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Faculty of Science
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BACHELOR THESIS

Environmental migration in Central America

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Abstract

This bachelor thesis is focused on the issue of environmental migration in Central America, with a case study of the Dry Corridor region. The first chapter defines terms, that are crucial to understanding the thesis, such as migration and environmental migration; as well as specifying some types of those phenomena. In the second chapter, socioeconomic and environmental factors, that contribute to environmental migration in Central America, are discussed, with an emphasis on the influence of the United States of America. The third and final chapter of the paper focuses on the Central American Dry Corridor, observing the historical background, causes, trends, and impacts of environmental migration in the region.

Key Words: *Dry Corridor, environmental migration, Central America, climate change, climate migration.*

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Prohlašuji, že jsem zadanou bakalářskou práci vypracovala samostatně pod vedením Mgr. Radovana Dluhého-Smithe a uvedla v seznamu literatury veškerou použitou literaturu a zdroje.

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Práce bude napsána ve formě rešerše a zaměřena na problematiku environmentální migrace ve Střední Americe s případovou studií regionu tzv. Suchého Koridoru (Mexiko, Guatemala, Salvador, Honduras, Nikaragua, Kostarika, Panama). Hlavní část textu bude věnována zkoumání faktorů, které způsobují migraci v dané oblasti a její důsledkům.

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Introduction

Environmental migration in the Western world seems like a completely foreign concept right now, but in other parts of the globe it has already become a reality. Vulnerable communities are being forced to leave their homes due to the adverse impacts of environmental factors such as extreme weather events, droughts, floods, and soil degradation. Central America, with its unique geographical and climatic characteristics, stands as a notable region where climate- and natural disaster-induced migration poses considerable challenges and implications.

The first chapter of the thesis will define terms, that are crucial to understanding the themes and problematics of the paper, such as migration and environmental migration. Trying to define environmental migration proves to be difficult, as there is no official, universally agreed on definition, that is recognized by international institutions and international law. Despite that, the chapter focuses on some definitions provided by scholars, as well as studies, where the term first appeared and later resurfaced.

In the second chapter, the Central American region, some socioeconomic and environmental factors, that affect environmental migration in the area, will be looked at, with emphasis on the influence of the United States of America. Comprising seven countries (Belize, Costa Rica, El Salvador, Guatemala, Honduras, and Panama), the Central American region is particularly susceptible to environmental hazards, exacerbated by its geographic location and socio-economic vulnerabilities. This includes low living standards, poverty, malnourishment, as well as high violence rates in the countries.

In the third and final chapter of this bachelor thesis, the case study of the Central American Dry Corridor will be provided. Within the context of the paper, the Dry Corridor, spanning Guatemala, El Salvador, Honduras, Nicaragua, and sometimes the “Arco Seco” of Panama, emerges as a focal point for understanding the complexities of environmental migration. Characterized by irregular rainfall patterns, prolonged droughts, and fragile ecosystems, the region presents a compelling case study to explore the intricate relationship between environmental factors and human mobility. The chapter will shed light on the historical background, causes, trends, and impacts of environmental migration in the area.

The significance of this study lies in its potential to inform policymakers, researchers, and stakeholders about the intricate connection between environmental change and human mobility in Central America. By shedding light on the challenges faced by local communities in the Dry Corridor and exploring existing adaptation strategies, climate-smart agriculture, as well as some food security and programs. This paper hopes to bring awareness to the development of context-specific interventions, that address the needs of environmental migrants and enhance resilience in the region.

Ultimately, this thesis seeks to advance scholarly discourse on environmental migration while offering practical insights into addressing the socio-economic, environmental, and humanitarian implications of this complex phenomenon in Central America, particularly within the context of the Dry Corridor. By doing so, it hopes to pave the way for sustainable development and equitable outcomes for the communities affected by environmental migration.

Aims and methods

The main aim of this thesis is to describe the complex problem of environmental migration, as well as its meaning and significance. Also, by focusing on Central America and the Dry Corridor region, this paper will try to narrow down and specify the complexity of environmental migration by defining its main causes, trends, and impacts in the area.

As mentioned previously, the most vital part of this thesis will be concentrated on the problem of environmental migration in the Dry Corridor region. The main focus will be on the environmental and socioeconomic factors that cause migration out of the area and its historical background. One of the other significant factors that will be talked about is the influence and the complicated relationship of the United States of America with the communities in Central America, especially the U.S. migration policies and repercussions.

Another aim of this thesis will be raising awareness to the problem of environmental migration in poor areas with food scarcity and little access to alternative food sources other than self-supplying on private small farms. Environmental migration is usually talked about in the context of small island states, where due to the rising sea levels residents have no choice but to seek shelter elsewhere. But in regions like the Dry Corridor, where climate change brought drought and consequent hunger and malnourishment, environmental migration is overlooked, and often seen as just migration in order to flee poverty and try to find a place with better quality of life. Therefore, this thesis will try to better describe and specify the problem of environmental migration in those areas.

According to the aims of this thesis, there are a few questions that it will try to answer:

1. How can environmental migration be defined? What types of environmental migration can be specified?
2. What factors play a role in affecting environmental migration in Central America? How does the United States contribute to migration in Central America?
3. What historical and environmental factors may have been the cause of environmental migration in the Dry Corridor region?

Some of the primary literature used in this thesis is: *Understanding Migration in North Central America Countries: El Salvador, Guatemala, Honduras, and Nicaragua* (The World Bank, 2022); *Sixth Assessment Report (Chapter 12: Central and South America)* (IPCC, 2022); *Annual Review of Public Health: Climatic and Environmental Change, Migration, and Health* (McMichael, 2023); *WFP'S Contributions to Improving The Prospects For Peace In The Central American Dry Corridor: Spotlight on Climate Change* (Valencia, 2022), *Climate Change and Food Security: A Test of U.S. Leadership in a Fragile World* (Sova et al., 2019), among others.

1. Definition of terms

In this chapter, crucial terms to navigating and understanding the thesis, its themes, and problematics, will be discussed and examined. The terms include migration and environmental migration, as well as some historical definitions and debates over the topic of climate- and natural disaster-induced migration.

1.1. Migration

In his book „Migration: Practices, Challenges and Impacts” (2013), Truong Huy Huynh argues that the links between migration – both internally and internationally – and its effects have been increasing attentions at regional and international policy level. Moreover, according to official data from the International Organization for Migration (IOM), in 2020 there had been approximately 281 million international migrants all over the world, making up about 3.6% of the global population. On top of that, there had been an overall increase in remittances in recent decades, from \$126 billion in 2000 to \$702 billion in 2020. As a consequence of this trend, there has been a growing effort to define migration with all its different aspects and concepts.

IOM states that migration is simply the movement of persons away from their place of usual residence, either across an international border or within a State. In his article “A Theory of Migration” (1966), Everett S. Lee argues that in this case, no restriction is placed upon the distance of the move or upon the voluntary or involuntary nature of the act. Thus, a move across the hall from one apartment to another is counted as just as much an act of migration as move from Bombay, India, to Cedar Rapids, Iowa though, of course, the initiation and consequences of such moves are vastly different. Therefore, no matter how short or how long, how easy or how difficult, every act of migration has to involve an origin, a destination, and an intervening set of obstacles. Among the set of intervening obstacles, the distance of the move is included as one that is always present.

Additionally, according to the IOM, the term *migrant* includes a number of well-defined legal categories of people, such as migrant workers; persons whose particular types of movements are legally defined, such as smuggled migrants; as well as those whose status or means of

movement are not specifically defined under international law, such as international students. IOM also specifies five types of migration: regular, irregular, voluntary, forced, and mixed migration. Voluntary migration includes family formation or reunification, labour, and education migration. Although, differentiating between regular and irregular migrants proves to be difficult. The United Nations Human Right Council (UNHR) states that the vast majority of migrants worldwide initially arrive in their host countries through regular means but may later become classified as 'irregular' due to administrative issues, such as overstaying visas. This transition can occur due to various factors including unclear or overly bureaucratic migration procedures, discrimination, or practical obstacles like high visa renewal costs, language barriers, and limited access to legal assistance. Irregular status affects migrants from diverse backgrounds and socioeconomic levels, and even within families, individuals may hold different legal statuses that can change over time. It's crucial to recognize that irregular arrival, while less common, may be justified, particularly when migrants seek protection from refoulement or other forms of persecution.

