# **Rising Storms, Shifting Homes: An Examination of Legislation Regarding Migration and Displacement in the Caribbean**

By

Lotti Lutter

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Supervisor: Ruben Mnatsakanian

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#### ABSTRACT

The following thesis examines climate-induced migration and displacement in the Caribbean, specifically due to hurricanes, and assesses the adequacy of current migration and displacement legislation in addressing this emerging crisis. The thesis aims to identify shortcomings or gaps in the legislation by examining inter-island agreements, migration and displacement laws, and disaster risk management. By employing secondary sources, the paper investigates the hypothesis that the intensity and frequency of hurricanes have increased in recent decades due to climate change, thereby escalating the migration and displacement crisis. This investigation aims to reveal how these climatic challenges disrupt lives and prompt people to seek safer habitats. The paper delves into how three economically different countries in the Caribbean region deal with the displacement of the people and damages during the aftermath of the most devastating hurricanes. Furthermore, part of my research aims to investigate existing migration, immigration, and displacement laws regarding disasters in the Caribbean and categorize them into five groups. Finally, the thesis ends with possible solutions and recommendations for the shortcomings in legislation regarding climate migration, displacement, and adaptation ideas.

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## LIST OF ABBREVIATIONS

CARICOM	Caribbean Community
CSM	CARICOM Single Market
DoD	Department of Defense
DTM	Displacement tracking matrix
eTA	electronic Travel Authorization
FMAs	Free Movement Agreements
IDPs	International Displaced Persons
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IRAP	International Refugee Assistance Project
NOAA	The National Oceanic and Atmospheric Administration
OECD	Economic Cooperation and Development
OECS	Organization of Eastern Caribbean States
SIDS	Small Island Developing States
SS scale	Saffir-Simpson scale
TC	Tropical Cyclone
TPS	Temporary Protected Status
TS	Tropical Storm
UNEP	UN Environmental Program
WASH	Water, Sanitation, and Hygiene
WMO	World Meteorological Organization

#### **INTRODUCTION**

As the Earth's climate continues to change at an alarming rate, more and more people are being forced to leave their homes in search of safer and more habitable environments. The paper's main aim is to showcase how the Caribbean region is facing climate migration and displacement difficulties due to changes in tropical cyclones/hurricanes due to climate change. The thesis explores whether the intensity and frequency of these extreme weather events have escalated in recent decades, potentially reflecting the broader narrative of climate change. This investigation aims to reveal how these climatic challenges disrupt lives and prompt people to seek safer habitats. Key objectives of my research include assessing the physical change, the different socio-economic systems within the region, and the adequacy of current migration and displacement legislation in addressing this emerging crisis. I aim to identify any shortcomings or gaps by examining inter-island agreements, also known as Free Movement agreements, and the broader legal framework. My thesis chapters build on each other, meaning that without the changes in tropical cyclones (TCs), the issues of migration and displacement.

Studies that examine hurricanes in the Caribbean region already exist, and many scholars have also researched migration due to natural hazards. However, my take, contribution to this issue is that when it comes to migration and displacement, I examine three countries from the region, the Bahamas, Haiti, and Cuba, which all have different socio-economic backgrounds, and compare them regarding how they dealt with the aftermath of the most destructive hurricanes they experienced and how well are they prepared when it comes to disaster management. Disaster risk management will be increasingly important because it can help us predict how well the small island states (SIDS) are prepared for climate change. Furthermore, in the last part of my research, I investigate whether legislation regarding migration and displacement is adequate for people who have to migrate due to natural disasters such as hurricanes. Thus, my research questions are: 1) Is the intensity of hurricanes in the Caribbean increasing due to climate change, and if so, how does it affect regional migration and displacement patterns? 2) Is existing international legislation on migration and displacement adequate to the existing challenge?

Current studies indicate that climate change is indeed influencing hurricanes and tropical cyclones. While the frequency of these storms is projected to decrease, their intensity is expected to increase (IPCC, 2023). Hurricanes form in the Atlantic basin, including the Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and occasionally the eastern and central North Pacific Ocean. The World Meteorological Organization maintains an updated list of names for these storms, identified using a six-year rotating cycle (NOAA, 2024). According to the National Hurricane Center (2024), hurricanes typically occur around 12 times yearly in the Atlantic basin. The Caribbean's experience of climate-induced migration and displacement due to climate change can offer valuable insights into the broader challenges of climate migration, serving as a case study for other regions facing similar threats. According to Regional Data Hub (2023) by the International Organization for Migration (IOM), between 2012 and 2022, the Caribbean experienced approximately 5.3 million new cases of internal displacement due to natural disasters. When it comes to emigration, there has been a 114% increase from 1990 to 2020 (Regional Data Hub, 2023, p.9).

I come to my findings using secondary sources, existing case studies about the Caribbean region, and reports from the hurricane seasons throughout the years. The two main limitations of the study are that I rely on secondary sources and have no connections to people who live there. Furthermore, I only used English language sources, thus only having limited material

about hurricanes, migration /displacement, and legislation. My findings show that while some countries are prepared for the changes that hurricanes and climate change will cause in the future, still the Caribbean region seems to have the least developed national laws and policies when it comes to addressing the needs of individuals displaced by disasters moreover there is also a lack of legislation regarding disaster management. Finally, as my contribution to the research, I have given possible solutions and ideas on how to tackle the gap in legislation.

#### **CHAPTER 1 - HURRICANES IN THE CARIBBEAN**

In the following chapter, I will discuss tropical cyclones/hurricanes and their relationship with climate change. The following data is relevant so that the reader can familiarize him/herself with the topic before analyzing the consequences of hurricanes and the legislation regarding them in the Caribbean region. A tropical cyclone (TC) is a storm that forms in tropical regions. It has a center of low pressure and is known for its strong winds and heavy rain that can cause flooding. These storms go by different names depending on their location and strength, such as hurricanes, typhoons, tropical storms, cyclonic storms, or tropical depressions (Stobl, 2011, p. 576). In the North Atlantic Basin, tropical storms are called hurricanes when they reach a certain level of strength (Stobl, 2011, p.576). In the Caribbean, the hurricane season starts as early as the end of May and lasts until the end of November, mainly from July to October. In the Caribbean, hurricanes are common and large-scale disruptions. The most powerful ones usually start near Africa's western coast and strengthen as they move west over the Atlantic Ocean. Weaker hurricanes and tropical storms (with wind speeds of 63-119 km/hr) can form anywhere in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico (Lawrence et al., 1991, p.313). In just one hurricane, the powerful winds can generate approximately half the energy produced by the entire world's electrical generating capacity, while cloud and rain formation from the same storm might release an astonishing 400 times that amount (National Oceanic and Atmospheric Administration (NOAA), 2023). TCs that are as strong as hurricanes are usually around 500 kilometers wide, but their size can differ a lot. Furthermore, hurricanes are classified based on wind speed using the Saffir-Simpson (SS) scale, which goes from 1 to 5. When hurricanes go over land, they lose their power rapidly because of the friction with the ground and the absence of moisture and heat from the ocean (Stobl, 2011, p.576).



Figure 1 How Hurricanes From (Internet Geography, 2023)

The relationship between TCs and climate change is intricate and has been extensively examined by numerous scientists in the past ten years, often showing conflicting findings. According to the Intergovernmental Panel on Climate Change (IPCC) (2023) and NOAA (2021) reports, changes in sea surface temperature (SST), atmospheric temperature, and moisture affect the formation of TCs; when tropical stability increases, there is a reduction in the formation of cyclones. The number of intense cyclones is expected to increase, which leads to a decrease in overall cyclone frequency (IPCC, 2023). Climate models predict how TCs will be affected by human-caused global warming. According to the reports mentioned above and studies based on observations, theories, and models, it is becoming increasingly clear that TC risk is expected to rise globally, impacting multiple regions (IPCC, 2023).

According to Murakami et al. (2020) and NOAA, between 1980 and 2018, there has been a noticeable rise in activity in the North Atlantic and Central Pacific regions. Murakami et al. (2020) also concluded that three factors determine the impact locations of TCs: greenhouse gases, volcanic eruptions, and anthropogenic aerosols. Furthermore, in the future, a 2°C increase in global warming is projected to affect TC activity in the following ways: Sea level rise caused by warming is expected to result in higher storm inundation levels (Knutson et al., 2020). TC precipitation rates will likely increase globally, with a projected median increase of 14%. This is similar to the rate at which tropical water vapor increases with warming, assuming relative humidity remains constant. TC intensity is expected to increase globally, with a projected median increase of about 5% in lifetime maximum surface wind speeds (IPCC, 2023). However, the range of projections varies from 1% to 10% in available higher-resolution studies (Knutson et al., 2020, p.303). The proportion of TCs that reach intense levels (category 4-5) globally is also expected to increase, with a projected median change of +13% (Knutson et al., 2020, p.309). It is essential to add that, currently, there are uncertainties and mixed opinions among scientists regarding the projections. Moreover, substantial differences exist in modeling studies of TC parameters in different TC basins (Probst, 2021).

