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Acronyms

CADC	Central American Dry Corridor
CAFTA-DR	Dominican Republic-Central America-United States Free Trade Agreement
CARECEN	Central American Resource Center
CDM	Clean Development Mechanism
CIA	Central Intelligence Agency
CLR	Coffee Leaf Rust
ENSO	El Niño Southern Oscillation
GDP	Gross Domestic Product
ICE	Immigration and Customs Enforcement Agency
IDB	Inter-American Development Bank
IDP	Internally Displaced Person
IIRIRA	Illegal Immigration Reform and Immigrant Responsibility Act
IACHR	Inter-American Commission on Human Rights
INS	Immigration and Naturalization Service
IOM	International Organization for Migration
LPR	Legal Permanent Residence
NACARA	Nicaraguan Adjustment and Central American Relief Act
NELM	New Economics of Labour Migration
NTCA	Northern Triangle of Central America
SLA	Sustainable Livelihoods Approach
TPS	Temporary Protected Status
UFCo	United Fruit Company
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
USA/US	United States of America
WBGU	German Advisory Council on Global Change

Abstract (English)

This thesis analyses climate-induced migration from the Northern Triangle of Central America (NTCA) and examines how climate change has become a decisive driver of migration from Honduras, Guatemala and El Salvador over recent decades. Drawing on the multi-level migration framework by Black et al. and the conceptual model developed by Perch-Nielsen, migration is understood as a structurally embedded, multicausal process shaped by interacting environmental, economic, political, and social drivers, as well as other intervening factors.

Through historical analysis and comparative country case studies, the thesis demonstrates that slow-onset climate change processes—intensified by phenomena such as the El Niño Southern Oscillation (ENSO) effect—together with extreme weather events and crop diseases such as coffee leaf rust, have systematically undermined agricultural livelihoods. These dynamics have increased food insecurity, reduced employment opportunities and deepened poverty, particularly in rural and agriculture-dependent regions. Although migration decisions are often framed in economic or security terms at the household level, the findings show that these pressures increasingly originate in environmental degradation, positioning climate change as an increasingly autonomous structural driver of displacement.

The research further highlights a growing gap between climate-induced migration and existing legal and migration frameworks. People displaced by slow-onset environmental degradation remain largely unprotected under current regimes, creating growing social, political, and governance challenges, particularly for the United States, the primary destination country. The findings underscore the urgency of adapting migration policies to recognise climate-driven mobility and integrate environmental resilience and climate justice into migration governance.

Abstract (German)

Diese Masterarbeit analysiert klimabedingte Migration aus dem Nördlichen Dreieck Zentralamerikas und untersucht, inwiefern der Klimawandel in den vergangenen Jahrzehnten zu einem entscheidenden Treiber von Migration aus Honduras, Guatemala und El Salvador geworden ist. Auf Grundlage des Mehrebenen-Migrationsrahmens von Black et al. sowie des von Perch-Nielsen entwickelten konzeptionellen Modells wird Migration als strukturell eingebetteter, multikausaler Prozess verstanden, der durch das Zusammenwirken ökologischer, ökonomischer, politischer und sozialer Faktoren sowie weiterer intervenierender Bedingungen geprägt ist.

Anhand einer historischen Analyse und vergleichender Fallstudien zeigt die Arbeit, dass langsam einsetzende Klimaveränderungen – verstärkt durch Phänomene wie die El-Niño-Southern-Oscillation (ENSO) – in Kombination mit extremen Wetterereignissen und Pflanzenkrankheiten wie dem Kaffeeroost die landwirtschaftlichen Lebensgrundlagen systematisch untergraben haben. Diese Entwicklungen führten insbesondere in ländlichen und stark agrarisch geprägten Regionen zu zunehmender Ernährungsunsicherheit, sinkenden Beschäftigungsmöglichkeiten und einer Vertiefung der Armut. Obwohl Migrationsentscheidungen auf Haushaltsebene häufig in ökonomischen oder sicherheitsbezogenen Kategorien formuliert werden, zeigen die Ergebnisse, dass diese Belastungen zunehmend auf umweltbedingte Degradationsprozesse zurückzuführen sind. Der Klimawandel tritt damit nicht mehr lediglich als Hintergrundfaktor, sondern als zunehmend eigenständiger struktureller Treiber von Verdrängung und Migration in Erscheinung.