1.2. Environmental migration

In the 2022 Intergovernmental Panel on Climate Change (IPCC) report, it is highlighted that climate and weather extremes are increasingly causing displacement worldwide, with Small Island States facing disproportionate impacts. Instances of flood and drought-related acute food insecurity and malnutrition have risen notably in regions like Africa, Central, and South America. Climate change-induced displacement and involuntary migration from extreme weather events have exacerbated vulnerability among affected populations. Additionally, The World Bank (2018) projects that by 2050, without intervention, over 143 million internal climate migrants may emerge across Sub-Saharan Africa, South Asia, and Latin America. Despite this data, the concept of environmental migration remains controversial, primarily due to challenges in accurately measuring the extent to which environmental factors drive human movement (Martin, 2010).

In the examination of climate change and human mobility, a substantial body of research has emerged, characterizing it as both a crisis response to failed in situ adaptation and an effective form of adaptation to climate risks. Studies have attempted to identify pathways through which climate change will influence human mobility and pinpoint hotspots of climate-related

mobility. Broadly, three main types of climate mobility are recognized: displacement (this involves the forced movement of individuals from their habitual residences due to climate-related disasters), relocation (also known as resettlement, retreat, or realignment; this refers to the permanent movement of infrastructure and populations away from hazardous areas and settlements to new locations), and, finally, migration (this encompasses the voluntary movement and settlement of individuals within or across national borders, often influenced by various pressures driving migration decisions; it's important to note that migration patterns can be bidirectional, with people moving both from and into areas facing climate risks) (McMichael, 2023).

In her 2015 article "Migration and Environment," Katrin Millock discusses the origins of the concept of environmental refugees, which was initially introduced by El Hinnawi in 1985 during his tenure as a UNEP representative. This term gained wider recognition through the work of Myers, particularly in several articles published in 1997. Millock highlights that the prevailing scientific discourse on this issue emphasizes the importance of not conflating the legal definition of refugees with environmental migrants. Instead, it underscores the analysis of environmental changes as one of several factors that may contribute to migration. Therefore, estimating future environmental migrant flows presents challenges, with initial projections by El Hinnawi (1985) suggesting 30 million climate migrants and Myers (1997) mentioning 25 million. Recent projections from The Stern Review (2007) suggest that by 2050, 200 million people could be affected by adverse climate events leading to migration. Christian Aid's report (2007) further highlighted the potential displacement of up to one billion people due to environmental causes by 2050. Analytical work faces the task of confronting and testing these figures to better understand the underlying causes of projected migration. Current analyses aim to integrate environmental factors with various socioeconomic characteristics to elucidate why some households are more vulnerable than others and why individuals may choose to migrate rather than adapt in their original areas. IOM provides the most contemporary definition, defining environmental migrants as individuals or groups who, primarily due to sudden or gradual environmental changes that negatively impact their lives or living conditions, are compelled to leave their habitual places of residence, either temporarily or permanently, and relocate within or outside their country of origin or habitual residence.

2. Central America

Central America is a region located in the south of North America. It consists of seven countries: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. Humid swamps and lowlands stretch along both the western and eastern shores of the area, but the majority of Central America consists of hills or mountains. As one moves westward from the Caribbean lowlands, the altitude gradually rises until, nearing the Pacific Coast, high plateau highlands give way to mountain ranges and approximately 40 volcanic peaks, some reaching heights exceeding 3,700 meters (Bushnell & Woodward, 2023). Situated between North America and South America, Central America is a narrow isthmus connecting the two continents. Its location exposes it to a wide range of climate systems, including tropical storms and hurricanes from the Atlantic and Pacific Oceans. Additionally, the tropical climate makes the region highly susceptible to extreme weather events such as hurricanes, floods, and droughts. Despite abundant rainfall in some areas, water scarcity is a significant issue in many parts of Central America, particularly during the dry season. Climate change is exacerbating this problem by altering precipitation patterns, reducing water availability, and increasing the frequency of droughts. Overall, the combination of these geographical factors coupled with socioeconomic challenges such as poverty, rapid population growth, and limited access to resources, makes Central America highly vulnerable to the impacts of climate change.

The regions that are threatened by climate change the most, are the Dry Corridor region, which will be discussed later in the thesis, and the Northern Triangle. The Northern Triangle consists of three of the poorest and most vulnerable countries in Central America – El Salvador, Guatemala, and Honduras. These countries also have the highest immigration rates and, consequently, citizens of these states send the most remittances back to their places of origin. Due to those reasons, a large portion of migration data and statistics will be focusing mainly on the Northern Triangle region.

In this chapter of the thesis, socioeconomic and environmental factors that contribute to migration in Central America will be discussed, with emphasis on the influence of the United States of America on the region, as well as how climate change and natural disasters affect the people of Central America.

2.1. Socioeconomic factors

As some of the most prominent push-factors in Central America authors mention: low living standards, poverty, malnourishment, and high crime rate. Although, in a report provided by the World Bank (2022), it is mentioned that due to insufficient data availability and methodological obstacles, establishing a causal link between violence and migration proves challenging. Clemens (2021) finds that in the case of El Salvador, Guatemala, and Honduras, approximately 10 extra homicides in the origin city led to between three and six additional apprehensions of children (serving as a proxy for migration) in the United States from 2011 to 2016. However, the World Bank (2022) reports that in case of qualitative research conducted in Honduras, it is indicated that the prevalence of gang-related violence significantly influences people's intention to migrate.

In Central America, population living below poverty line can be as low as 22 % in Costa Rica, and as high as 59 % in Guatemala (CIA World Factbook, 2020). This consequently leads to malnourishment, and Guatemala, again, has the highest malnourishment rate out of all of the region's countries. The country has the sixth-highest malnutrition rate in the world with at least 47 % of children suffering chronic malnourishment. Malnutrition rates are even higher among the country's 24 indigenous communities, rising to over 60 % in Camotán (Lakhani, 2019). Moreover, in 2014, every Central American country, except for El Salvador and excluding Belize, exhibited greater GINI coefficients, indicating more inequality, compared to the Latin American average of 0.473, which stands as the highest among global regions in terms of inequality (ECLAC, 2019). This pattern persisted in 2018, where El Salvador recorded the lowest GINI coefficient at 40, while the other countries continued to surpass the Latin American average in terms of inequality (BCIE, 2020).

Another big issue in the region (especially North Central America and The Northern Triangle) is the skewed land distribution. For instance, in Guatemala, about 2% of the population control 70% of all productive farmland (Viscidi, 2004). Moreover, the Congressional Research Service (2023) also reports that, historically, land ownership and economic influence in the Northern Triangle have been heavily concentrated among a small elite, resulting in profound inequality and widespread poverty. Although market-driven economic reforms implemented in the 1980s and 1990s brought about greater macroeconomic

stability, the resulting moderate economic growth has failed to translate into improved living standards for many in the region. Analysts anticipate that the working-age population in the Northern Triangle will continue to expand over the next two decades, as approximately 44 % of Guatemalans, 42 % of Hondurans, and 36 % of Salvadorans are under the age of 20. In the absence of improved job opportunities, individuals entering the workforce may face the dilemma of accepting precarious employment in the informal sector or seeking opportunities elsewhere.

2.1.2. Influence of the United States of America

In 2023, the U.S. Border Patrol encountered more than 447 000 nationals from the Northern Triangle - three of the largest Central American sending countries (Congressional Research Service, 2023). As the main migration destination of many citizens of Central America, the United States' migration policies, overall attitude towards migration, the U.S. economic and political decisions towards Central America, play a significant role in shaping the regions socioeconomic conditions.

