severely and are likely to cause mass population migration. Climate-induced displacement in the US needs to be considered in a broader framework that is not only ecological but also encompasses non-ecological issues. Inequalities exist even among people displaced by climate change. Among displaced people, marginalized and vulnerable groups experience more severe impacts.

Studying environmental justice, Bullad and Wright argued that the hurricane affected African American households more than white Americans (Bullard, Wright, 2009: 30). The high density of African Americans in the region, where the African American population is densely populated and the white American population is less densely populated, caused more black people to be affected. Only 19% of white Americans were displaced by this disaster. On the other hand, 47% of African Americans migrated to a different destination after the disaster (Jayawardhan, 2017: 106).

Violent incidents may also occur in the absence of post-disaster protection assistance and unequal or inequitable distribution of assistance. As in the case of politicized disaster relief, certain social groups did not benefit from state assistance in the aftermath of Hurricane Katrina (Anker, 2001: 394). McLeman (2014) argues that an important lesson was learned from Hurricane Katrina, namely that the hurricane caused extensive damage to housing.

The ability of institutional authorities to provide relief and recovery are key determinants of whether people migrate elsewhere (McLeman, 2014: 141). In this sense, Hurricane Katrina demonstrated how weak local governance is (Jayawardhan, 2017: 118). Hurricane Katrina has shown how unprepared the US is for climate change and the inadequacy of the management of such disasters. Hurricane Katrina stood out in the world press as an event that documented the failure of the US Administration in crisis management.

### 3.1. Crisis Management in the USA: Where was Hurricane Katrina in Natural Disaster Management and Why did it Fail?

The Federal Emergency Management Agency (FEMA) is the most authorized organization for natural disaster and crisis management in the USA. FEMA's main task is to prepare protection plans against all kinds of disasters and attacks in the US and to develop moves for post-event interventions. FEMA carries out all kinds of preliminary work related to the Federal Government's fight against natural disasters and the elimination of damages, and works to prevent disasters or reduce the destruction caused by disasters. On the other hand, FEMA is an organization that copes with all kinds of destruction, damages and attacks not only of natural disaster origin but also of human origin in the USA, which hosts different ethnic elements and has become a target point for global terrorist groups, reduces the destructive effect of the damages that occur, and on the other hand, prepares a defense plan against any ecological/anthropogenic destruction that may occur (FEMA Brochure, 2008: 1).

In managing crises around the world, recovery policies are generally used, and preventive policies are not dealt with before the crisis occurs. In general, crises become more difficult to deal with and their destructive impact increases after the crisis event starts, develops and reaches an unpreventable scale. It is not foreseen who will be affected by a crisis and to what extent. On the other hand, communication within the organization and with the public in crisis management is vital for the elimination of the crisis. Strong communication networks used during a crisis and media organizations sharing accurate and explanatory information with the public are important in order to draw a picture of the crisis and to see what steps the state has taken in crisis management (Luekke, 2008: 118-121). In the aftermath of Hurricane Katrina, FEMA prepared a general framework of post-crisis conclusions and revealed the cause-and-effect relationships between the data collected in the field and the incident. It is seen that FEMA, which learned lessons from the crises experienced, did not face the same shortcomings in the hurricanes experienced in the following years in the US history (Balanco, et all. 1996: 10-11).

Hurricane Katrina has gone down in history as a deadly hurricane, which is not new to the US but has become more severe due to global warming. Global warming increases the severity and destructive impact of hurricanes in the US. While thousands of people lost their lives as a result of the hurricane, many people migrated from their regions due to natural disasters and environmental insecurity. The deterioration of environmental trust as a result

of the hurricane and climate-related variables led people to migrate; local governments were found negligent and inadequate in the management of migration, and FEMA and the Federal Government were found negligent and inadequate in the management of the post-disaster crisis. 1 million people were evacuated or displaced and the damages caused by the hurricane were considered unnatural or man-made. The bureaucratic obstacles and lack of coordination in FEMA during Hurricane Katrina had a multiplier effect on the post-disaster damages as well as the pre-disaster preparations. The negativities experienced in FEMA made it necessary to make some legal arrangements during the Bush era. As Yılmaz et al. (2014) report, President Bush signed the Post Katrina Emergency Reform Act of 2006, redefining FEMA's jurisdiction and duties and reforming disaster and crisis management in the US (Post Katrina Emergency Management Reform Act, 2006). As a result, the problem of uncoordination and fund transfer seen within the organization was not experienced in the 2012 Hurricane Sandy, which occurred after Katrina; the recovery process was more effective and faster as FEMA intervened quickly in the disaster area with the bureaucratic obstacles and rapid fund transfer that were overcome in the Obama-era hurricane (Bozkurt and Akdeniz, 2014:105). In his article, Sharkey (2007) emphasizes Hurricane Katrina as a metaphor of the racial inequality that left the US helpless in disaster management and at the same time the disaster affected disadvantaged groups more. In his empirical research, he reveals that the losses in the hurricane resulted in more severe victimization in New Orleans, where African Americans live in large numbers. The aftermath of Hurricane Katrina and the weaknesses of the Bush administration resulted in the 2008 presidential elections with Obama's propaganda in the press that the federal government and FEMA would stand by the disaster victims in any future disaster based on the reforms made and that they would provide permanent settlements to the disaster victims.