Darüber hinaus macht die Masterarbeit eine zunehmende Diskrepanz zwischen klimabedingter Migration und bestehenden migrations- und völkerrechtlichen Rahmenwerken sichtbar. Personen, die infolge der langsam fortschreitenden Umweltdegradation zur Migration gezwungen sind, bleiben unter den derzeitigen Regelungen weitgehend ungeschützt, was insbesondere für die Vereinigten Staaten als wichtigstes Zielland zu zunehmenden sozialen, politischen und Governance-bezogenen Herausforderungen führt. Die Ergebnisse unterstreichen daher die Dringlichkeit, migrationspolitische Ansätze weiterzuentwickeln, um klimabedingte Mobilität anzuerkennen und Aspekte der ökologischen Resilienz sowie der Klimagerechtigkeit systematisch in die Migrationspolitik zu integrieren.

1. Introduction

The topic of climate-induced migration is of significant political importance, especially for regions like Central America's Dry Corridor, which is severely affected by climate change. This region has witnessed increasingly severe droughts, hurricanes, and crop diseases such as coffee leaf rust (CLR), resulting in food insecurity, loss of livelihood, and rising poverty levels. These pressures drive migration northward, often towards the United States of America (USA). This thesis investigates how climate change has evolved into a primary migration driver and the interplay among environmental, economic, political and social factors that compel individuals to leave their homes.

This research holds critical political relevance for several reasons. Firstly, it highlights the need for international policy adaptations that address the unique category of climate-induced migration, which currently lacks legal frameworks and recognition under international law. This gap leaves climate migrants without protection under established refugee laws, despite their forced displacement due to environmental conditions. Additionally, the migration flow from the Dry Corridor to the USA raises questions about bilateral policies between Central America and the United States, especially as US immigration policies struggle to address the increasing number of climate-displaced individuals.

Furthermore, as this migration intensifies, it affects both sending and receiving countries economically and socially. In sending countries, rural and marginalised communities are hit hardest by the environmental degradation that drives migration. In receiving countries, there is potential for political tension due to increasing demands on resources and services, often leading to stricter immigration policies that disproportionately impact vulnerable populations. By highlighting these dynamics, this study underscores the need for a holistic approach that integrates environmental resilience, migration policies, and climate justice, particularly given the unequal contributions to climate change by regions most affected, such as Central America.

2. Scope and Research Question

In recent years, media attention has been brought to the migrant caravans heading to the USA multiple times, portraying thousands of migrants from regions of Central and Latin America on the move (BBC, 2023; The Guardian, 2022; The Washington Post, 2020; Independent, 2018). These migration flows were curbed during the presidency of Donald Trump, which saw the lowest number of apprehensions since 1971 in 2018 (BBC, 2019). Even though immigration to the USA

from Central and South American countries is not a new phenomenon, the number of irregular migrants from El Salvador, Guatemala and Honduras apprehended at the USA border with Mexico increased fivefold from 2010 to 2014, while migration from Mexico diminished (Martínez Flores, 2020, p. 1598). A disproportionately high number of migrants comes from the so-called Dry Corridor countries affected by the growing El Niño effect.

Looking beyond the disturbing images of masses of migrants heading north, struggling to fight natural elements, carrying crying children in their arms, and being potentially exposed to the cruel practices of human traffickers just to attempt to cross the US border, one would assume that the reasons for such risky endeavours cannot be insignificant. In fact, adverse climatic conditions, such as poor rainfall and droughts in the Dry Corridor area, affect food security by diminishing agricultural productivity in both commercial and subsistence farming and by reducing employment opportunities in agriculture. The most stated reasons for leaving their home countries are criminality and violence, but increasingly also food insecurity, which has its sources in changing environmental conditions linked to climate change (World Food Programme, 2017, p. 5).