When talking about the influence of the United States on Central America, it is only right to mention the horrors the United Fruit Company and the U.S. government bestowed upon the people of Central America. The United Fruit Company was established in 1899 and experienced rapid growth in subsequent years. By 1900, approximately 20 companies were competing for dominance in the banana market. By 1958, the United Fruit Company commanded a significant share of the market, accounting for around 60% of North American imports, 10% of the European market, and 28% of the global market at the time. The company possessed extensive land holdings, totalling 1.7 million acres, with approximately a quarter (450,000 acres) deemed suitable for banana cultivation. Of this, 133,000 acres were already under cultivation, with an additional 300,000 acres remained for potential cultivation. The company found itself with 1.3 million acres that it sought to sell yet faced challenges in finding buyers. In countries like Guatemala, Honduras, and Costa Rica, the United Fruit Company held significant sway as the largest landowner, primary business entity, and major employer. However, the concentration of land ownership posed legal challenges in certain nations, where laws prohibited land monopolies. As a result, the company had to negotiate "special arrangements" with domestic governments to maintain its holdings. Much of the land owned

by the company was not allocated for agricultural use, as it also accommodated infrastructure needs such as housing, pasture, water sources, warehouses, power stations, and lumber for construction purposes (Bruyn, 1971).

Advertising has been one of the most significant tools for manipulation employed by United Fruit. During the mid-twentieth century, the company initiated multiple advertising campaigns aimed at capitalizing on the emotions and sense of adventure of the expanding American middle class. These campaigns were crafted to not only sell bananas but also to exacerbate racial divisions and political tensions between the United States and Central America to further the company's interests (Morey, 2014). United Fruit launched its first advertising campaign in 1917, leveraging its established plantations across Central and South America to promote the sale of bananas to the American market. At the time, advertising primarily targeted consumers' rationality rather than their emotions. United Fruit hired scientists to produce positive reviews about bananas, regardless of their accuracy, to appeal to consumers' logic. But in the 1920s, the company introduced a new advertising campaign centered around its cruise liner, "The Great White Fleet," which transported American citizens to United Fruit-controlled countries in Central and South America. This campaign aimed to evoke Americans' sense of adventure and cultivate a favorable corporate image. Tourists on the cruise were often taken on guided tours of United Fruit's plantations, where they were shown carefully staged areas portraying harmonious working conditions, masking the reality of harsh labor conditions and corruption. By romanticizing Central America, United Fruit's advertisements enticed more Americans to embark on the exotic adventure offered by the Great White Fleet, thereby increasing both cruise ticket sales and banana consumption (Cocks, 2013). Beyond manipulative advertising, United Fruit was notorious for its racially discriminatory practices in the workplace. The company deliberately fostered divisions among its diverse workforce, pitting employees from different racial backgrounds against each other to suppress potential revolts. White Americans were typically assigned prestigious roles such as managers and financial advisers, while people of color were relegated to labor-intensive tasks. United Fruit enforced strict distinctions between Hispanic and West Indian workers, granting different privileges and punishments based on ethnicity. This strategy diverted workers' resentment towards each other, preventing collective action against the company's exploitative labor practices (Colby, 2011). The Great White Fleet exacerbated racial tensions by prominently displaying its ships in bright white paint and encouraging passengers to wear white attire, further reinforcing racial hierarchies within the company and society (Cocks, 2013).

Throughout the mid-twentieth century, the United Fruit Company continued its advertising efforts, eventually redirecting its public relations expertise for political ends. When Jacobo Arbenz assumed the presidency in Guatemala, a country where United Fruit held significant interests, he pursued a nationalist agenda aimed at alleviating poverty among his people. A key issue in Guatemala was land scarcity, exacerbated by United Fruit's acquisition of vast tracts of land from local farmers for its plantations, leaving little for the peasant population dependent on agriculture for their livelihoods. Arbenz responded by implementing an agrarian reform, redistributing land from the company to impoverished farmers (Gleijeses, 1989). United Fruit vehemently opposed this reform and orchestrated a propaganda campaign led by Edward Bernays to portray Arbenz as a communist dictator (Streeter, 2000). Exploiting Cold War fears of communism, United Fruit insinuated that the agrarian reform was a ploy by Arbenz, under Soviet influence, to undermine American economic interests in Central America. The company's influence, coupled with the U.S. government's anti-communist stance, led to intervention. The CIA enlisted civilian militias from Honduras to instigate a war against Arbenz, while United Fruit leveraged its ties to President Dwight Eisenhower and other officials with stock in the company to secure support for the coup (Gleijeses, 1989).

Despite Arbenz's resignation, United Fruit sought to assert its dominance and set an example for other host nations. The CIA manipulated the Guatemalan military to ensure the victory of the Honduran militia, led by Castillo Armas, who became president under United Fruit's influence (Council on Hemispheric Affairs [COHA], 2010). Armas reversed the agrarian reform, restoring United Fruit's confiscated land and granting the company preferential treatment in ports and railways. United Fruit orchestrated a media campaign, portraying Armas as the "Liberator" who rescued Guatemala from communism, while vilifying Arbenz as "Red Jacobo" (Streeter, 2000). The company controlled the narrative by depicting Armas as a hero and falsely crediting him with policies devised by United Fruit and the American government, thereby shaping public perception and maintaining its grip on power in Guatemala.

The United Fruit Company is still operating today, but under a different name – Chiquita. After the recent merge of Chiquita and another big fruit company – Fyffes, they control over 29 % of the banana market, more than any other company in the world today (Morey, 2014). While Chiquita and Fyffes demonstrate a more understated approach to their autocratic tendencies, they persist in many of the political and social manipulation tactics practiced by

their parent company (COHA, 2010). After decades of soil devastation, all whilst taking the land from the farmers who need it, unethical and inhumane business practices, the fact that some Central American countries still can't recover economically and environmentally from what they have suffered is not surprising. Soil degradation and skewed land distribution, most of which is concentrated in the hands of a small elite, are still prevalent today. Especially in Guatemala, the country that arguably suffered the most.

In terms of more recent events, it is argued by some that the reason that drives the people of Central America out of their countries, creating the so-called 'migration and border crisis' in the U.S., is at fault of the United States' government itself. It is stated that president Bidens administration proposed to allocate \$4 billion in aid over four years, with additional \$310 million in emergency Covid-19 aid to Honduras, Guatemala, and El Salvador. Including humanitarian aid and centrally managed funds, \$1.87 billion in U.S. assistance was allocated to the region in 2021 and 2022 alone (Meyer, 2023). The aid could be extremely helpful to the socioeconomic growth of said counties, but in practice it's doing more harm than good. The United States provides military and security funding to governments and armed forces in the region, which often use these resources against their own citizens. This implies that many of the human rights violations carried out by these Central American militaries are done with U.S. tax-payer money and tacit support. For example, in 2017, Honduras was named as the deadliest country in the world for environmental activism. A report from Global Witness outlines how the Honduran police and military are heavily implicated in violence against advocates for land and environmental causes. Although the U.S. provides the region aid for different issues including economic growth and good governance, the majority of funds are directed towards the security sector. That money has partially served to support governments that use state security forces to suppress dissent and activism. Unaccompanied minors and other migrants come to the United States as a result of systematic causes. These comprise of corruption, human rights violations, gang, and gender-based violence, poverty, and climate change—all of which have been heightened during the pandemic. U.S. policy toward Central America can either perpetuate or contribute to addressing long-standing structural issues. The real "crisis" in need of a solution lies in the poverty, violence, corruption, and government apathy prevalent in many Central American countries, tacitly supported by misguided U.S. policies and further exacerbated during the global pandemic. The absence of economic prospects and access to basic services, coupled with the impacts of climate change and ongoing violence from various

actors, generates an extremely challenging environment for peaceful living and basic success (León-Gómez Sonet, 2021).