Collecting data on "Named Storm Days" and "Hurricane Days" is essential in monitoring and comprehending tropical activity. The quantification of tropical cyclone days involves daily enumeration of active storms throughout the year, followed by the summation of these totals (Nato et al., 2024, p.4). Storms are classified into three categories based on their intensity. Named storm days encompass all TCs with winds of at least 63 km/hr, hurricane days include storms with winds of at least 119 km/hr, and major hurricane days account for storms with winds exceeding 179 km/hr (Nato et al., 2024, p.4). These counts are cumulative, meaning that when counting named storms, hurricanes, and major hurricanes, a storm with major hurricane

intensity is included in the counts (Nato et al., 2024, p.4). For example, a storm that persists for three days as a tropical storm, two days as a category 1–2 hurricane, and one day as a major hurricane (category 3–5) is recorded as six named storm days, three hurricane days, and one major hurricane day. Collectively, these counts provide an integrated measure of tropical cyclones' strength, duration, and frequency within a specific year. Major hurricanes are unquestionably the most devastating TCs (Nato et al., 2024, p.5).

According to a study by Hernández-Delgado et al. (2024), hurricanes in the northeastern Caribbean region have been getting stronger in recent decades. The number of storms passing within 300 km of northeastern Puerto Rico has increased since 1981-1990. From 1981 to 2022, the frequency of tropical storms per decade increased by 78% compared to 1851-1980. Specifically, the frequency of category one hurricanes increased by 54%, category two hurricanes decreased by 56%, category three hurricanes decreased by 30%, category four hurricanes increased by 23%, and category five hurricanes increased by 226% (Hernández-Delgado et al., 2024, p.7). A study by Nato et al., "Temporal evolution of hurricane activity: insights from decades of category 1-5 analysis" (2024), also shows that the number of named storms and hurricanes in the North Atlantic has been increasing over time, especially since 1991. Major hurricanes have risen in frequency and strength in the last twenty years. Nato et al. (2024) compared data from 1961 to 2021 with historical records, and they found a significant increase in the occurrence and variation of named storms, hurricanes, and major hurricanes over the past sixty years, which suggests more frequent events and greater unpredictability, which could have implications for coastal communities and ecosystems (Nato et al., 2024, p.13).

As we can see, TCs are highly hazardous natural disasters characterized by their destructive winds and heavy rainfall, leading to floods, flash floods, landslides, and storm surges. These phenomena annually impact millions of individuals worldwide, causing significant devastation in numerous countries, particularly coastal regions such as the Caribbean, leaving people with no choice but to leave their homes, especially during hurricane season. In the following, I will be showcasing images that help to explain that while the frequency of hurricanes has also changed throughout the years, what is really changing is their intensity.



Figure 2 Accumulated energy of North Atlantic hurricanes between 1950 and 2020 (From: Temporal evolution of hurricane activity: insights from decades of category 1–5 analysis, 2023).



Figure 3 Atlantic hurricane season between 2000 – 2020 distinguished by tropical storms, hurricanes, and major hurricanes (From: Probst et al., 2023)

As mentioned, the relationship between TCs and climate change shows conflicting findings between researchers. Moreover, we can also see from the figures above that there have been some changes throughout the decades. My interpretation of the data is that while there are conflicting results, I still think that the majority of the data does agree on the fact that hurricanes and TCs are changing in some ways due to climate change. The different categories of hurricanes might change how Hernández-Delgado et al. (2024) discuss, and even IPCC (2023) questions the confidence of some of the predicted outcomes. Furthermore, in addition to climate change, el Nino and la Nina can also influence the intensity and frequency of hurricanes in the Atlantic. In my understanding, hurricanes and tropical cyclones are changing and already have or will impact coastal communities. This brings us to the second chapter of my thesis, where I discuss migration due to these changing TCs.

#### **CHAPTER 2 - CLIMATE MIGRATION IN THE CARIBBEAN**

Climate change is a significant issue for the global community. While precise figures are not yet available, it is anticipated that there will be an increase in migration and displacement due to environmental changes in the future (Piguet & Laczko, 2014, p.2). However, before further discussing the issue, I would like to point out the same way Sener (2023) pointed out in his writing that human movement is shaped by various socioeconomic, cultural, political, and climate-related influences. It is extremely difficult to attribute it solely to climate change, and it is crucial to acknowledge that multiple causes influence migration in the context of climate change. Environmental changes will continue to impact migration in the future by affecting economic, political, and social factors as well, and the combination of those will lead to migration in most cases.

The change in the climate can cause enormous losses and damages, which are significant concerns in the Caribbean region and global discussions on climate change. There are ongoing discussions regarding the appropriate approaches to tackle these issues. Loss and damage are strongly related to climate justice in the Caribbean since they highlight the injustices the region's countries must contend with. Thomas and Benjamin (2022) state that despite contributing less than 1% to global emissions that contribute to climate change, these nations suffer disproportionately from its impacts. Climate change seriously threatens Small Island Developing States (SIDS) in the Caribbean and Pacific regions. The IPCC (2023) warns that rising temperatures, reduced freshwater availability, and sea level rise could make certain atoll islands "uninhabitable" with just a 1.5°C increase in global warming. At the current rate of greenhouse gas emissions, the global average temperature is projected to reach this threshold as early as 2030 (Francis, 2019, p.3).

Consequently, several atoll islands may become uninhabitable within the next few decades. Sea level rise also poses a risk, as it can lead to saltwater intrusion, soil salinization, and flooding, which undermine access to freshwater and agricultural productivity, all essential for sustaining human life (Francis, 2019, p.3). Every year, rapid-onset natural hazards in the Caribbean not only have significant impacts on economies, livelihoods, habitats, food security systems, and key infrastructure but also result in the displacement of thousands of people. Regarding per capita vulnerability to disaster-related displacement from rapid-onset natural hazards, many Caribbean SIDS are among the most susceptible countries/territories globally (Regional Data Hub, 2023, p.4). Tropical storms (TS), known as hurricanes in the region, are also changing due to climate change, as mentioned in the previous chapter. As written earlier, hurricanes' frequency might not increase; the intensity will likely be due to climate change. This means that the impacts will also worsen, forcing more and more people to migrate first within their island, then to one island to another, or even to the mainland to seek safer habitats. Hurricanes have the potential to jeopardize vital services like the provision of water and power, impose substantial financial losses, disturb developmental processes, and disrupt infrastructure networks. For example, Hurricane Maria caused extensive damage in Dominica, equivalent to over 226% of its GDP, and resulted in a complete failure of electricity services due to severe damage to the transmission and distribution network (Francis, 2019, p.3). The higher intensity of hurricanes puts Caribbean SIDS at risk of becoming economically unsustainable without significant adaptation efforts (IPCC, 2023). Thus, it is unsurprising that it directly affects regional migration patterns. Recent trends show a rise in environmental migration, the outmigration of skilled professionals to the Organization for Economic Cooperation and Development (OECD) countries, a disproportionate number of female migrants, and voluntary and forced returns to the region (Francis, 2019, p.4). Scientists predict that natural hazards such as tropical cyclones, heavy rains, floods, droughts, and sea level rise will significantly impact climate-induced migration in the region (Kaenzig & Piguet, 2014, p.155). Sudden-onset disasters have already led to increased displacement and emigration from affected countries in the Caribbean (Francis, 2019, p.4). The Caribbean islands face disproportionately high levels of environmental displacement risk per person. Among the ten countries and territories with the highest average annual displacement risk relative to population size caused by sudden-onset hazards, all are SIDS, with the top six located in the Caribbean (Francis, 2021, p.i). For instance, hurricanes potentially displace around 5.9% of the Bahamas' population annually, while tropical cyclones could affect around 3.6% of Antigua's population yearly (Francis, 2021, p.i). According to Kaenzig and Piguet (2014), most displacements occur within proximity, with urban areas attracting migrants while facing vulnerability to environmental hazards. In instances of sudden catastrophes, the displacements are typically temporary.