Considering the links between food security and migration from Central America established in studies undertaken by organisations such as Hunger Without Borders and the World Food Programme, it would be essential to further look into the reasons for these migration flows and their development over the years to determine if there is an underlying factor causing the migration flows from this geographical area. The focus is on the countries mentioned above, as the increasing food insecurity is directly connected to the effects of climate change. Labouring under the assumption that climate change is becoming an increasingly important driver of migration from Dry Corridor countries to the USA, the thesis aims to determine the extent to which climate change has become a decisive factor in creating environmental migrants from Dry Corridor countries in the last few decades.

To elaborate on this further, the most important terms and definitions will be elucidated in the next section, with emphasis on the conceptual challenges and their implications. This will be followed by research on the environmental dimensions of migration, which has moved beyond linear environmental 'push-pull' theories toward greater integration of context, including micro-level, meso-level, and macro-level interactions. Therefore, the migratory patterns from the research area could be analysed by considering household composition and its characteristics as well as political, social, economic, and environmental factors, along with other intervening obstacles and facilitators. This interplay of factors driving migration will be compared from a historical

perspective for Honduras, Guatemala and El Salvador to assess the increasing role of climate change.

3. Definitions and Conceptual Challenges

3.1. Climate Change

Climate refers to the long-term pattern of weather conditions in a particular area, shaped by both natural causes, such as volcanic eruptions and solar variability and by human activity as the predominant observed source of change since the industrial era (IPCC, 2023, p. 42). A primary cause of human-induced climate change is the increase in atmospheric concentrations of greenhouse gases (Kniveton et al., 2008, p. 11). The rapid increase in atmospheric greenhouse gases through unsustainable energy use, land-use change and global consumption and production trends has raised the average surface temperature by 1.1 °C above the levels of 1850-1900 in 2011-2020. The resulting effects — extreme weather events, negative impacts on food and water security, human health, economies, society and damage and loss to people and nature — disproportionately affect communities that have contributed the least to global emissions (IPCC, 2023, pp. 46-51).

Particularly impacted areas include the region of the Central American Dry Corridor (CADC), encompassing Panama, Costa Rica, Nicaragua, Honduras, El Salvador, and Guatemala. Although these states emit less than 3% of total global greenhouse gas emissions (World Resources Institute, 2023), they experience some of the world's most severe climate risks, including recurrent droughts, floods, and crop failures. The countries of the Northern Triangle of Central America (NTCA) – Honduras, El Salvador and Guatemala – that this paper focuses on rank within the top 50 countries demonstrated to be most affected by climate risks from 1999-2018 (Läderach et al., 2021, p. 13).

Agricultural dependence heightens vulnerability: smallholder farmers account for roughly 60 % of agricultural producers, and their yields depend heavily on rainfall. Extended droughts have therefore undermined food security and livelihoods. Future predictions show that seasonal droughts are expected to prolong by 12-30%, heighten by 17-42%, and become more frequent by 21-24% by 2071-2100 (Huber et al., 2023, pp. 7-9).

3.2. El Niño Southern Oscillation (ENSO) Effect

The natural climate pattern called El Niño Southern Oscillation (ENSO) significantly influences weather in the studied region and beyond by rising ocean surface temperatures in the central and eastern Pacific. On the other hand, when there are reductions in ocean surface temperatures, the cold phase of the event can be recognised as the so-called 'La Niña'. These oscillations occur every 2 to 7 years, typically lasting between 9 and 12 months, and strongly influence precipitation and temperature across the Americas.

In the NTCA region, El Niño has historically brought prolonged droughts, water scarcity, and declining crop yields, whereas La Niña tends to cause floods and landslides. Rising sea-surface temperatures above 26 °C also fuel stronger tropical storms (UNRCP for Latin America and the Caribbean, 2023, p. 4; CIIFEN, 2022). Climate change further exacerbates the impact of El Niño, leading to increasingly intense events and creating conditions for more pronounced heatwaves in Central America in the future (Rojas et al., 2020, p. 46). Given the NTCA's high dependence on agriculture, these fluctuations directly affect food prices and employment, threatening the food security of approximately 40 million people (UNRCP for Latin America and the Caribbean, 2023, p. 7).