2.2. Environmental factors

As environmental factors that push people to migrate out of Central America, both naturally occurring disasters and human-induced climate change are mentioned in several studies by various authors. For example, an IPCC report for Central and South America (2022) mentions: *“The countries in the region are consistently ranked highest in the world by risk of being impacted by extreme events (high confidence). The economic costs of climate-change impacts*

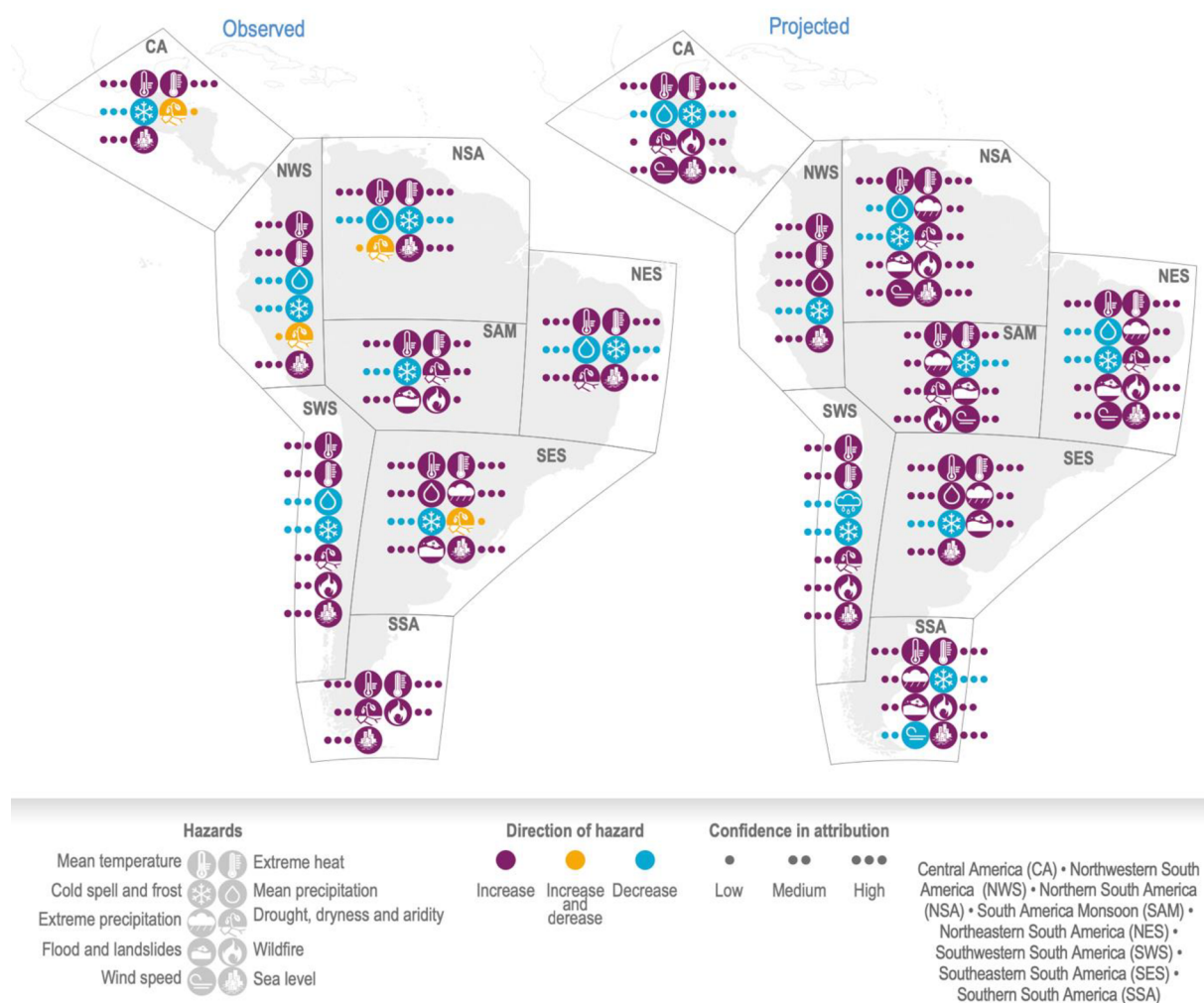


Figure 1. Observed and projected hazards in Central and South America. Author: IPCC, 2022; Data source: Seneviratne et al., 2021 and Ranasinghe et al., 2021).

in 2010 were estimated as being from 2.9% of GDP for Guatemala to 7.7% for Belize (ECLAC et al., 2015). For the period 1992–2011, Honduras, Nicaragua and Guatemala were among the 10 most impacted countries in the world by extreme weather events (UNISDR and

CEPREDENAC, 2014). The number of these events has increased 3% annually in the last 30 years (Bárcena et al., 2020a)”. IPCC also states that main climate impact factors such as severe heat, drought, relative sea level rise, coastal flooding, erosion, marine heatwaves, ocean acidification, and aridity, as well as drought and wildfires, are projected to escalate by the middle of the century (cited: Ranasinghe et al., 2021).

With the exception of Belize and Panama, a significant portion of the populations in the countries—ranging from 56% in Honduras to 95% in El Salvador—were exposed to two or more risks stemming from natural extreme events, impacting between 57% and 96% of the countries' GDP (UNISDR and CEPREDENAC, 2014). Central America stands out as one of the most vulnerable regions to climatic phenomena due to its extensive coastlines and low-lying areas, which frequently experience droughts, heavy rainfall, cyclones, and El Niño-Southern Oscillation events (ECLAC et al., 2015). Moreover, volcanoes in Central America sometimes erupt with force, and earthquakes are common in the area. It is also mentioned that poor populations from rural areas are the most sensitive to climate extremes, as their main income and food source is based on agriculture in vulnerable terrains (NU CEPAL, 2018).

3. Case study of the Dry Corridor

The Dry Corridor is a region located in Central America. Its precise location is not easily defined and varies from study to study. Although, it is generally described that the Dry Corridor comprises of Costa Rica, El Salvador, Guatemala, Honduras, and sometimes the “Arco Seco” of Panama (see Figure 2.). It is commonly characterized by irregular rainfall patterns, lasting dry seasons of at least four months, pronounced climatological and ecological aridity, high drought risk due to physical conditions, dry tropical forest ecosystems, where forest cover still exists, and low agricultural yields due to slopes and unfavourable chemical and physical soil conditions. It encompasses predominantly rural areas, spanning lower regions of the Pacific basin and a significant portion of central pre-mountainous areas (0 – 800 meters above sea level). With a population exceeding ten million people, the corridor faces stark poverty levels, with about two-thirds of its rural inhabitants living in poverty and three-quarters of those in