According to the Regional Data Hub by the International Organization for Migration (IOM), between 2012 and 2022, the Caribbean experienced approximately 5.3 million new cases of internal displacement due to natural disasters (Regional Data Hub, 2023, p.48).

By year and quantity of countries/territories affected, 2012-2021			
Year	No. of countries / territories affected	Total no. of new displacements	
2012	4	483,013	
2013	8	19,282	
2014	2	17,941	
2015	6	35,051	
2016	10	1,322,876	
2017	19	1,984,324	
2018	10	90,474	
2019	11	26,473	
2020	8	701,384	
2021	9	455,097	
2022	9	166,370	
	Overall	5,302,285	

Figure 4 Number of people displaced between 2012 – 2022 due to natural hazards (Reginal Data hub, 2023).

Natural disasters, especially hurricanes, and tropical cyclones are common in the Caribbean. In the following subchapters, I will showcase how three economically different countries in the Caribbean region deal with the displacement of the people and damages during the aftermath of the most devastating hurricanes. I will discuss the Bahamas after Hurricane Dorian, Cuba after Hurricane Irma, and Haiti after Hurricane Matthew. I chose these countries because they can work as representatives of other countries for the region. The Bahamas can represent the Cayman Islands, Aruba, and Puerto Rico. However, Puerto Rico is considered a non-sovereign US territory, meaning the US provides some financial assistance to Puerto Rico. Haiti can serve as a representation of the Dominican Republic, Jamaica, and Guyana. Lastly, Cuba can serve as a phenomenon on its own; it can also provide an interesting alternative to typical poor and typical rich countries in the region due to its unique social order. These examples of countries and their most destructive hurricanes can serve as examples of how such natural disasters can cause migration and displacement. Furthermore, we can see how prepared these nations are for what climate change can bring.



Figure 5 Caribbean Islands Map (Geology.com, n.d.)

## 2.1 The Bahamas

According to the Encyclopedia Britannica, the constitution of The Bahamas became independent in 1973 and was based on the Westminster model, with a bicameral parliament and limited powers for the Senate. The political landscape has evolved and has seen increased female representation. Education in the country is compulsory and provided free of charge in government schools. Health and welfare face challenges with HIV/AIDS, with medical

services administered by the Ministry of Health. Bahamian culture blends African, European, Caribbean, and American influences (Encyclopedia Britannica, n.d.).

Between 2012 and 2020 17.,977 people were displaced in the Bahamas due to natural disasters. The highest displacement occurred during Hurricane Dorian in 2019, when around 9,800 to 15,000 individuals were displaced (Coupland, 2022; Marazita, 2020; Regional Data Hub, 2023). Dorian, the most powerful hurricane ever recorded in the Bahamas, caused extensive devastation and loss of life. It rapidly intensified into a Category 5 hurricane on the 1st of September 2019 and lingered over the Caribbean, unleashing destructive winds, storm surge, and rainfall (World Meteorological Organization, 2019). At its peak, Dorian had sustained winds of 297 km/h, generating a storm surge of 5.5 to 7 meters above normal tide levels. The stationary nature of the storm exacerbated the impact of hazards such as wind, rain, waves, and storm surge. Satellite and aerial imagery revealed unprecedented flooding and destruction in the hardest-hit islands of Abaco and Grand Bahama (World Meteorological Organization, 2019). On the 2nd of September, Dorian intensity stayed the same as it moved towards the eastern region of Grand Bahama. The hurricane's center, the eye, stayed over Grand Bahama for 24 hours, and approximately 60% of Grand Bahama Island submerged during the hurricane (Coupland, 2022, p.78). According to the World Meteorological Organization (WMO) (2019), around 13,000 houses were destroyed and became uninhabitable, and the abnormal rise in seawater levels during a storm reached the roofs of multiple houses; furthermore, the main airports of the island were unusable due to the flood, which Dorian caused.

Even though the Bahamas is considered an economically stronger country in the Caribbean, the region of Abaco still exhibits a low Emergency Services Capacity (Pacific Disaster Center, 2021, p.111). The island demonstrates the highest mean distance to shelter and the lowest shelter capacity per 100 individuals. Hurricane Dorian's impact in 2019 destroyed many of Abaco's designated hurricane shelters. Furthermore, Abaco ranks sixth highest in average distance to a police station within the country (Pacific Disaster Center, 2021, p.12). The damages, losses, and additional costs were around \$3.4 billion (Coupland, 2022, p.78). The assessment that calculated the damage considers the expenses incurred from direct physical damage, the revenue and income losses, and additional costs.

Furthermore, approximately 29,472 individuals were affected by the hurricane, primarily due to the destruction of their homes and assets (Coupland, 2022, p.78). Nine thousand houses were assessed as damaged or destroyed, 2,894 homes have been deemed uninhabitable due to the hurricane, and 90 percent of these damages are occurring in Abaco (Coupland, 2022, p.79). The precise number of displaced people is challenging because many rely on personal social networks for evacuation and shelter following the storm. Furthermore, the public services and non-governmental organizations may only partially capture part of the displaced population. However, the displaced individuals are around 9,800 and 15,000 (Coupland, 2022; Marazita, 2020). Regarding international displaced persons (IDPs), according to Marazia (2020), the destruction caused by Hurricane Dorian led to a mass departure from Abaco and Grand Bahama, with an estimated 5,500 IDPs seeking transportation to New Providence, the economic center of the Bahamas.

After three months, Bahamian survivors integrated back into their communities or returned to their place of origin, while displaced individuals of Haitian background remained in shelters or hid due to deportation threats (Marazia, 2020, p.11). As the government aimed to close the remaining shelters by the end of the year, 497 IDPs remained in two collective shelters in New Providence (Marazia, 2020, p.11). Within two months, 3,142 IDPs from Abaco had returned

home (Marazia, 2020, p.11). The long-term outlook for displacement in Abaco and Grand Bahama remains uncertain (Marazia, 2020, p.13). Furthermore, Bahamian citizens have special access to Canada through an electronic travel authorization (eTA) visa for up to 90 days and to the US through a conditional visa, allowing free entry for up to 180 days (Marazia, 2020, p.11). Cruise ships and aircraft transported displaced individuals to South Florida as the exodus to New Providence began. However, damage to the US Customs and Border Protection processing center in the Grand Bahama International Airport created bureaucratic obstacles that limited travel. Evacuees were required to have pre-approved entry visas before being transported to the US. According to Marazia (2020), the number of cross-border displacements to Canada was small but significant, considering the rarity of this type of displacement from an island state.

#### **2.2 Cuba:**

Cuba is a significant country in the Caribbean region. It gained formal independence from Spain in 1898. In 1959, Fidel Castro led a revolution and established a Marxist-Leninist government, which isolated Cuba from the US and developed close ties with the Soviet Union. Although after the fall of the Soviet Union, the country loosened some of its economic and social policies, still the US embargo on Cuba remains in place. Cuba has a centrally planned economy that provides increasing opportunities for private business and foreign investment (Encyclopedia Britannica, n.d.). Although some independently operated markets exist, the government controls most aspects of Cuban life, including healthcare and education (Encyclopedia Britannica, n.d.).

Regarding displacement due to natural hazards, Cuba had considerably greater internal displacements than all other Caribbean nations and territories combined (Regional Data Hub,

2023, p.49). The cumulative count of individuals displaced by natural disasters from 2012 to 2022 reached 4,156,591. Moreover, the annual projected number of displacements resulting from natural hazards like storm surges, cyclonic winds, and floods counts to 23,306 (Regional Data Hub, 2023, p.49). According to the IOM's Reginal Data Hub (2023), the primary cause of these displacements in Cuba is attributed to well-coordinated mass evacuations implemented by the government as a precautionary measure against natural disasters. A staggering 78% of all new internal displacements in the Caribbean region from 2012 to 2022 occurred in Cuba (Reginal Data Hub, 2023, p.50). The highest number of displacements due to natural hazards in Cuba happened in 2017 when 1.738.000 people were displaced due to Hurricane Irma and the subtropical storm Alberto (Reginal Data Hub, 2023, p.49).