3.3. Environmental Refugees

The ENSO effect, reinforced by climate change, has increasingly affected food production, favouring migratory processes in the NTCA area. Human mobility takes different forms — seasonal or permanent, internal or international — depending on temporal and spatial factors. The terminology used to describe people migrating in response to environmental stress is crucial for legal and policy-setting frameworks, as the obligations of the international community differ based on the applicable international law (Acketoft, 2008, p. 13). In this thesis, the terms climate and environment are used interchangeably to refer to persons displaced by climatic factors, though 'environment' encompasses broader elements such as air, water, soil quality, and biodiversity (Merriam-Webster, 2024).

The concept of the environmental refugee counts as one of the earliest and most frequently used terms to capture the phenomenon. El-Hinnawi (1985) defined such individuals as persons 'forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardised their existence and/or seriously affected the quality of their life.' (White, 2011, p. 21). Proponents of this term — the so-called maximalists — emphasise a direct, linear 'push-pull' model between environmental degradation and migration, assuming movement from more to less

environmentally degraded areas. Critics or minimalists challenge this determinism, emphasising the interplay of historical, economic, political and social factors that also shape migration decisions (Hunter et al., 2015, p. 386).

Furthermore, Acketoft, in her 2008 report to the Council of Europe, summarises the challenges of the term, the use of which has also been disputed by international organisations such as the United Nations High Commissioner for Refugees (UNHCR) and the International Organization for Migration (IOM), as follows:

1. The term is not accurate under international law since the 1951 Geneva Refugee Convention does not encompass climate and environmental change as one of the grounds for the persecution that leads to persons fleeing their country and would grant them international protection. On the other hand, Kolmannskog (2008) suggests that environmental degradation and disaster could be considered a form of persecution occurring 'when governments knowingly induce environmental degradation and that degradation harms people by forcing them to migrate' (p. 27). However, this is a matter of interpretation by affected countries and their applicable policies, which come into play, and it does not guarantee any protection for concerned environmental refugees.
2. Cross-border movement is implied under the term 'refugee'. At the same time, environmental displacement has been more prone to lead to internal migration due to the socioeconomic and political costs of cross-border moves (Hunter et al., 2015, p. 379).
3. The concept implies the universal right of return in case the reasons that triggered the migration cease, which would not apply to situations of irreversible environmental changes, i.e., in the case of small island states and sea level rise.
4. The UNHCR expressed concerns that extending the existing definition of 'refugee' would undermine the protection under the currently accepted Geneva Refugee Convention and possibly lead to lower standards, considering the political climate in many countries.
5. Lastly, countries most responsible for climate change fear the moral and possibly legal responsibility of accepting the term in case of environmentally induced migration.

Besides the above conceptual challenges, the sceptics of the term point out that climate-induced migration can also be seen positively as a proactive adaptation strategy (Piguet, 2013, p. 155). In a similar vein, the term was contested in the paper written by Dreher and Voyer (2015, pp. 67-71), which deals with the topic of climate justice and how the depiction of Pacific Island people as 'refugees' and 'victims' of climate change in the media robs them of their agency for self-

determination and perception of being equal partners in negotiations while being at the forefront of increasing impact of climate change.

3.4. Internal Migration and Internally Displaced Persons (IDPs)

According to available academic research, the number of persons migrating within a country outnumbers those moving internationally (Laczko and Aghazarm, 2009, p. 74). Internal migration may take rural–rural, rural-urban, urban-rural, or urban–urban forms, depending on economic opportunities, environmental conditions, and political stability. Studies in least-developed regions show that limited financial resources often prevent long-distance mobility; short-term or seasonal migration serves as a key adaptation strategy for households facing environmental stress (White & Linstrom, 2019, p. 388). Multilevel statistical studies revealed that rainfall scarcity and drought intensify short-distance rural-to-rural migration on the one hand and, in other cases, contribute to urbanisation (Laczko and Aghazarm, 2009, p. 75). For instance, Findley (1994, p. 539-541), in his study of migration from rural Mali during the 1983-1985 drought, demonstrated that migration did not rise overall, but patterns shifted toward circular, short-cycle mobility lasting several months, as families sought to diversify income and reduce consumption. Long-distance international migration, by contrast, remained prohibitively expensive for most.