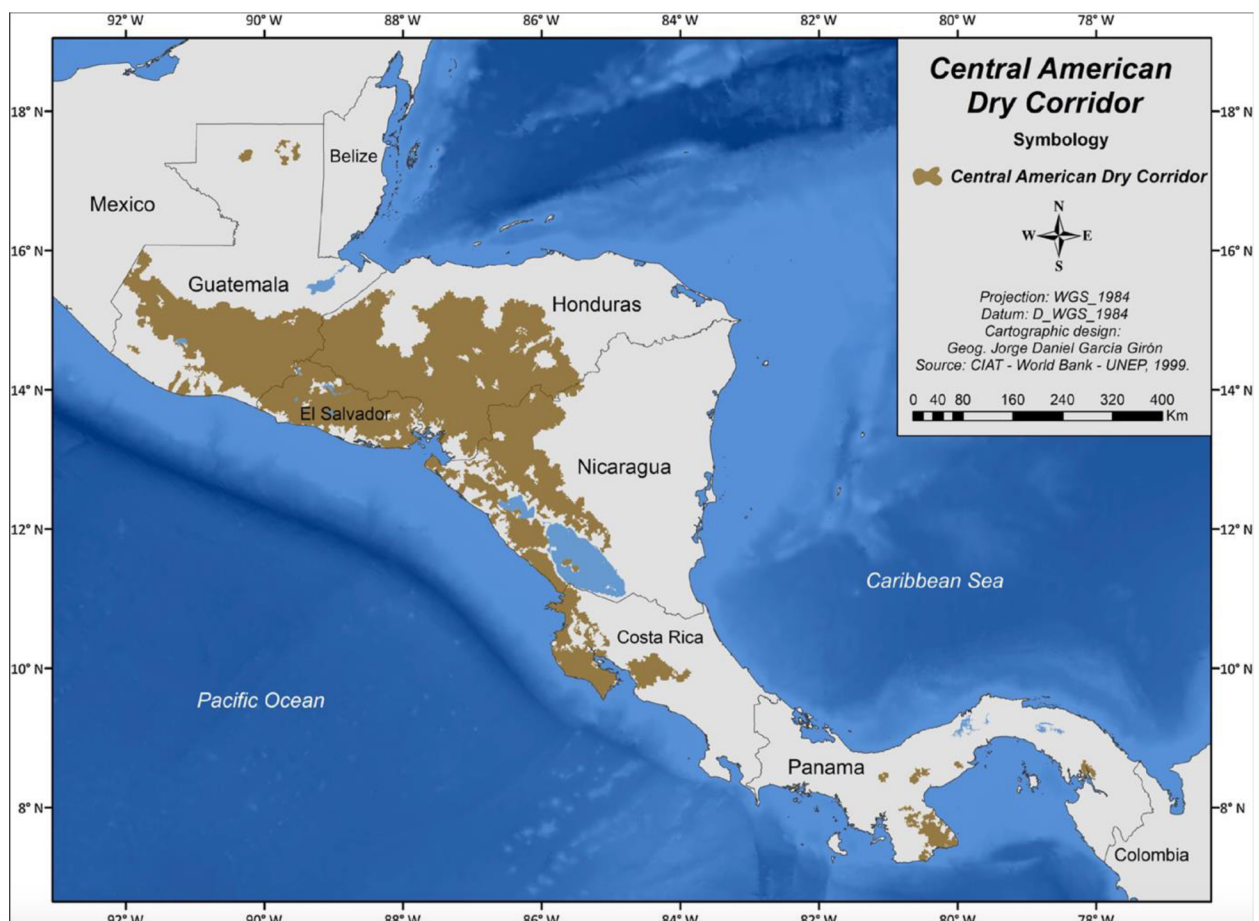


Figure 2. Geographical extension of the Central American Dry Corridor and the “Arco Seco” of Panama. Source: Garcia Giron and Gotlieb (2020).

extreme poverty, suffering from high malnutrition rates (Valencia, 2022). Agriculture serves as the primary livelihood, mainly through family farms producing staples like corn, beans, and rice. However, reliance on rain-fed agriculture, coupled with limited access to technology, irrigation, and road infrastructure, restricts diversification of production. This makes the people of the Dry Corridor especially vulnerable to droughts, extreme weather events, pest outbreaks or socioeconomic shocks, such as the Covid-19 pandemic.

In this most crucial part of the paper, the historical background, causes, trends, and impacts of environmental migration in the Dry Corridor will be thoroughly examined and discussed. The historical background part will mainly focus on how the agriculture and trade in post-colonial Central America may have affected the current environmental migration crisis, focusing on prevalence of banana and coffee production. The causes will highlight the El Nino-Southern Oscillation and climate change, as well as how they affect the Dry Corridor population in particular. The trends will provide some necessary migration statistics and data. And, finally, the impacts will focus on some negative parts of environmental migration, such as the U.S. border and migration crisis, brain drain, health issues etc. Some of the surprising positives of climate-induced migration will also be discussed: remittances, potential economic growth in sending countries, and call for climate and food security action.

3.1. Historical background

Following the end of the Spanish colonial order in early 1820s and the eventual fall of the then newly created Central American Federal Republic in 1838, the individual national states have emerged. In some countries this occurred earlier, as in the case of Costa Rica, and in others later, for example in Honduras. In the case of Nicaragua, conflicts arose between the local elites of León and Granada, situated in the western part of the country. These tensions escalated into armed clashes, prompting the intervention of William Walker's filibustering forces during the 1850s. Walker's forces seized control of the Via del Transito, a crucial route facilitating communication between the two North American coasts. This route was established using a navigation system that connected the San Juan de Nicaragua river, Lake Cocibolca, and the isthmus of Rivas (Diaz Bolanos, 2019).

Throughout the 19th century, the nascent isthmian states that emerged after the dissolution of the Central American Federal Republic began to mould their own economic structures based on the colonial experience. Thus, Guatemala and El Salvador continued to produce grana (a red dye extracted from an insect known as cochineal) and indigo, respectively, until they were displaced by coffee, a product that had already been grown and successfully exported by Costa Rica to the world market. Due to the demand for cochineal for European markets, this product became the main export item for Guatemala, despite the impact of pests and irregular rainfall cycles on nopal cactus plantations – the insects’ main food source. The expansion of coffee cultivation in the midlands and highlands of the Central American Pacific slope led to a significant alteration of the landscape in this region. Vast areas, previously utilized for subsistence farming and livestock raising, were repurposed for coffee tree growing. This shift involved the clearing of new lands where coffee crops coexisted with traditionally farmed crops like corn, beans, and other products aimed at meeting domestic market demands in the countries of the isthmus (Fonseca, 2013). Moreover, cattle ranching continued to develop as an economic activity along the Central American Pacific coast. The main centers of production were in Choluteca and Nacaome (Honduras), Segovia, Matagalpa, and Chontales (Nicaragua) and in the province of Guanacaste and the plains east of the Gulf of Nicoya (Costa Rica). In Panama, cattle ranching flourished in the “Arco Seco” (The Dry Arc), while the rapid expansion of sugar cane contributed to the clearing of forests and led to a fragmentation of land between smaller and larger properties.

From the 1870s onward, the agro-export model strengthened in Central America, hand in hand with the liberal reforms that took place in several of the countries of the isthmus. This had political, social, and economic implications, including the construction of railways, the privatisation of more land in order to grow crops for export, and the introduction of the banana plantations (Diaz Bolanos, 2019). And by the beginning of 20th century, biculturalism in a form of coffee and banana production characterised agriculture in the region. Later, due to the impact of international crises, Dry Corridor countries attempted to diversify their economies in the mid-20th century: Guatemala specialised in the production of lemon grass for oil extraction; Nicaragua turned to the cultivation of cotton and sesame; while livestock farming in Costa Rica picked up and cereal production for domestic consumption became widespread throughout the isthmus. In 1950, cotton was already the main crop and the most important agricultural export product in Nicaragua, which accounted for 53 % of the area under cultivation in the region and 71 % of Central American production (Fonseca, 2013). Nonetheless, attempts at agricultural

diversification tended to stagnate as coffee and banana production proved to be the most financially beneficial.

Biculturalism, numerous wars that happened in the region throughout the 20th century, in addition to extensive cattle farming, which requires large amounts of land that could be otherwise used for subsistence farming, may have contributed to the devastation of the Central American soil, and further led to food insecurity observed today. However, further research and qualification are needed to support this theory.

3.2. Environmental migration

As it was stated earlier in the thesis, the term “environmental migration” or “environmental migrant” is not easily defined. Nonetheless, according to the World Food Program, migration from the Central American Dry Corridor increased almost five times between 2010 and 2015, with approximately one-third of migrants attributing extreme weather conditions as their main motivation for leaving. This concludes that, at least in the eyes of those who choose to emigrate, climate change and other environmental issues such as natural disasters are a valid and real reason to emigrate. The main issue in the region revolves around the erratic distribution of rainfall, characterized by alternating periods of scarcity and intensity, which in turn lead to landslides and flooding (The World Food Program [WFP], 2019).

3.2.1. Causes

As one of the main causes of environmental migration from the Dry Corridor, authors mention the El Niño-Southern Oscillation. Originally, the term “El Niño” referred to a mild warm ocean current that flowed southward along the coasts of Peru and Ecuador around Christmastime, hence the name “El Niño” – “the boy Christ-child” in Spanish. It later became associated with the irregularly occurring, significant warmings of the ocean that alter local and regional ecology every few years. This coastal warming is often linked to a broader abnormal ocean warming extending to the international date line, forming the basis for anomalous global climate patterns. The atmospheric aspect associated with El Niño is known as the “Southern Oscillation”. Scientists commonly refer to the collaboration between the atmosphere and ocean as ENSO, an abbreviation for El Niño-Southern Oscillation, where El Niño represents the warm

phase. Conversely, the opposite phase, known as “La Niña” (“the girl” in Spanish), involves a widespread cooling of the tropical Pacific, representing the cold phase of ENSO (Trenberth, 1997). La Niña, associated with above-normal rainfall during the months of June to August, could benefit the first crop of staple grains being planted under drought conditions. However, the likelihood of excess rainfall associated with a more active Atlantic hurricane season (June–November), typical of a La Niña episode in the region, could also have serious consequences for the agricultural sector (Food and Agriculture Organization of the United Nations [FAO], 2016).