Hurricane Irma was the first category-five hurricane to land in Cuba since 1924. The hurricane hit the island from 8 to 10 September 2017, generating the highest accumulated cyclone energy recorded in the tropical Atlantic (Avila-Alonso et al., 2020, p.603). Irma caused extensive damage in Cuba, killed ten people, and impacted over 2 million individuals living along a 482 km stretch of the county's northern coastline (Sullivan, 2017, p.2). Furthermore, the hurricane caused significant harm to crucial infrastructure, including electric power, water, and sanitation systems. Additionally, the agricultural sector and tourism facilities were severely affected, while low-lying regions of Havana experienced substantial flooding. A staggering 210,000 homes suffered damage (Sullivan, 2017, p.2). Despite the compelling damage, the ongoing economic hardships, and the political realities that required Cuba to handle the situation without support from other nations, Cuba's recovery was rapid and effective thanks to decades of disaster planning and the continuous improvement of disaster risk reduction and management strategies (Zakrison et al., 2019, p.10). While Cuba's unique political structure, including the central command center, local dispatch response teams, and citizen engagement,

played a role in its successful response, five key attributes of Cuba's hurricane response can also be valuable for other vulnerable islands and coastal nations facing Atlantic tropical cyclones (Zakrison et al., 2019, p.10). These five characteristics of Cuba's hurricane response made the aftermath of Hurricane Irma easier and faster. According to Zakrison et al. (2019), the five attributes include the following:

- 1) Learning from past experiences and implementing necessary changes.
- Involving healthcare professionals in frontline response, engaging its citizens in disaster preparedness and response.
- 3) Ensuring that responsibilities are widely shared.
- The importance of upgrading its power grid and related technologies to recover from natural disasters swiftly.
- 5) Lastly Cuba is actively addressing climate change and the challenges opposed by it and striving for energy independence through renewable sources.

Large-scale off-island evacuation to protect the population is not possible in Cuba, and the political sanctions prevent last-minute travel to the United States. Despite being unable to evacuate, Cuba had extensive experience safely sheltering its population. During Hurricane Irma, over 1.7 million people, representing one-sixth of the nation's population, were relocated to 1441 citizen shelters in "evacuation centers" spread across 13 provinces (Zakrison et al., 2019, p.12). Since 57% of Cuba's population lives in coastal cities that face a higher chance of flooding from hurricanes and escalating sea levels, these people were moved inland to stay with family members in well-built homes (Green Climate Fund, 2021; Zakrison et al., 2019). During the aftermath of Hurricane Irma, Cuba quickly restored electricity, had a stable healthcare system, and even helped other SIDS.

#### 2.3 Haiti

Haiti gained independence from France in 1804 and has faced chronic poverty, natural disasters, and social difficulties (Encyclopedia Britannica, n.d.). It is the poorest country in the Western Hemisphere, with high poverty and unemployment rates. The economy is dominated by agriculture, but the domestic food supply is insufficient, leading to imports and further impoverishment. Moreover, the country has struggled with political instability and ballot tampering in elections. Healthcare and education are inadequate, with high rates of infectious diseases and illiteracy. The culture has developed from a history of slavery and colonialism, creating a unique blend of art influenced by African, French, Spanish, and English cultures (Encyclopedia Britannica, n.d.).

Regarding displacement, according to Reginal Data Hub (2023), 548,390 people were displaced due to natural hazards in Haiti between 2012 – 2022. The expected number of people displaced by natural hazards yearly in Haiti is 50,469 (Regional Data Hub, 2023, p.49). One of the highest displacements happened in 2016 during Hurricane Matthew. On October 4, 2016, Hurricane Matthew struck Haiti, specifically the Grand Anse and Southern Peninsula, with significant force as a Category 4 hurricane, bringing about intense rainfall, powerful winds, and flooding (DTM, 2017, p.2). During the hurricane, 546 people were killed, around 180,000 people were displaced to more than 220 temporary shelters countrywide, and about 1.4 million people required immediate humanitarian assistance (Reginal Data Hub 2023; Habitat for Humanity 2022).

Mountain ranges with river valleys and coastal flatlands characterize Haiti's topography. Given its extensive 1,771 km coastline and a population exceeding 11 million, a significant portion of this densely inhabited island is concentrated near the coastal areas (World Bank, 2011, p.2).

When it comes to tropical cyclones/ hurricanes and other natural disasters, it is problematic enough that more than half of the population lives on the coastline; according to Habitat for Humanity Haiti (2022), the country faces significant vulnerability to natural disasters, and over 90% of its population is exposed to such risks. Furthermore, in the rural regions along the coastlines, which accommodate 60% of Haiti's inhabitants, a staggering 88% of individuals live in poverty, with 67% classified as living in extreme poverty (Habitat for Humanity, 2022, p.9). During Hurricane Matthew, the southern coastal towns such as Jeremie, Les Cayes, Port Salut, Dame Marie, and Jacmel experienced severe damage to their tin-roof homes, schools, and public buildings due to winds reaching speeds of up to 240 km/h and around 90% of the houses suffered severe or complete damage (DTM, 2017; USAID, 2016). The southern Peninsula received between 50 and 100 centimeters of rainfall and a substantial storm surge, resulting in extensive flooding throughout the region (DTM, 2017, p.2). Consequently, numerous households sought shelter in locally designated evacuation centers and other suitable buildings acting as evacuation centers (DTM, 2017, p.3).

While Cuba could manage the aftermath of Hurricane Irma mainly alone, Haiti needed aid from other countries since it is a financially poor country due to natural disasters, disease, and political instability. Furthermore, in contrast to Cuba, they do not have disaster risk reduction management, although, as mentioned, the country faces multiple natural hazards; thus, it might be beneficial for them to implement those five elements of disaster risk reduction management. Due to Hurricane Matthew, Haiti received \$5 million from USAID/OFDA and nearly \$7 million from USAID/FFP (USAID, 2016). USAID funding aids NGOs, UN agencies, and other relief entities in delivering emergency food aid, supplying relief items, and addressing water, sanitation, and hygiene (WASH) requirements, among other tasks (USAID, 2016). The U.S. Department of Defense (DoD) has also approved allocating up to \$11 million in Overseas

Humanitarian, Disaster, and Civic Aid funds to support USAID's disaster relief efforts (USAID, 2016). It took years for Haiti to recover from this catastrophe, and the 2017 Atlantic hurricane season slowed this process down even more.

Haiti is currently involved in several climate change adaptation initiatives, with funding from donors such as UNDP, UN FAO, the EU, USAID, and others (UNEP, n.d.) One of the most significant projects is the Strategic Program for Climate Resilience, implemented by the Inter-Ministerial Committee on Land Use Planning in 2013 and funded by the Climate Investment Fund (UNEP, n.d.) Still, according to the UN Environmental Program (UNEP), Haiti's attempt to tackle climate change has been significantly limited. The combination of social and political instability, coupled with the challenging economic circumstances witnessed by the country over the past decade or so, has prevented effective environmental management, and the country will face enormous difficulties in the future since it is main cities and most of the country's economic infrastructures are located on the coastline.

From all the information above, we can see that there are quite significant differences between these countries when it comes to disaster risk management and preparedness against natural disasters. Moreover, we can also conclude from the data that there is a need for change in the upcoming years since, as we can see, it is a pressing issue that needs to be addressed and dealt with appropriately. In the appendix, figures 6, 7, and 8 showcase the devastating aftermath of each hurricane, which was discussed above. In the following chapter, I will discuss, besides dealing with hurricanes and their aftermath, how the countries in the Caribbean deal with the legislation of migration and displacement, which happens throughout each hurricane.

# CHAPTER 3 - LEGISLATION REGARDING CLIMATE MIGRATION AND DISPLACEMENT DUE TO NATURAL HAZARDS IN THE CARIBBEAN

As we can see in Figure 5 in Chapter 2, the Caribbean region is made up of 13 independent states: Antigua and Barbuda, The Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago. Moreover, it also includes the non-sovereign territories of Anguilla, Aruba, Bermuda, Bonaire, British, Virgin Islands, Cayman Islands, Curaçao, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Saint Barthélemy, Saint Martin, Sint Eustatius, Sint Maarten, Turks and Caicos Islands, and the US Virgin Islands.

While it is evident that migration laws vary across countries in this region, one common thing is that they are in a region that faces intricate internal and international movements in the context of natural disasters associated with climate change and other risks. It is important to note that environmental factors have always played a significant role in the causes of migration patterns, and it is challenging to separate the influence of environmental and climatic factors from social and economic factors as they often intertwine. Furthermore, the movement of people is and will always be affected by natural disasters and environmental changes. These events can trigger forced and voluntary migration, which may take various forms, including temporary, permanent, internal, or international. Thus, the legislation of such procedures and happenings is not straightforward; however, to effectively address the challenges posed by environmental migration, it is crucial to place the concept of "vulnerability" at the forefront of current and future response strategies. By recognizing and addressing the vulnerabilities of affected populations, there can be better support for their adaptation and resilience-building efforts.