Revealing the reasons for the failure of disaster management in Hurricane Katrina is important in terms of drawing the dimensions of the disaster and questioning the measures for future disasters. In this sense, post-disaster discourses were reconsidered during the Bush era. The Bush administration prepared a post-disaster assessment report in order to reveal why the hurricane was so destructive and to explain the US administration, which was at the center of criticism, to the public. On the other hand, the aim was to shift the question from blame to identify the gaps in American disaster and crisis management and to determine the stages of preparation for any natural or man-made disaster. The 17 headings identified by the White House on what went wrong were useful in determining a roadmap for disaster management and what awaits the public and local/federal governments in the event of a disaster in the Americas. The 17-item study, which expresses the lessons learned and the road map of the American administration after Hurricane Katrina, has been promising in terms of managing the coordination of the American people in the face of a new disaster. These 17 articles expressing the pre-disaster action plan can be stated as follows:

- National Preparedness
- Integrated Use of Military Capabilities

- Communications
- Logistics and Evacuations
- Search and Rescue
- Public Safety and Security
- Public Health and Medical Support
- Human Services
- Mass Care and Housing
- Public Communications
- Critical Infrastructure and Impact Assessment
- Environmental Hazards and Debris Removal
- Foreign Assistance
- Non-Governmental Aid
- Training, Exercises, and Lessons Learned
- Homeland Security Professional Development and Education
- Citizen and Community Preparedness

The critical challenges in disaster are that the current system does not provide the necessary framework to manage the challenges posed by the devastating impacts of the 21st century. But no matter how strong a framework a state plans, it is difficult to predict how large or destructive a disaster will be. Even during a typical hurricane season, there may not be sufficient structural functions in place to prevent or mitigate uncontrollable fires or other natural disasters. Indeed, four critical elements of national preparedness emerged during the federal response to Katrina: Processes for integrated management of the national response, command and control structures within the federal government, knowledge of preparedness programs, regional planning, and lack of coordination. Institutions have to be in a state of governance in the management of catastrophic events, both public and private sector organizations. The Federal Government is only an organization that coordinates resources to meet the needs of local and state governments based on requests for assistance. In American crisis management, according to the National Incident Management System (NIMS) and the National Response Plan (NRP), federal and state agencies establish their own command and coordination structures to support local command and coordination structures in emergencies. However, this framework fails in a disaster event where there are large-scale needs, inadequate resources, and no functioning local governments. As a result, the Katrina debacle proved that jurisdictional limitations are major obstacles to the effective pooling of Federal, State and local resources (The White House, 2005a). Shortly after Katrina made landfall, state and local officials recognized the severity of the devastation. However, there was a lack of infrastructure and the ability to respond. Federal authorities struggled to carry

out responsibilities typically handled by state and local authorities, such as rescuing citizens trapped by rising floodwaters, providing law enforcement, and evacuating the remaining population of New Orleans, without advance planning or remedial assistance. The federal government is not, and should not be expected to be, the first responder in American crisis management. In the federally governed United States, state and local governments are in the best position to handle incidents within their jurisdiction and are always first in line for disaster response. However, Americans have a right to expect the federal government to respond effectively to a catastrophic event. When local and state governments are overwhelmed in catastrophic events, only the federal government has the resources and capabilities to respond. The federal government must therefore plan, train and equip.

Hurricane Katrina has had a significant impact on many sectors of the region's critical infrastructure, particularly the energy sector. The hurricane caused the shutdown of most crude oil and natural gas production and refining capacity in the Gulf of Mexico. In this context, the economic cost of Katrina to the United States was huge. Production was halted in Louisiana, Mississippi and Alabama. Because more than 10% of imported crude oil enters through the Louisiana Offshore Oil Port. One-sixth of all refineries in the US were shut down, 11 of which are located in the disaster zone. As a result, more than 2.5 million customers in Louisiana, Mississippi and Alabama are known to have lost power across the region. We observe that the federal government has failed to adequately coordinate its response with state and local protection and restoration efforts, the federal government has responded inconsistently to individualized requests, creating confusion, and finally, the federal government has responded without a comprehensive understanding of the interdependence of critical infrastructure sectors in the federal state and geographic region. For example, one energy company arranged for generators to be sent to the facilities where they were needed to restore the flow of oil to the entire Mid-Atlantic region of the United States. But FEMA regional representatives directed these generators to hospitals. While saving lives was a priority, the two demands conflicted and there was no awareness.