El Niño stands out as one of the most significant climate variability patterns, occurring periodically in the equatorial Pacific Ocean every 2–8 years, following the changing seasons. It often triggers atmospheric teleconnections and hydrometeorological hazards, such as floods, droughts, and extreme temperatures (Glantz, 2015). Approximately one-fourth of the time, the equatorial Pacific Ocean experiences El Niño conditions, disrupting 'normal' regional climate patterns and providing valuable insights into Earth's future climate, water, and weather-related scenarios (Trenberth, 1997). El Niño-associated perturbations encompass not only rainfall and temperature anomalies but also seasonal variations.

The El Niño–Southern Oscillation, as it is a natural occurrence, wouldn't be an issue and a migration driver factor for Dry Corridors people, if it weren't amplified by climate change. It's also important to emphasize that vulnerability to climate change should be seen as a multifaceted concept. It doesn't solely depend on the biophysical aspects of climate risks but also on the ability to adapt to them. In essence, climate events take place within a social framework that shapes the magnitude of their effects on local livelihoods (Fraga, 2020).

In recent years, several notable El Niño events have occurred, such as the 1982–1983 then called “El Niño of the century” or the “Godzilla El Niño” of 2015–2016 (Schiermeier, 2015). But probably the most significant oscillation in Central America happened in 2009, when between 50 % and 90 % of crops in the region were affected by droughts and water scarcity and river levels in the corridor fell 20 to 60 percent below normal – due to those conditions it was also the year the term “Dry Corridor” was penned (FAO, 2016). Droughts linked to the El Niño–Southern Oscillation phenomenon resulted in agricultural losses valued at approximately U.S. \$465 million in 2014 alone. Over the past three decades, losses attributed to drought in the Central American Dry Corridor have reached nearly U.S. \$10 billion, with half of these

losses occurring in the agricultural sector (Pons, 2021). Even with support from governmental initiatives like the World Food Program and other organizations, 1.6 million people in the Dry Corridor still face moderate to severe food insecurity (WFP, 2019) and 3.5 million people are in need of humanitarian aid (FAO, 2016). The International Fund for Agricultural Development (IFAD) and the Climate Policy Initiative (2020) disclosed that in 2017 and 2018, only 1.7 percent of climate finance reached smallholder agriculturalists in developing nations globally (Pons, 2021). Small-scale farmers and rural communities are the most vulnerable to drought, making it a major socio-economic phenomenon through its effects on loss of livelihoods, capital loss of small household economies, impoverishment, and migration to overcrowded urban centres. The significant drop in agricultural production also creates a risk of depletion of food reserves, decreases dietary diversity and reduces the energy intake of the affected population, increasing cases of malnutrition in children under five years of age. As a last-resort adaptation strategy, migration, often to the United States, has become necessary for some.

In a recent World Bank report (2022) it is mentioned that, for Honduras, research by Bermeo and Leblang (2021) indicates a correlation between prolonged droughts in the Central American Dry Corridor and increased apprehensions by the U.S. Customs and Border Protection, with this effect being more pronounced in regions experiencing higher levels of violence (homicides). Similarly, in El Salvador, Ibañez et al. (2021) observes that weather shocks act as significant drivers for migration, impacting agricultural crop yields, productivity, and labour market outcomes for agricultural workers. Their findings suggest that households in rural areas opt for migration abroad as a strategy to offset negative income shocks resulting from temperature variations. Flores-Yeffal and Pren (2018) reveal that idiosyncratic shocks such as job loss elevate the probability of initial unauthorized migration from El Salvador to the United States. In the same vein, Halliday (2006) notes that migration flows from El Salvador escalate following adverse agricultural shocks, such as crop and livestock losses linked to natural disasters, which significantly increase the likelihood of households sending members to the United States and receiving remittances. Additionally, Loebach (2016) demonstrates that Hurricane Mitch in 1998 impacted migration probabilities in rural areas of Nicaragua, with Costa Rica being the primary destination. Moreover, it appears that the most vulnerable and marginalized segments of the population, including women, are disproportionately affected by climate hazards. For instance, in Honduras, the Afro-descendant and indigenous populations are more prone to migration driven by climate hazard risks (World Bank, 2023).

To sum up everything that has been stated in this chapter so far, the climate change-driven changes in the El Niño-Southern Oscillation, such as droughts, floods, and extreme weather events, lead to agricultural instability in the Dry Corridor, which further contributes to malnourishment and extreme poverty. All those factors combined cause environmental migration in the region.

3.2.2. Trends

In May 2019, over 130,000 migrants were apprehended along the U.S.-Mexico border, reaching an 11-year high. Among them, 80% were families and unaccompanied minors from Guatemala, Honduras, and El Salvador – the Northern Triangle countries (Sigelmann, 2019). Migration flows from the region have fluctuated over the years, with an estimated 692,000 individuals leaving the area in 2019, followed by 113,000 in 2020, and 521,000 in 2021. Surveys conducted in 2020 revealed that many potential migrants had delayed their plans due to the Covid-19 pandemic but intended to proceed with their journeys once government-imposed cross-border travel restrictions were lifted. In 2023, the U.S. Border Patrol encountered over 447,000 foreign nationals from the Northern Triangle crossing the U.S. Southwest border between ports of entry. This included 213,000 Guatemalans, 181,000 Hondurans, and 53,000 Salvadorans. Roughly 40% of these enforcement encounters comprised single adults, 39% involved individuals traveling with family members, and 21% involved unaccompanied minors (Congressional Research Services, 2023). Due to the fact that the Northern Triangle countries are the top sending countries in the Central America region, this chapter of the thesis will mostly focus on the emigrants from Guatemala, Honduras and El Salvador.

These statistics stand out in the migration flows from Central America and, consequently, the Dry Corridor region:

- 1) With the exception of Costa Rica and Panama, all countries demonstrate negative net migration flows, particularly notable in the Northern Triangle countries, where emigration surpasses immigration by a significant margin (Canales and Luz Rojas Wiesner, 2017).

- 2) The United States stands as the primary destination country, with a significant 78% of Central American migrants (totaling 3.13 million individuals) residing in the U.S. (Canales and Luz Rojas Wiesner, 2017).
- 3) While intraregional migration flows may be less pronounced, two notable cases emerge. Firstly, the migration of Nicaraguans to Costa Rica constitutes both the largest proportion of emigrants from Nicaragua and the largest influx of immigrants into Costa Rica (Morales, Acuña, and Li Wing-Ching, 2010). Secondly, the migration of Guatemalans to Mexico illustrates a circular and recurrent cross-border movement that influences the demographic landscape of the border region between the two countries (Canales, Vargas, and Montiel, 2010).
- 4) Approximately 57% of migrants transiting through Mexico relied on "coyotes" (individuals who smuggle immigrants across the Mexico-U.S. border) or similar arrangements to facilitate their entry into the United States (El Colegio de la Frontera Norte et al., 2017).
- 5) Only 19 out of every 100 migrants who embarked on the journey to the United States successfully reached their destination without being intercepted by Mexican or United States authorities (Canales and Luz Rojas Wiesner, 2017).
- 6) Regarding sociodemographic trends, the majority of migrants from Central America are men, whereas migrants from other countries are predominantly women, with the number of female migrants exceeding that of men by 13.5%. The male-to-female ratio for cumulative migration stands at 1.14 for the Northern Triangle countries. In terms of the age of migrants, data indicates that most recent migrants from the Northern Triangle countries are young individuals, with an average age of 25.2 years. Central American migrants also stand out by their lower levels of education compared to migrants from other regions of the world. Cumulatively, over 55% of Central American migrants have not completed secondary education, while only 20% have attained some level of higher education (Canales and Luz Rojas Wiesner, 2017). This makes the typical Central American migrant a 25 year old male with primary education.
- 7) In 2016, remittances in the Central American countries surpassed US\$ 18 billion for the first time, with the majority of the money going to the Northern Triangle - US\$ 7.4 billion for Guatemala, US\$ 4.6 billion for El Salvador and US\$ 3.8 billion for Honduras (Canales and Luz Rojas Wiesner, 2018).
- 8) A huge issue in the Central American countries in particular is unaccompanied minors. IOM defines them as children who have been separated from both parents and other

relatives and are not under the care of an adult who, either by law or custom, is responsible for their care. It is reported that 180,000 unaccompanied minors were stopped on the south-west border of the United States between 2013 and 2017 (IOM, 2018) and 45,000 unaccompanied minors from Northern Central American countries were registered in Mexico between 2015 and 2016 (Secretaría de Gobernación [SEGOB], 2016).