### **3.1 Climate-induced migration definition**

Before analyzing the gaps in migration and climate change legislation, we must understand the connection between migration and climate change. According to the IOM (2014), there are three key terms in the context of migration and climate change, and the differences between the terms are crucial. The terms are the following:

- Environmental migrants: "Persons or groups of persons who, predominantly for reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad" (IOM, 2014, page1).
- 2) Environmentally displaced person: "Persons who are displaced within their country of habitual residence or who have crossed an international border and for whom environmental degradation, deterioration or destruction is a major cause of their displacement, although not necessarily the sole one. This term is used as a less controversial alternative to environmental refugee or climate refugee [in the case of those displaced across an international border] that have no legal basis or raison d'être in international law to refer to a category of environmental migrants whose movement is of a clearly forced nature" (IOM, 2014, p.13).
- 3) Planned relocation: "refers to persons whose livelihoods have been re-built in another place, due to sudden-onset natural disasters, slow-onset effects of climate change, their lands are needed for mitigation or adaptation projects, or their country or parts of it could become unsuitable for habitation due to the negative impacts of climate change" (IOM, 2014, p.16).

Moreover, the 2018 Global Compact for Safe, Orderly, and Regular Migration acknowledges that migration related to disasters, climate change, and environmental degradation is a recognized phenomenon (Global Compact for Migration, 2018). It emphasizes the need to assist migrants and states (IOM, n.d). Although no universally accepted legal definition exists for individuals who migrate due to environmental factors, various organizations, including the International Organization for Migration (IOM), have developed conceptual frameworks to address this issue (IOM, n.d).

The definitions/terms provided by the IOM (2014) are intentionally broad and flexible to encompass the various types of population movements caused by environmental factors. They highlight that environmental migration can take on different forms, including forced and voluntary, temporary and permanent, internal and international, individual and collective, proximity-based and long-distance (IOM, n.d.). The nature, duration, and scale of environmental migration are influenced by gradual environmental changes such as sea level rise, increasing temperatures, land degradation, and sudden events like floods, cyclones, and storms worsened by climate change and environmental degradation.

Climate-induced migration primarily occurs within national borders, typically over short distances (Francis, 2019). It is observed that wealthier and more educated migrants are more likely to cross international borders. Policy experts have categorized climate-induced migration into five groups. As noted by Francis (2019), these categories include:

"i) temporary and internal migration triggered by sudden-onset disasters such as flooding and hurricanes; ii) permanent migration resulting from slow-onset degradation like rising sea levels and soil salinization; iii) the unique case of "sinking" small island states, where rising sea levels and low-lying island topography make the islands uninhabitable; iv) high-risk zones that governments deem unsuitable for human habitation; and v) forced displacement caused by violence, armed conflict, or unrest due to scarcity of essential resources like water, arable land, or grazing grounds" (Francis, 2019, p.6).

Additionally, it is essential to note that the decision to migrate is influenced by socio-economic, cultural, and political factors (IOM, n.d). According to the IOM UN Migration Portal, it is essential to recognize that environmental migration is not solely positive or negative; while it can exacerbate vulnerabilities, it can also help individuals build resilience. Furthermore, as no universally accepted legal definition exists for the term' environmental refugee' - as the 1951 Refugee Convention does not recognize environmental factors as criteria to define a refugee - alternative proposals have been suggested to categorize movements resulting from environmental drivers. These proposals often suggest narrower definitions that focus on specific types of movement, for instance, displacement, or specific environmental drivers, such as climate change impacts (IOM, n.d.).

# **3.2 Migration, immigration, and displacement laws due to natural disasters**

The Caribbean region seems to have the least developed national laws and policies regarding addressing the needs of individuals displaced by disasters. Still, certain countries view mobility as a potential strategy for adapting to climate change. In the following, I will discuss immigration and displacement laws due to natural disasters in the Caribbean. The following information is relevant because it can give the reader an insight into how the countries currently deal with such issues and can easily analyze the gaps and shortcomings.

While some countries in the region are parties to the 1951 Convention relating to the Status of Refugees and its 1967 Protocol, not all have fully ratified or accepted the Protocol (Cantor, 2018). Regarding the issue of displacement, the 1951 Convention and its 1967 Protocol offer safeguards to people displaced by climate change (International Refugee Assistance Project

(IRAP), 2024, p.4). According to Cantor's research (2018), which examined cross-border migration in Latin America and the Caribbean, immigration laws regarding disasters in the Caribbean can be categorized into five groups: former British colonies, US territories, Dutch Antilles, French Antilles, and non-English speaking states.

For former British colonies, the immigration laws are based on British laws; these include a list of non-nationals who are forbidden to enter the country. While non-entries' criteria differ, such as insufficient money to support themselves, some flexibility exists for people who suffered disasters. However, it is essential to highlight that while there is some flexibility regarding disaster displacement, these regulations have minimal provisions addressing disaster-related movements (Cantor, 2018, pp.60-61). Non-English-speaking countries in the Caribbean (Cuba, Haiti, Dominican Republic, Suriname) have different immigration laws regarding non-nationals escaping disasters. Cuba treats them as refugees and does not use general immigration laws; the Dominican Republic gives them temporary residence, while Haiti's immigration law does not explicitly address disasters for admission (Cantor, 2018, p.61).

Since Puerto Rico and the US Virgin Islands are territories of the US, they apply US immigration laws, including short-term relief measures for individuals who are not citizens and have been impacted by natural disasters or critical circumstances. The Secretary of the Department of Homeland Security also has the authority to designate a foreign country as eligible for Temporary Protected Status (TPS) due to severe environmental disasters (Cantor, 2018, p.62). However, TPS has not been granted for any new disasters in the Americas since the earthquake in Haiti in 2010. Instead, alternative measures have been observed, such as the US Virgin Islands reportedly only allowing US citizens to enter during Hurricane Irma in 2017

(Cantor, 2018, p.62). In the Dutch Antilles, Dutch immigration law is being used, meaning visitors without the required identity document can be issued a certificate of passage for a short stay if they have an urgent and valid need for entry; furthermore, in exceptional circumstances such as flooding or severe natural disasters, border checks may be relaxed or diverted to other checkpoints (Cantor, 2018, p.63). Finally, in the French Antilles, French law is applied, and there are no specific immigration laws that allow non-French citizens or residents to enter the French Antilles based on fleeing disasters abroad. However, after the 2010 earthquake in Haiti, both Martinique and Guadeloupe temporarily halted deportations of Haitians to their home country (Cantor, 2018, p.63).

While some flexibilities allow people to migrate from one country to another in case of natural disaster, Cuba is the only country that completely separates migration or displacement caused by environmental change or disaster and has its unique refugee definition, which includes disasters as a ground for refugee status.

#### **3.3 Free Movement Agreement**

Regarding cross-border migration in the Caribbean, besides migration and refugee laws, there are also Free Movement Agreements (FMAs) between Caribbean states. According to Francis (2019), who closely examines these agreements in her paper, FMAs refer to provisions found in (sub-) regional economic integration schemes that aim to ease mobility restrictions among participating member states. These agreements vary in scope, from eliminating visa requirements for entry into member states to granting more extensive rights to reside and work. FMAs can also encompass the recognition of skills and the transfer of social security benefits (Francis, 2019, p.11). However, it is essential to note that implementing these agreements may

not be uniform, as certain rights and benefits may be limited to specific groups such as migrant workers, businesspeople, students, and refugees. In most regions, FMAs are closely tied to a common market, where the free movement of goods, services, capital, and labor forms the foundation of economic integration, meaning workers are afforded the privilege to enter, work, and/or settle in member states (Francis, 2019, p.11). Besides being a solution against natural hazards, the unrestricted mobility or free movement of individuals plays an essential role in the development strategies of the Caribbean region. According to Aragón & Mawby (2019), FMAs serve as a crucial element in the organizational structures and integration arrangements of both the Caribbean Community (CARICOM) and the Organization of Eastern Caribbean States (OECS). The freedom of individuals to move across borders is a fundamental aspect of fostering broader regional integration throughout the Caribbean.