The federal government lacked current, accurate, and basic information to assess which critical infrastructure was damaged, not functioning, or both during the disaster. FEMA teams assigned to assess damage in the region were not focused on critical infrastructure and lacked sufficient expertise. In the US, the Interim National Infrastructure Protection Plan (NIPP) provides guidance for all state, local and federal agencies to prioritize infrastructure protection. However, there was no implementation plan for these actions during a natural disaster (The White House, 2005a). State and local governments are normally responsible for debris removal after disasters in the US. Furthermore, when state and local governments request assistance in disasters, the federal government provides assistance in two ways: The first is debris removal by the U.S. Army Corps of Engineers (USACE), other federal agencies, or locally contracted debris removal, reimbursed by other federal agencies. It is reported that Katrina created an average of 118 million cubic meters of debris, while 71 million cubic meters of debris was removed from Louisiana, Mississippi and Alabama in

just 5 months. Compared to 1992 Hurricane Andrew, Andrew's 20 million cubic meters of debris took 6 months to remove. However, unnecessary bureaucracy and rules for removing privately owned debris prevented intervention. Another problem was that the US administration was not prepared to make the best use of foreign assistance. While some countries sent aid that the US did not request, the acceptance of the aid needed during the disaster faced bureaucratic obstacles. This amount of foreign aid could not be used effectively due to coordination problems. Lack of planning in the acceptance and distribution of aid wasted the donations of many donor countries. Federal, state and local emergency response authorities did not include assistance for foreign nationals in their response plans. It was very difficult for the Federal Government to eliminate the environmental damage caused by Katrina. It destroyed numerous drinking water plants and wastewater treatment facilities along the Gulf. The Environmental Protection Agency (EPA) and the Coast Guard jointly led an interagency environmental assessment and remediation effort, cleaning up 7 million gallons of oil and resolving the problem. More than 2300 incidents of pollution have been reported. Federal authorities failed to identify environmental hazards to inform the public and raise awareness among emergency responders. In the aftermath of the disaster, there were 93,000 square miles of hurricane-affected land, and no environmental assessment of even the approximately 80 square miles of inundated land. All these can be explained as reasons for the failure in the management of Hurricane Katrina (The White House, 2005a).

## CONCLUSION

It is a reality that global warming is a problem area that cannot be tackled by a single nation and requires international cooperation. Considering the natural disasters that affect one or several states at the same time, the disasters caused by global climate change result in wide-spectrum damages and require local governments to produce policies by acting at the governance level in disaster areas. Today, politicians all over the world act to develop the regions they are responsible for and make them more livable and make promises to their voters. However, over the years, the changes that occur with the increase in global warming result in the failure to fulfill their promises to build more livable cities. As the earth warms, the water level in the seas and oceans rises, the intensity of storms and hurricanes increases, and droughts and food shortages due to warming increase, promises are left in the air. With this, politicians lose their credibility. Climate change-induced migration means the construction of new problem areas in terms of migration and migration destinations. Climate-related migration causes disruption of public services and municipal services to be provided here due to the increasing agglomeration at the destination points, and creates both inequality and inefficiency in terms of benefiting from services, creating a demand for over-capacity services. Migration will also be unsatisfactory for the receiving regions and their inhabitants, resulting in environmental injustice. Migrants may be subject to social exclusion or be pushed out of society. On the other hand, there will be unemployment, housing shortages, and disruptions in the functioning of sectors such as education and health. Not

only how people live, but also where they live will affect countries demographically, if not territorially, and the maps of world states will change. The accumulation at the destination points of climate-related migration will push livable cities into unlivable conditions.

The hurricane disasters in the US have had such a devastating impact that power lines were cut and people's lives were turned upside down after all the hurricanes. Thousands of people were displaced and thousands of people were lost during the disaster. It has become impossible to calculate the number of missing people. The 2005 Hurricane Katrina was more difficult to assess than any other hurricane disaster in US history. The main reason for this is that the destruction caused by the disaster took place over a large area and a longer-term investigation and observation was needed to determine the consequences. On the other hand, the failures of local governments and the federal government to provide pre-disaster preparation and post-disaster interventions to New Orleans, where African Americans and the elderly population live in large numbers, have led to discourses of neglect and discrimination. Non-governmental organizations and activists have taken action to analyze the post-Katrina debacle and what needs to be done, and billions of dollars have been invested in coastal resilience projects in coastal cities such as Louisiana and New Orleans to delay/prevent new hurricanes that may be triggered by the expected 5 degrees of human-induced global warming by 2100, and measures that can be applied to possible new disasters. In the US, the inability of the federal government and local governments to carry out pre-disaster risk and damage management and to evaluate foreseeable consequences has exacerbated the effects of the disaster. Local governments and grassroots activist groups promoting environmentalist practices such as electric bicycles, scooters and electric cars have mostly turned opposition to global warming into a propaganda tool. Green politics tries to prevent these climate crises. It can be assumed that green policies can stop global warming. It should be noted that hurricanes, which are especially severe in the US, and floods that develop over the ocean are problems that are not limited to US environmental security and require cooperation with neighboring states. On the other hand, evaluating these large-scale climatic problems at the political and economic level in disaster preparedness and disaster response processes and producing protective / preventive policies in this regard will prevent possible losses.

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***Araştırmacıların Katkı Beyanı***

Birden çok yazarlı çalışmada her bir yazarın katkısı aşağıdaki gibidir:

Çalışmanın giriş, literatür ve sonuç bölümü yazarlar tarafından eşit şekilde üretilmiştir.

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Makalede yazar tarafından beyan edilmiş herhangi bir olası çıkar çatışması bulunmamaktadır.

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