3.2.3. Impacts

The biggest negative impact of environmental migration in the Dry Corridor is, arguably, the U.S. border and migration crisis. In 2023, the number of immigrants turned away or apprehended at U.S. borders reached 3.2 million, marking the highest figure since at least 1980. Of this total, over 2 million immigrants were apprehended for illegal entry into the US. Additionally, the remaining 1.1 million individuals were turned away at legal ports of entry by the Office of Field Operations, which represents more than double the number recorded in 2022 (U.S. Customs and Border Protection, 2023). Furthermore, according to recent Rasmussen Reports (2022) national telephone and online survey, 54 % of Likely U.S. voters believe that the issue of illegal immigration is worsening. Conversely, only 12 % feel that the problem of illegal immigration is improving, while 30 % state that the problem remains relatively unchanged. Furthermore, 66 % of respondents believe that the current situation with illegal immigrants at the U.S.-Mexico border constitutes a crisis, 22 % disagree with this assessment, while 12 % are uncertain, and 69 % of respondents stated that there was an illegal immigration or "migrant" crisis at the U.S.-Mexico border.

But maybe the 'crisis' in question can be looked at from a different angle: 70 % of the economically active Central American population living in the United States has a job and 58 % of those immigrants are employed in low-skilled occupations, that most U.S. citizens wouldn't want to work at (Canales and Luz Rojas Wiesner, 2018). In fact, only 16 % of Americans are working in the same fields, such as industrial work, craft work, agriculture, forestry, fishing, and aquaculture (Statista, 2019). Moreover, according to Census Bureau, the number of the U.S. foreign-born population grew only about 3 % since 2000, from 11.1 % to 13.8 %.

In terms of recent events at the border, in February 2024, a contentious debate arose in Texas, the second most immigrant-populated state (Batalova, 2024), with regarding whether states possess the authority to protect their borders against illegal immigrants when the federal government fails to take action. Three years into the Biden Administration, illegal border crossings persist at unprecedented levels, surpassing over 7,000,000 encounters along the southwest border during this period. In response to the border crisis, a new Texas law has classified illegal migration as a state crime on March 5th, 2024. Local police will now have the authority to make arrests instead of being required to hand over individuals to border patrol. Furthermore, courts will have the ability to issue orders for these individuals to return to Mexico. These actions can be regarded as inhumane and unconstitutional, in addition to making it harder for the sheriff's department to operate normally and deal with large numbers of immigrants at the border, which can be as high as 17,000 in one day (Full Measure and Sharyl Attkisson, 2024).

In its 2011 State of the Region Report, the United Nations Development Program (UNDP) highlighted that Central America, alongside another region in the Americas, experiences one of the highest rates of brain drain to developed countries. Notably, Guatemala, El Salvador, Honduras, and Nicaragua stand out with nearly 30% of their university-educated labour force residing in the United States. This phenomenon significantly impacts these countries, as the percentage of their population holding a college degree is notably low, particularly in the Northern Triangle: 2.8 % in Guatemala, 3.4 % in Honduras, and 7.7 % in El Salvador (Barro-Lee Educational Attainment Dataset, 2010). Only about 10 % of migrants from Central America have completed university education. Moreover, in 2009, it was observed that almost half of Central American immigrants aged 25 and older (48 %) did not possess a high school diploma, while approximately 25 % held a high school diploma as their highest level of education. The remaining 17 % had received some college education (Batalova and Ward, 2023; Azpuru and Hernandez, 2015).

Additionally, in an Annual Review of Public Health study (2023), McMichael has speculated that there are links between climate change, human mobility, and population health. She references comparable case studies of human migration and recent empirical research on climate-induced migration. Several recent review articles, reports, comments, and editorials explore the interconnectedness of climate change, migration, and health. These sources examine how climate-related hazards may serve as drivers for migration, the health risks faced

by climate migrants during their journey and upon reaching their destination, and the acknowledgment that migrants may relocate to areas with climate-related health challenges, such as extreme heat events. The study highlights that individuals relocating due to climate-related impacts may encounter health risks, alongside potential opportunities. These risks include restricted access to healthcare, heightened occurrences of water- and foodborne illnesses, mental health concerns, threats to sexual and reproductive health, disrupted social connections, loss of attachment to their original location, skin conditions, and food insecurity, both during their journey and upon settling in new areas. She also finds that recent empirical research delves into the health challenges and opportunities experienced by individuals who migrate, either permanently or as seasonal laborers, in response to climatic and weather-related hazards such as droughts, floods, riverbank erosion, and cyclones. Displacement caused by disasters is also associated with increased health risks, including skin diseases, diarrhoea, waterborne illnesses, malnutrition, respiratory issues, and injuries. Displaced women may face challenges accessing maternity and postnatal services. Additionally, poor social determinants of health such as overcrowded living conditions, inadequate access to land, electricity, sanitation, and healthcare services contribute to health vulnerabilities. Displacement can also lead to feelings of loss, decreased quality of life, social isolation, and mental health issues like depression and anxiety, especially for those unable to return home or relocate due to limited resources. Despite these challenges, it's noteworthy that some studies have found improved health outcomes or determinants of health among displaced populations.

One might argue that the climate change-induced migration in the Dry Corridor also has some positive impacts to it. For example, as our comprehension of the connection between climate change and food insecurity advances, so does our understanding of how food systems can contribute to addressing climate change. Presently, there is a consensus among scientists and policymakers that to achieve the Sustainable Development Goal of zero hunger by 2030 (SDG 2), we must seek methods to enhance food production sustainably while substantially decreasing the carbon footprint of our food system. There is a shift from merely identifying problems to proposing solutions, and we are progressively transitioning from theory to practical implementation in the agricultural climate change domain (Sova et al., 2019).

Agriculture holds significant economic importance in most developing countries, often representing a large portion of their economies. Historically, urging millions of subsistence farmers to consider the emissions generated by their agricultural practices has been politically

challenging. Global climate negotiations have largely sidestepped the issue of agricultural mitigation, driven by a strong coalition of developing nations arguing that their agricultural sectors should focus solely on adaptation. However, in recent years, there has been a shift in this reasoning with the emergence of climate-smart agriculture (CSA). CSA entails agricultural interventions and technologies designed to adapt systems to changing conditions, mitigate greenhouse gas emissions, and enhance production simultaneously. The adoption of beneficial CSA practices is increasingly evident worldwide, with over 1,700 unique interventions implemented across more than 30 developing countries. These practices include cover cropping, reduced or zero-till agriculture, integrated crop-livestock systems, agroforestry and silviculture, conservation of plant genetic material and crop wild relatives, and water management strategies like alternate wet and dry rice irrigation. Farmers are particularly inclined to adopt CSA practices when they lead to improvements in productivity and income.

In 2014, the United States, alongside other donors, multilateral organizations such as the FAO and the CGIAR (Consultative Group on International Agricultural Research) research program on Climate Change, Agriculture, and Food Security, and private sector companies, launched the Global Alliance for Climate Smart Agriculture to promote CSA and sustain momentum around the concept (Sova et al., 2019). Addressing climate change through food security solutions extends beyond on-farm actions. Project Drawdown, a comprehensive global initiative cataloguing solutions to combat climate change, highlights three agriculture-related actions among its top 10 most impactful actions. Two of these actions are consumer-facing: reducing food waste and adopting plant-rich diets. Other food-system measures in their solutions list include expanding the use of clean cookstoves and reducing deforestation from agricultural expansion and the use of biochar. Project Drawdown is not the sole effort emphasizing the significance of diet in combating climate change (Hawken, 2016). The EAT-Lancet Commission Report on Food, Planet, Health has also played a pivotal role in mainstreaming this concept, sparking renewed interest in the idea of food as medicine (Walleit et al., 2019). The urgency of responding to climate change has led to a crucial convergence between agriculture, nutrition, and environmental communities, with climate change and food security even becoming topics of discussion in political arenas (Sova et al., 2019).