Moreover, according to the International Refugee Assistance Project (IRAP) (2024), OECS citizens, their families, and dependents can freely reside, work, and enjoy equal rights in any Protocol Member State without requiring a work permit. As mentioned, this is vital during disasters, enabling the free movement of individuals displaced by climate events or other disasters. The Caribbean Community (CARICOM) Single Market (CSM) also facilitates free movement among its member states, supporting cooperation and allowing hassle-free travel for nationals of participating states. While certain limitations exist, such as specific entry timeframes, the CSM accommodates disaster-displaced individuals, and efforts are being made to achieve complete freedom of movement within the CSM by 2024 (IRAP, 2024, p.18).

# **3.4** Possible solutions, recommendations on filling in the gaps in legislation

There should be integrated regional legislation, called general disaster-oriented legislation, in which migrants, displaced people, or refugees due to climate change are recognized. While the term' climate refugee' is controversial and could be implemented in Africa in case of multi-year draughts, in the Caribbean, with one-off effects of hurricanes could hardly be implemented for now. Thus, instead of that, another alternative universal term should be implemented, which deals with temporary migrating, displaced people due to climate change. The enforcement of such a term should be as soon as possible because, as demonstrated in the previous chapters, there is an urgent need for it.

Besides adapting such a term, there can be other solutions and implementations. When specifically talking about the Caribbean region, one of the solutions could be to implement and widen the FMAs from Caribbean communities and states to the mainland, for example, to include countries from North and Latin America. I do understand the complications this can bring with them. However, these FMAs could be altered in a way that they can only be used when there is an environmental or another kind of disaster. Furthermore, a system can be implemented where Caribbean nations are being divided proportionately, thus not forcing another country to take up the slack after another when people migrate or are displaced to save their lives. While the division of the countries might seem radical when we talk about disasters, survival is the key and not comfort. Countries could be divided by language since people can integrate faster and be valuable parts of society.

While people often resort to migration when it comes to climate change to protect their lives, it should not be forgotten that the cost of migration, particularly international migration, is relatively high. Moreover, individuals affected by climate change usually face a decline in economic, social, and cultural resources, which would be necessary for their move. Thus, legislation should also concentrate on those trapped and unable to move due to the decrease in capital. For this reason, I propose that, ultimately, the problem should be tried to be solved from the roots; this means that regulations and legislation regarding disaster risk management and climate change should be implemented within each Caribbean country.

While these islands are still habitable since the sea level rise cannot be adequately measured, the main issue behind migration and displacement during hurricanes is that they do not have proper disaster risk management. Most of the SIDS in the area have their infrastructure on the coastline, thus exposing their economy and livelihoods to hurricanes. As mentioned in Chapter 2, Cuba's disaster risk management is a good example that could also be implemented in other SIDS. Each country could alter the plan to its own needs, but implementing a disaster risk management plan should be required from all nations in that region. Cuba's plan could be altered in a way that they add the following three ideas to it:

- Building Resilient Networks, establishing networks and partnerships between various stakeholders involved in disaster management, meaning they could share resources, exchange knowledge, and coordinate response efforts to address the hurricane displacement challenge.
- 2) Information Platforms, meaning different communication channels, could be created to facilitate effective communication and information sharing among displaced individuals and relief organizations during hurricanes and their aftermath.
- 3) Environmental and Disaster Education, educational programs that promote environmental information and what to do during environmental disasters.

Furthermore, legislation against environmental degradation on the islands should be implemented as well. One specific legislation to slow down and prevent hurricanes could be

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related to the mangrove forests. Even though mangrove forests can protect coastal communities from waves, storms, and flooding and provide a rich habitat for various fish, insects, and birds, serving as a nursery, home, and feeding ground, and have a significant impact on carbon storage, they are being destroyed to make way for roads, beaches, resorts, and other developments (Smith, 2024). According to Smith (2024), over the last 25 years, 25% of the mangrove forests were destroyed, and the mangroves in the Wider Caribbean region account for approximately 26% of the total global mangrove coverage. These ecosystems should be protected by law.

If those mentioned above or similar regulations were implemented, migration and displacement would be more structured and well-organized. Furthermore, those with restricted mobility due to decreased capital would be better protected.

#### CONCLUSION

This thesis examines how hurricanes change due to climate change and how it affects migration and temporary displacement in the Caribbean region. Furthermore, it investigates the legislation section of migration, displacement, and disaster risk management and its shortcomings or gaps. The thesis tries to answer the following questions: 1) Is hurricane intensity increasing in the Caribbean due to climate change, and if so, how does it affect regional migration and displacement patterns? 2) Is existing international legislation on migration and displacement adequate to the existing challenge?

While some scholars disagree on how hurricanes change due to climate change, most state that their frequency and intensity change due to climate change. While the sum of the hurricanes in one hurricane season might decrease, the ones that occur will be more destructive, increasing the intensity. Regarding migration, displacement, and disaster risk management, the thesis examined three socio-economic countries from the Caribbean region, the Bahamas, Cuba, and Haiti, and the aftermath of their most destructive hurricanes. These countries can work as representatives of other countries from the region and can serve as examples in the future to see how prepared these nations are for what climate change can bring.

The thesis recognizes that human movement is shaped by various socio-economic, cultural, political, and climate-related influences. It is challenging to attribute it solely to climate change, and it is crucial to acknowledge that multiple causes influence migration in the context of climate change. It is essential to acknowledge that environmental changes will continue to impact migration in the future by affecting economic, political, and social factors (Sener, 2023, p.202). However, these factors interact in intricate ways, making it extremely difficult to differentiate between migrants driven by environmental change and others. While it is difficult

to differentiate between these kinds of human mobility, the thesis highlights that it is still vital that there is adequate legislation regarding climate migration and displacement that supports those in need in case of natural disasters.

Future research could investigate disaster risk management more in-depth, thus giving an even clearer picture of how these countries in the Caribbean region are currently able to tackle and adapt to natural disasters and issues that come with them. Moreover, further research could be conducted on expanding FMAs to the mainland since they can currently address cross-border climate-induced migration and displacement while governmental and universal legislations are absent.

## APPENDIX



Aftermath of Hurricane Dorian in the Bahamas:

Figure 6 The Bahamas, Before and After Hurricane Dorian (New York Times, 2019)



Aftermath of Hurricane Irma in Cuba:

Figure 7 Aftermath of Hurricane Irma in Cuba (Reynolds, 2017)

Aftermath of Hurricane Matthew in Haiti



Figure 8 Aftermath of Hurricane Matthew in Haiti (Burdett, 2016)

Further agreements connected to migration governance in the Caribbean:

Barbados and Jamaica reciprocal portability agreements with Canada and the US	Allow for nationals who work abroad to access their pensions when they return.
Caribbean Basin Initiative (CBI)	Provides 19 beneficiary countries with duty-free access to the U.S. market for most goods.
Caribbean Canada Trade Agreement (CARIBCAN)	A nonreciprocal agreement enables all Commonwealth Caribbean countries to export goods to Canada without paying duties, with a limited number of exceptions.
Caribbean Court of Justice (CCJ)	The Caribbean Court of Justice (CCJ) functions as a dispute resolution body for Caribbean Community (CARICOM) Member States. Additionally, it operates as the highest appellate court for both civil and criminal cases.
CARICOM Agreement on Social Security	The objective of this initiative is to standardize the social security laws among CARICOM Member States. Individuals and their dependents who are registered in one of these states can receive benefits from the social security programs of the countries where they have made contributions, although there are certain restrictions.

CARICOM Single Market Economy	The CSME aims to remove trade and professional restrictions, enabling businesses to establish themselves, offer regional services, freely move capital, and coordinate economic policies.
Economic Partnership Agreement (EPA)	Trade and development agreements negotiated between the EU and African, Caribbean and Pacific (ACP) countries.
Georgetown Agreement and the Revised Georgetown agreement	The Georgetown Agreement, established in 1975, serves as the foundational document for the African, Caribbean, and Pacific Group of States (ACP). Its main objectives are to promote sustainable development and reduce poverty among ACP Member States. Recently, the 9th Summit of ACP Heads of State and Government adopted the Revised Georgetown Agreement in December 2019. This revision transformed the organization into the Organization of African, Caribbean, and Pacific Group of States (OACPS). The updated agreement now covers a wider range of topics, including global challenges like environmental issues, climate change, peace, and security.
IMPACS	The Caribbean Community (CARICOM) Implementation Agency for Crime and Security (IMPACS). directly responsible for various tasks including research, monitoring and evaluation, analysis, preparation of background documents and reports, as well as project development and implementation of the regional Crime and Security agenda.
Jamaica bilateral labor agreements with United Kingdom, Canada, Quebec, and CARICOM	Facilitate the coordination of social security programs between countries, safeguarding specific social security entitlements and ensuring uninterrupted coverage for both citizens and migrants.
Multilateral social security agreements	They enable multiple countries to synchronize standards and regulations for social security administration simultaneously, guarantee fair treatment of workers, regardless of their nationality.
Seasonal Agricultural Worker Program (SAWP)	SAWP is intended to allow Canadian farm employers to hire workers from Mexico and the Caribbean on temporary visas when employers are unable to hire local workers to fulfill their labor demands.
The Caribbean Development Bank (CDB) and the Pan American Health Organization (PAHO) agreement	An agreement aimed at improving mental health and psychosocial support in disaster management in the Caribbean region.