Furthermore, internal migration differs in terms of underlying factors such as economic opportunities and changing social, political, and environmental conditions, which can ultimately lead to voluntary or forced migration. The UN Guiding Principles on Internal Displacement (1998) define internally displaced persons (IDPs) as those ‘[...]forced or obliged to flee or to leave their homes ...as a result of or in order to avoid the effects of armed conflict, situation of generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised State border’ (OCHA, 2001, p.1). In light of the definition, such situations include forced migration but can also pertain to situations where people move voluntarily to access essential services or seek safety. National governments bear primary responsibility for IDP protection, with international actors intervening only when states are unable or unwilling to act (UNOCHA, 2024). Although not legally binding, the Principles synthesise relevant norms of human-rights, refugee, and humanitarian law and thus carry significant normative weight (Kolmannskog, 2008, p. 29).

This definition, however, has two key limitations: it excludes cross-border movement caused by identical disasters, and it remains ambiguous regarding gradual, slow-onset processes such as

land degradation or rising temperatures (Acketoft, 2008, p. 20). Consequently, internal migration often constitutes the first response to environmental change, while international migration may occur only when local coping capacities are exhausted. Studies also show that households may use migration proactively as a risk-diversification strategy rather than a purely forced reaction (Hunter et al., 2015, p. 379).

Understanding these patterns is essential to analyse the impacts of environmental changes and migratory patterns in the NTCA study area, where both displacement and adaptive migration occur simultaneously within fragile socioeconomic and political contexts.

3.5. Environmentally Induced Migration

3.5.1. Development of Environment and Migration Nexus

The connection between environment and migration has long been recognised by the founders of migration studies and geographers like Ratzel and Ravenstein, yet it disappeared from mainstream migration studies for much of the twentieth century as economic paradigms and the establishment of refugee studies focusing on political dimensions dominated. Interest revived in the late 1980s, with growing concern over environmental degradation and climate change. Alarmist projections — such as Myers's estimate of up to 200 million environmental refugees by 2100 — shaped public discourse and media narrative. Such discourse is characterised by terminology referring to rising numbers of future migrants and metaphoric expressions when referring to environmental migrants, such as tides, streams, and waves of migrants (Piguet, 2013, pp. 149-154). As can be seen from the newspaper coverage of human mobility in America mentioned at the beginning of this paper, such discourse seems to follow a recurring pattern. Later on, sceptics questioned the term environmental refugee, emphasising the multidirectional nature of migration drivers and the need for context-specific analysis. Contemporary research increasingly relies on mixed-methods — quantitative surveys, longitudinal studies, and contextual household analyses— to trace how environmental stress interacts with other drivers of migration (Piguet, 2013, pp. 155-156).

3.5.2. Defining Environmental Migrants and Legal Framework

Despite the absence of a legally binding definition for people on the move due to environmental factors, one of the most cited definitions was proposed by IOM, characterising environmental migrants as 'persons or groups of persons who, for reasons of sudden or progressive changes in

the environment that adversely affect their lives or living conditions are obliged to leave their homes or choose to do so, either temporarily or permanently, and who move either within their country or abroad'. (IOM, 2007, pp. 1-2).

This broad formulation captures both slow- and rapid-onset events as well as internal and international movements. Its inclusiveness, however, also creates overlaps with categories such as refugee and IDP, leading to conceptual and policy ambiguities. The distinction between forced and voluntary migration likewise proves difficult to sustain in climate-related contexts (Acketoft, 2008, p. 17).