The United States also implements various global food security funds, policies, and programs. One prominent initiative is Feed the Future, led by USAID's Bureau of Food Security, which allocates over \$1 billion annually toward agriculture-led growth and nutrition

endeavours in countries worldwide. Emergency food assistance is provided through USAID's Office of Food for Peace (FFP), which includes both in-kind commodities (under P.L. 480) and cash-based assistance (Emergency Food Security Program). Moreover, the United States has played a pivotal role in launching and participating in several global movements and initiatives, such as the New Alliance for Food Security, Scaling Up Nutrition (SUN), and 1,000 Days movements, which prioritize public-private partnerships. These efforts are coordinated and guided by a whole-of-government Global Food Security Strategy. The United States, alongside other donors, has also made enduring commitments to safeguard the food security of impoverished communities in the face of climate change. This commitment stems from the overarching goals of poverty reduction and the preservation of hard-won development gains. According to the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee, in 2017, the United States allocated just over \$2 billion in climate-sensitive development finance to developing countries, with approximately \$300 million (15 %) directed towards the food security sector. These investments encompass a diverse array of thematic areas and initiatives. One such initiative, the Tropical Forest Alliance 2020, established by USAID and the Consumer Goods Forum, collaborates with governments and private sector entities to combat deforestation stemming from agricultural activities and supply chains, particularly concerning commodities like soy, beef, palm oil, and paper/pulp. Furthermore, initiatives like SERVIR, a joint endeavour between the National Aeronautics and Space Administration (NASA) and USAID, empower developing countries to utilize Earth-observation satellites for enhancing environmental decision-making and climate services. Other notable efforts include collaborative ventures with the CGIAR on promoting low-emissions agriculture, providing financial support to the BioCarbon Fund Initiative for Sustainable Forest Landscapes, and active participation in the Low Emission Development Strategies Global Partnership, serving as a platform for learning and technical cooperation in this domain (Sova et al., 2019).

In addition to its dedicated climate-specific projects and initiatives, the U.S. government has taken systematic steps to integrate climate resilience into its food security development portfolio. The 2014 Executive Order (#13677) on Climate-Resilient International Development, which remains in effect, mandates the incorporation of climate-resilience considerations into all U.S. international development endeavours. This commitment to climate-proofing is evident throughout U.S. government global food security programming. The second phase of Feed the Future, for instance, introduced resilience as a new strategic

objective, redirecting its focus towards more fragile settings in 12 target countries where climate impacts intersect with other social, economic, and political factors to exacerbate poverty and instability. Moreover, humanitarian efforts under USAID's Food for Peace (FFP) have increasingly responded to the surge in climate-related extreme events. FFP's 2016–2025 Food Assistance and Food Security Strategy explicitly addresses climate change within its updated conceptual framework and emphasizes enhanced collaboration and knowledge-sharing with USAID's Bureau for Economic Growth, Education, and Environment (E3). Furthermore, FFP collaborates closely with the Famine Early Warning Systems Network (FEWS NET), which operates in tandem with five U.S. agencies to provide food security projections in high-risk regions worldwide, alongside specialized reports on weather and climate. These initiatives collectively underscore the U.S. government's proactive approach to climate resilience within the realm of global food security (Sova et al., 2019).

Remittances could also be considered a positive side of environmental migration, as it can greatly benefit one's financial situation. They also exhibit greater stability and consistency over time compared to other macroeconomic variables, such as foreign direct investment, manufacturing exports, and other forms of foreign-exchange inflows. Additionally, remittances are less susceptible to fluctuations in economic cycles (ECLAC, 2017). For the Dry Corridor countries, percentage of GDP in remittances was estimated as follows: 0.9 % for Costa Rica, 23.7 % for El Salvador, 19.2 % for Guatemala, 26.8 % for Honduras, and 0.7 % for Panama, with Honduras being the fifth country in the world with the highest percentage of GDP in remittances (The World Bank, 2022). Although, authors argue that such high numbers are not evidence of the positive impacts of remittances, but the structural failings in the economies of recipient countries. Those structural failings are the sole reason why the countries' economies rely on remittances so much (ECLAC, 2017).

Conclusion

The main aim of this bachelor thesis was to describe and define the complex problem of environmental migration, as well as its meaning and significance. Additionally, by focusing on Central America and the Dry Corridor region, this paper tried to narrow down and specify the complexity of environmental migration by defining its main causes, trends, and impacts in the area. Another aim was to raise awareness to the problem of environmental migration in poor areas with food scarcity and little access to alternative food sources other than self-supplying on private small farms, areas prone to extreme weather events, such as droughts, floods, and irregular rainfall patterns, as well as areas with fragile ecosystems and soil degradation. Environmental migration in those areas is often overlooked and, in case of the Central American Dry Corridor, it is because of the low living standards and already high numbers of labour migration due to reasons other than climate change. By highlighting some already existing climate smart agriculture initiatives, as well as food security programs, the thesis hopes that policymakers and stakeholders find new ways of helping those who suffer in drought-prone regions. And, increasingly, scholars from diverse fields are posing the same question: “How can we produce sufficient food to meet the needs of a growing population while simultaneously nourishing the planet?”

The first question of the thesis tries to define environmental migration and possibly differentiate some types of environmental migration. This proved to be difficult, as to this day there is no universal definition that the international law can recognize due to the difficulty of defining climate- and natural disaster-induced factors, that contribute to said form of migration. Nonetheless, several scholars tried to define the concept of environmental migration in their studies. The first author to try and bring awareness to the issue was arguably El Hinnawi (1985), but only later has the term gained wider recognition with the work of Myers (1997). The most up-to-date and widespread definition comes from the International Organization of Migration, which defines a person who is an environmental migrant, rather than defining the type of human mobility in question. It is believed that as environmental migration becomes a more prominent and evident issue in the world, the international institutions and international law will have to choose but to include climate change as a valid and real reason to migrate.

In terms of types of environmental migration, broadly, three main types of climate mobility are recognized: displacement (this involves the forced movement of individuals from their habitual residences due to climate-related disasters), relocation (also known as resettlement, retreat, or realignment; this refers to the permanent movement of infrastructure and populations away from hazardous areas and settlements to new locations), and, finally, migration (this encompasses the voluntary movement and settlement of individuals within or across national borders, often influenced by various pressures driving migration decisions; it's important to note that migration patterns can be bidirectional, with people moving both from and into areas facing climate risks) (McMichael, 2023).

The second question of the thesis has also been answered and discussed. It makes the most sense to divide the factors that affect environmental migration in Central America to socioeconomic and environmental factors. As environmental factors that push people to emigrate, both naturally occurring disasters and human-induced climate change are mentioned in several studies by various authors. Then, the most prominent socioeconomic factors are low quality of life, poverty, malnourishment, and high violence levels. This may also include the influence of the U.S., as it is a top recipient country for Central American immigrants. One of the most notable findings of the paper is that the United States may be creating the so-called 'migration and border crisis' by itself. Some of the U.S. actions, that shape the socioeconomic conditions of Central America are migration policies, economic and political decisions towards Central America, such as funding the police and military forces of governments that are known for prosecuting their own citizens unjustly. The unethical and inhumane business practices of the United Fruit Company and the U.S. government in the 20th century have also played a big role in the situation of present-day Central America.

Answering the third question of this bachelor thesis, the historical and environmental factors that may have been the cause of environmental migration in the Dry Corridor region specifically, scholars mention the historically skewed land distribution and extensive banana and coffee production, all in the hands of a small elite, which could contribute to soil degradation in the region. Although, as one of the most dominant environmental factors contributing to migration, authors bring up the El Niño-Southern Oscillation events. Normally, they wouldn't pose much of a threat to local communities, but amplified by climate change, it can cause different issues, including floods, droughts, and extreme temperatures. The majority of the Dry Corridor population are small-scale farmers, who rely on basic crops like corn,

beans, and rice to sustain their livelihoods. But with poverty and malnourishment rates so high, these people fail to adapt and are unfortunately forced to flee their homes. This leads to a conclusion, that there is a need to implement more successful adaptation and mitigation strategies, food security initiatives, as well as creating more climate-resilient food systems.

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