### REFERENCES

- Aragón, E., & El-Assar, A. (2018). Migration Governance In The Caribbean . IOM -International Organization of Migration . <u>https://www.iom.int/sites/g/files/tmzbdl486/files/our\_work/ICP/RCP/2023/migrationgovernanceinthecaribbean.pdf</u>
- Aragón, E., & Mawby, B. (2019). Free movement of persons in the Caribbean: Economic and Security Dimensions . IOM - International Organization of Migration . <u>https://kmhub.iom.int/sites/default/files/publicaciones/free\_movement\_in\_the\_caribbean\_n.pdf</u>
- Avila-Alonso, D., Baetens, J. M., Cardenas, R., & Baets, B. D. (2020, March 5). Oceanic response to Hurricane Irma (2017) in the Exclusive Economic Zone of Cuba and the eastern Gulf of Mexico - Ocean Dynamics. SpringerLink. <u>https://link.springer.com/article/10.1007/s10236-020-01350-y</u>
- *Brazil plan of action*. The Americas Network on Nationality and Statelessness. (2023). <u>https://americasns.org/brazil-plan-of-action/</u>
- Burdett, D. (2016, October 7). *Horror in Haiti as Hurricane Matthew death toll surges to* 842. West Central Tribune. <u>https://www.wctrib.com/news/horror-in-haiti-as-hurricane-</u> <u>matthew-death-toll-surges-to-842</u>
- Cantor, D. J. (2018, July). Cross-border displacement, climate change and disasters: Latin America and the Caribbean. UN CC: Learn. <u>https://www.uncclearn.org/wpcontent/uploads/library/cross-</u> border\_displacement\_climate\_change\_and\_disasters\_lac\_david\_cantor\_2018.pdf
- Caribbean Basin initiative. United states Trade Representative (USTR). (n.d.). <u>https://ustr.gov/archive/Trade\_Development/Preference\_Programs/CBI/Section\_Index.</u> <u>html</u>
- *Caribbean Court of Justice*. International Justice Resource Center. (2012). https://ijrcenter.org/regional-communities/caribbean-court-of-justice/

Caribbean islands map and Satellite Image. Geology.com . (n.d.). https://geology.com/world/caribbean-satellite-image.shtml

- Caribbean migration consultations. IOM International Organization of Migration Crisis Response . (2019, June). <u>https://crisisresponse.iom.int/sites/g/files/tmzbdl1481/files/appeal/documents/report-</u> <u>climate\_change\_and\_human\_mobility\_f\_0.pdf</u>
- *Caricom Single Market and economy*. CARICOM Caribbean Community . (2024). <u>https://caricom.org/projects/caricom-single-market-and-economy/</u>
- CDB and PAHO Sign Agreement to support mental health in aftermath of natural disasters: Caribbean Development Bank. Caribbean Development Bank. (2018, June 13). <u>https://www.caribank.org/newsroom/news-and-events/cdb-and-paho-sign-agreement-support-mental-health-aftermath-natural-disasters</u>
- *Chapter 11: Weather and climate extreme events in a changing climate.* IPCC Sixth Assessment Report. (2023). <u>https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-11/</u>
- Coupland, K. (2022). Adaptive capacity and mobility in the Bahamas. Scholars Commons @ Laurier. <u>https://scholars.wlu.ca/cgi/viewcontent.cgi?article=3648&context=etd</u>
- DISPLACEMENT TRACKING MATRIX (DTM) . (2017, February). *Haiti hurricane Matthew displacement report 4 (February 2017)*. International Organization for Mihgration - UN Migration I Global Data Institute Displacement Tracking Matrix . <u>https://dtm.iom.int/reports/haiti-%E2%80%94-hurricane-matthew-displacement-report-4-february-2017</u>
- *Economic Partnership Agreements (epas)*. European Commission Economic Partnership Agreements (EPAs) | Access2Markets. (n.d.). <u>https://trade.ec.europa.eu/access-to-</u> <u>markets/en/content/economic-partnership-agreements-epas</u>
- Encyclopedia Britannica. (n.d.-a). *Cuba*. Encyclopedia Britannica. <u>https://www.britannica.com/place/Cuba</u>

Encyclopedia Britannica. (n.d.). *Government and society*. Encyclopedia Britannica. <u>https://www.britannica.com/place/The-Bahamas/Government-and-society</u>

Encyclopedia Britannica. (n.d.). Haiti. https://www.britannica.com/place/Haiti

FP157: Coastal Resilience to Climate Change in Cuba through Ecosystem Based Adaptation

- "*MI COSTA*." Green Climate Fund. (2021, April 6). <u>https://www.greenclimate.fund/sites/default/files/document/funding-proposal-fp157.pdf</u>

- Francis, A. (2019). Free-movement agreements & climate-induced migration. Columbian Law School - Scholarship Archives . <u>https://scholarship.law.columbia.edu/cgi/viewcontent.cgi?article=1061&context=sabin\_climate\_change</u>
- Francis, A. (2021). *Global Governance of Environmental mobility: Latin America & the Caribbean*. Columbia Law School Scholarship Archive. https://scholarship.law.columbia.edu/sabin\_climate\_change/36/
- Global Compact for Migration. (2018, July 11). *Global Compact for Safe, orderly and regular* ... Refugees and Migrants UN . https://refugeesmigrants.un.org/sites/default/files/180711\_final\_draft\_0.pdf

 Habitat for Humanity . (2022, July). Report of the UN Special Rapporteur on the right to adequate housing to the 52nd session of the Human Rights Council - The right to adequate housing and climate change. United Nations Human Rights Office of The High Commissioner .
<u>https://www.ohchr.org/sites/default/files/documents/issues/housing/climate/submissions</u> /2022-10-24/Submission-ClimateChange-CSO-HabitatForHumanity-Bangladesh 0.pdf

- Hermes Furian/Shutterstock, P. (2024). Caribbean islands map with countries, sovereignty, and Capitals. Mappr. <u>https://www.mappr.co/thematic-maps/caribbean-islands-map/</u>
- Hernández-Delgado, E. A., Alejandro-Camis, P., Cabrera-Beauchamp, G., Fonseca-Miranda, J. S., Gómez-Andújar, N. X., Gómez, P., Guzmán-Rodríguez, R., Olivo-Maldonado, I., & Suleimán-Ramos, S. E. (2024, February 9). Stronger hurricanes and climate change in the Caribbean Sea: Threats to the sustainability of endangered coral species. MDPI. https://www.mdpi.com/2071-1050/16/4/1506
- Hiroyuki, M., Thomas L., D., William F., C., Ming , Z., Baoqiang , X., & Pang-Chi , H. (2020, March 23). Detected climatic change in global distribution of tropical cyclones. Ntional Library of Medicine. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7245084/pdf/pnas.201922500.pdf
- *How do tropical storms form?*. Internet Geography. (2023, January 9). <u>https://www.internetgeography.net/topics/how-do-tropical-storms-form/</u>
- Hurricane Dorian causes devastation in Bahamas. World Meteorological Organization. (2019, September 3). <u>https://wmo.int/media/news/hurricane-dorian-causes-devastation-bahamas</u>