For the purposes of the paper, the broad nature of the definition fits the studied area since different types of environmental stresses can be observed in slow-onset processes, as well as rapid climate changes and migration, which undeniably have an international aspect, while the IDP definition does not. Other intervening factors besides the environmental change driving the migration will be considered using theoretical frameworks explained below.

3.5.3. Data Collection Challenges and Advancements

Empirical research on climate-induced migration remains constrained by limited and inconsistent data, particularly in developing regions. Many national censuses omit questions related to migration or environmental exposure. Hunter et al. (2015) highlight several key research gaps: the peripheral role of environmental variables in migration theory, insufficient integration of vulnerability and political ecology perspectives, and a lack of conceptual clarity across studies.

Nevertheless, methodological progress is evident. Recent approaches include:

- integrating environmental indicators into demographic surveys,
- employing agent-based models to simulate household behaviour under climatic stress,
- conducting vulnerability and adaptation assessments,
- running macro-level simulations of population movement under climate-change scenarios, and combining spatial modelling with satellite data to estimate resource availability and hazard exposure (Laczko & Aghazarm, 2009, pp. 21–22; Hunter et al., 2015, pp. 386–391).

These innovations strengthen the empirical foundation for understanding climate-related mobility and provide a valuable basis for analysing migration in Central America.

4. Literature Review

4.1. Overview of International Migration Theories

While acknowledging the diversity of migration and its widely varied theorisation, this section aims to provide an overview of the most salient theories of international migration. The focus is on international theories, as this paper's underlying hypothesis focuses on international migratory patterns from NTCA to the USA. One way to look at the different migration models is to divide them into macro-, meso-, and micro-level theories depending on the levels of analysis.

4.1.1. Macro, Meso and Micro-Level Theories

Macro-level theories consider the functioning of political and economic systems as the primary driving mechanism of international migration. To this category belong the political economy model, push-pull theory, segmented labour market theory and the world system theory (Morawska, 2007, p. 1). Classical push-pull models attribute migration to inequalities between origin and destination regions, including economic disparities, environmental degradation, political repression, etc., on the one hand, and pull factors in the place of destination, such as better education and job prospects, welfare system, better living and environmental conditions, political freedom, etc., on the other hand. The influence of these push and pull factors leads to international labour migration, which, in the long term, reinforces the equalisation of economic imbalances between countries. Embedded in neoclassical economic thought, these models assume rational decision-making aimed at income maximisation (King, 2012, p. 13). Despite their heuristic value, the theory has been widely criticised for its determinism and limited explanatory power, particularly its inability to account for differing migration patterns among countries with similar structural conditions, for socio-cultural, personal and family factors or for the role of historical and political interdependencies. In comparison, the segmented labour market theory explains migration as a response to persistent demand for low-paid labour in advanced economies, while neo-Marxist dependency perspectives stress how migration reproduces global inequalities through processes of cumulative causation. World-systems theory extends this view by linking migration flows to historical patterns of economic integration between core and peripheral regions, a perspective particularly relevant for Central America given its long-standing economic and political ties to the USA (Morawska, 2007, pp. 2-3; King, 2012, pp. 13, 17-18).

The meso level goes beyond the impersonal characteristics of push-pull migration theories, shedding light on social networks and systems which sustain migration in time and space. Network theory highlights the role of social ties — family, community, and labour networks — in reducing the costs and risks of migration and shaping destination choices. Over time, these networks may develop into institutionalised migration systems that persist even when original economic or political incentives weaken (Mytna Kurekova, 2011, p. 10). While such networks facilitate mobility, they may also enable exploitative practices such as smuggling or trafficking.

The usefulness of network theory lies in its contribution to comprehending the formation of migration regimes and its potential for future migration projections (King, 2012, p. 21). Another representative of such theories, the migration systems model, goes further by suggesting that migratory patterns follow links between receiving and sending countries rooted in trade, cooperation, and colonial and other ties (Mytna Kurekova, 2011, p. 10).

From the micro-level perspective, most notably the New Economics of Labour Migration (NELM), conceptualises migration as a household strategy rather than an individual decision. Through the lens of NELM, migration is understood as a means to diversify income, manage risks, and compensate for the absence of credit and insurance markets (King, 2012, pp. 22-23). Household characteristics — including family size, age structure, skills, and access to resources and employment — shape migration decisions (Morawska, 2007, pp. 5-6). This model views migration positively, taking into account economic benefits such as remittances from emigrated family members and accumulated savings of returned migrants. Although NELM offers valuable insights for rural contexts, its assumptions of intra-household cohesion and its limited engagement with power relations have been subject to critique. Moreover, it does not consider scenarios of entire household migration.

4.2. Application of Theories: New Economics of Labour Migration (NELM) and Sustainable Livelihoods Approach (SLA)

New methodologies, such as NELM and livelihood perspectives, pay more attention to contextual factors, including the environment's role in migration, offering valuable insights into how individuals adapt, remain stationary or migrate (Hunter et al., 2015, pp. 378-388).

The SLA is based on the premise that individuals aim to maintain socially and environmentally sustainable livelihoods. SLA conceptualises livelihoods as a combination of natural, financial, physical, human, and social assets, mediated by institutional and policy environments. The so-

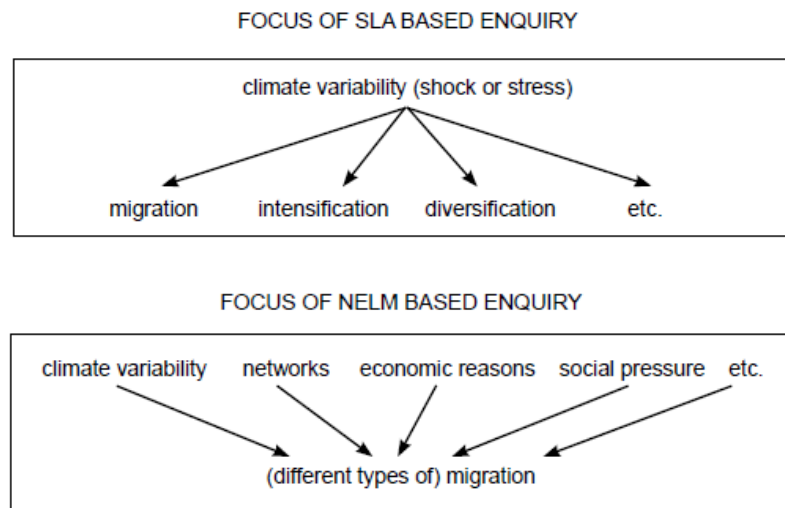
called assets pentagon ensures that in times of asset loss, individuals can compensate for it by leveraging other available assets. Environmental change affects these assets unevenly, particularly in agrarian societies such as those in the NTCA region, where livelihoods depend heavily on climatic stability. Migration within the SLA framework is understood as one among several adaptation strategies in response to shocks, seasonal variability, or long-term stress. SLA was deployed by some scholars, for instance, to assess the effect of climate variability on adaptive capacity. The main disadvantage of this approach is that examining people's livelihoods is quite time-consuming (Hunter et al., 2015, pp. 380-381; Kniveton et al., 2008, pp. 38-39).

NELM complements this perspective by focusing explicitly on migration as a risk-management strategy within households, particularly under conditions of environmental uncertainty. (Hunter et al., 2015, p. 380). Several empirical studies, such as Findley's analysis of drought-induced migration in Mali in 1983, demonstrate that households often respond to environmental stress through temporary or circular migration rather than permanent relocation (Findley, 1994, p. 539). This and other examples from available literature confirm the environmental scarcity hypothesis, which stipulates that migration linked to environmental factors can be induced by environmental variability, degradation, and unpredictability. The negative impacts of reduced natural capital are mitigated through the relocation of household labour supply (Hunter et al., 2015, p. 381).