- International Refugee Assistance Project (IRAP). (2024, March 25). Legal action agenda for climate displacement. <u>https://refugeerights.org/news-resources/legal-action-agenda-for-</u> climate-displacement
- IOM. (n.d.). Environmental migration: IOM, UN Migration: Environmental Migration Portal. IOM, UN Migration | Environmental Migration Portal. https://environmentalmigration.iom.int/environmental-migration
- IPCC Sixth Assessment Report (2023)
- Kaenzig, R., & Piguet, E. (2014). *Migration and climate change in Latin America and the Caribbean. In People on the move in a changing climate* (pp. 155-155). ResearchGate. <u>https://www.researchgate.net/publication/285874527\_Migration\_and\_Climate\_Change\_in\_Latin\_America\_and\_the\_Caribbean</u>
- Knutson, T., Camargo, S. J., Chan, J. C. L., Emanuel, K., Ho, C.-H., Kossin, J., Mohapatra, M., Satoh, M., Sugi, M., Walsh, K., & Wu, L. (2020, March 1). *Tropical cyclones and climate change assessment: Part II: Projected response to anthropogenic warming*. AMETSOC. <u>https://journals.ametsoc.org/view/journals/bams/101/3/bams-d-18-0194.1.xml</u>
- Lai, K. K. R., Watkins, D., Singhvi, A., Love, J., & Patel, J. K. (2019, September 5). *The Bahamas, before and after Hurricane Dorian*. The New York Times. <u>https://www.nytimes.com/interactive/2019/09/04/world/americas/bahamas-damage-hurricane-dorian.html</u>
- Marazita, J. (2020, May). *Displacement in Paradise*. Internal Displacement Monitoring Center . <u>https://api.internal-</u> <u>displacement.org/sites/default/files/publications/documents/202005-displacement-in-</u> <u>paradise\_FINAL.pdf</u>
- Migration, Environment and Climate Change: Evidence for Policy (MECLEP) GLOSSARY. International Organization for Migration (IOM). (2014). <u>https://publications.iom.int/system/files/pdf/meclep\_glossary\_en.pdf?language=en</u>
- National policy on international migration and development. Planing Institute of Jamaica-PIOJ . (2017, April). <u>https://www.pioj.gov.jm/wp-content/uploads/2019/08/National-</u> <u>Policy-and-Plan-of-Action-on-International-Migration-and-Development-April-</u> <u>2017.pdf</u>

- Neto, J. A. F. N., Mendes, D., Gonçalves, W. A., Cintra, M. M., & Júnior, J. F. de O. J. (2024, March 19). Temporal Evolution of Hurricane Activity: Insights from decades of category 1–5 analysis - Environmental Earth Sciences. SpringerLink. <u>https://link.springer.com/article/10.1007/s12665-024-11504-6/figures/1</u>
- NOAA National Centers for Environmental Information. (2021, January). *Monthly Tropical Cyclones Report for Annual 2020*. National Centers for Environmental Information. https://www.ncei.noaa.gov/access/monitoring/monthly-report/tropical-cyclones/202013
- Pacific Disaster Center. (2021). NDPBA The Bahamas Island Risks Profiles Subnational Assessment Results . Pacific Disaster Center Global . <u>https://www.pdc.org/wpcontent/uploads/NDPBA-BHS-Island-Profiles-Merged.pdf</u>
- Piguet, E., & Laczko, F. (2014). People on the move in a changing climate: The regional impact of environmental change on migration. Springer. <u>https://link.springer.com/book/10.1007/978-94-007-6985-4</u>
- Probst, P., Annunziato, A., Proietti, C., & Paris, S. (2021, March 23). 2020 atlantic hurricane season: A record-breaking season. JRC Publications Repository. https://publications.jrc.ec.europa.eu/repository/handle/JRC123923
- Regional Data Hub. (2023). *Data Report trends in Caribbean migration and mobility Oim*. IOM - International Organization for Migration. <u>https://rosanjose.iom.int/sites/g/files/tmzbdl1446/files/documents/2023-07/data-report-trends-in-caribbean-migration-and-mobility.pdf</u>
- Reynolds, M. (2017, September 12). *The Caribbean will be recovering from Hurricane Irma for years*. New Scientist. <u>https://www.newscientist.com/article/2147099-the-caribbean-will-be-recovering-from-hurricane-irma-for-years/</u>
- Sener, M. Y. (2023, July 14). Chapter 13: Mass migration due to climate change? A Critique of the security focus on Climate mobilities. Elgar Online: The online content platform for Edward Elgar Publishing. <u>https://www.elgaronline.com/edcollchap/book/9781803926841/book-part-</u> <u>9781803926841-20.xml?rskey=QqNB08&result=2&tab\_body=abstract-copy1</u>
- Signing Ceremony of the Revised Georgetown Agreement. Embassy of The Kingdom of Eswatini. (2021). <u>https://eswatini-embassy.eu/2020/06/17/signing-ceremony-of-the-revised-georgetown-agreement/</u>

- Smith, R. (2024, February 2). Unveiling the Marvels of Mangrove Forests: The Mighty Coastal Wetlands. Caribbean Biodiversity Fund. <u>https://caribbeanbiodiversityfund.org/blog/unveiling-the-marvels-of-mangrove-forests-the-mighty-coastal-wetlands/</u>
- Social Protection. ILO | Social Protection Platform. (2024). <u>https://www.social-protection.org/gimi/gess/ShowWiki.action?wiki.wikiId=951</u>
- Strobl, E. (2011). The economic growth impact of hurricanes: Evidence from U.S. coastal counties. *Review of Economics and Statistics*, 93(2), 575–589. <u>https://doi.org/10.1162/rest\_a\_00082</u>
- Sullivan, M. P. (2017, September 28). *Hurricanes Irma and Maria: Impact on Caribbean Countries and Foreign Territories*. Defense Technical Information Center. https://apps.dtic.mil/sti/citations/AD1172110
- *The Caribbean/Canada Free Trade Agreement (CARIBCAN).* Jamaica Trade Board Trade agreements. (n.d.). <u>https://www.tradeboard.gov.jm/ttbl/TACARIBCAN.php</u>
- *The Caribbean Community (CARICOM) Implementation Agency For Crime And Security (IMPACS).* CARICOM IMPACS. (2024). <u>https://www.caricomimpacs.org/about</u>
- *The SRV Annual report: Climate change and migration: What we know about the connection and what options there are for action.* Expert Council on Integration and Migration . (2023, May). <u>https://www.svr-migration.de/en/publications/annual-assessment/annual-report-2023/</u>
- The CARICOM Agreement on Social Security. ILO International Labour Organization. (2015, May 4). <u>https://webapps.ilo.org/dyn/migpractice/migmain.showPractice?p\_lang=en&p\_practice\_id=17</u>
- *The seasonal agricultural worker program*. Seasonal Agricultural Workers Program (SAWP) | Niagara Migrant Workers Interest Group (NMWIG). (2024). <u>https://www.nmwig.ca/site/seasonal-agricultural-worker-program</u>
- Thomas, A., & Benjamin, L. (2022, October 13). *Climate justice and loss and damage: Hurricane Dorian, Haitians and human rights*. Royal Geographical Society . <u>https://rgs-</u> ibg.onlinelibrary.wiley.com/doi/full/10.1111/geoj.12484?casa\_token=MryuM1UMcqM

<u>AAAAA%3AfB7OGENgSW9hdqJ1KOMxxoWzAyrYpXjPXiESBBq7pLDQUU8NZf</u> XYvae6lVItipJ\_yQkyd7sJxk3-L5JDiw

- UNEP. (n.d.). *Climate change / haiti: Interactive country fiches*. DICF UNEP GRID Climate change / Haiti | Interactive Country Fiches. <u>https://dicf.unepgrid.ch/haiti/climate-change</u>
- Walker, L. R., V. L. Brokaw, N., B. Waide, R. B., & Lodge, D. J. (1991). An Introduction to Hurricanes in the Caribbean. *Biotropica*, 23(4), 313–316. <u>https://doi.org/https://doi.org/10.2307/2388246</u>

World Bank. (2011, April). *Haiti - climate change - world bank*. Climate Change Knowledge Portal - World Bank . <u>https://climateknowledgeportal.worldbank.org/sites/default/files/2018-</u> <u>10/wb\_gfdrr\_climate\_change\_country\_profile\_for\_HTI.pdf</u>

Zakrison, T. L., Valdés, D. M., & Shultz, J. M. (2019, July 30). *The Medical, Public Health, and Emergency Response to the Impact of 2017 Hurricane Irma in Cuba*. Cambridge Core. <u>https://www.cambridge.org/core/journals/disaster-medicine-and-public-health-preparedness/article/abs/medical-public-health-and-emergency-response-to-the-impact-of-2017-hurricane-irma-in-cuba/AAC432BC0DD63BA7F39B8A128709C700</u>