Thus, both approaches offer a framework for comprehending households' responses to environmental stresses, viewing migration as one possible solution to diversify risks or secure and improve sustainable livelihoods. In practice, to gain such comprehensive knowledge about studied communities, it is necessary to obtain information from migrants, family members of migrants and those who do not decide to migrate, including background details about the institutional framework and social structures of concerned communities. This is usually done through surveys, which need to be further tested for climate sensitivity, as respondents tend to struggle to distinguish climate change as a reason for migration compared to other motives.

The graphics below help differentiate the focus of such questionnaires between the NELM and SLA approaches when collecting the above information. The NELM approach focuses more on the reasons for various migration types, while the SLA method views the various adaptation strategies, including migration, as an option resulting from environmental stressors.

Figure 1 Focus of SLA and NELM Based Enquiry



Kniveton et al., 2008, pp. 39-40

One needs to be mindful that, while both approaches seem to be useful models for empirical research and better reflect the realities of households in developing countries than the more rigid macro-level approaches, they have not fully theorised the role of the environment, treating it as an external variable. Moreover, there is also an empirical gap in exploring the relationship between environmental and economic drivers within urban settings (de Haas, 2008, p. 2; Hunter et al., 2015, p. 388).

4.3. Role of Environment in Migration Studies

To better understand the environment–migration nexus from a theoretical perspective, it is necessary to examine how classic migration theories have conceptualised environmental factors over time.

Early migration scholars such as Petersen conceptualised migration in pre-industrial societies as movement from ecologically risky to safer areas, thereby acknowledging environmental conditions as a contextual driver of mobility (Laczko and Aghazarm, 2009, p. 69). Subsequent theories incorporated environmental considerations in more indirect ways. Wolpert's stress–threshold model conceptualised the environment as a stressor influencing migration decisions and determinant of destination place utility, while Speare's residential satisfaction model treated environmental quality as a locational characteristic shaping dissatisfaction. Similarly, De Jong and Fawcett's value–expectancy framework considered the environment as part of the goal of comfort,

interacting with individual values and perceived opportunities (Laczko and Aghazarm, 2009, pp. 69-71). Hunter sought to connect environmental considerations with classic migration theories such as Wolpert's stress-threshold model and Speare's thoughts on residential satisfaction (Hunter et al., 2015, p. 379). Microeconomic theories implicitly integrated environmental factors through a cost-benefit analysis, for instance, wage differentials reflecting locational amenities and disamenities. Attempts to bridge macro- and micro-level approaches, such as Gardner's multi-stage decision-making model, further highlighted the role of perception and values in residential choice. In a nutshell, however, the above migration theories conceptualised the environment as a contextual factor rather than a central explanatory variable (Laczko and Aghazarm, 2009, pp. 71-72).

More recent contributions adopt a dynamic understanding of environmental influence. Hugo proposed a continuum ranging from slow-onset stresses, such as drought, to rapid-onset disasters leading to displacement. Building on this perspective, Black et al. conceptualised environmental change as one among several interacting migration drivers operating across multiple levels and mediated by household characteristics and intervening factors (Hunter et al., 2015, p. 379). This multidimensional understanding is particularly relevant for analysing migration in Central America, where environmental stress interacts with structural vulnerabilities.

An overview of the described migration theories and their conceptualisation of environmental factors is provided in the table below.

Table 1 Classic Migration Theories and the Potential Placement of Environmental Hazards

General typology of migration (Petersen, 1958)
Potential placement of environmental hazards: as ecological 'push' factor yielding migration as an 'innovative' response.
Stress-threshold model (Wolpert, 1966)
Potential placement of environmental hazards: as 'stressors'.
Mobility transition hypothesis (Zelinsky, 1971)
Potential placement of environmental hazards: as related to 'personal preferences'.
Residential mobility decision-making model (Speare, 1974)
Potential placement of environmental hazards: as 'locational characteristics'.
Neo-classical migration models (various contributors)
Potential placement of environmental hazards: as a 'location-specific disamenity'.
Value-expectancy model (De Jong and Fawcett, 1981)
Potential placement of environmental hazards: as a personal value/goal of 'comfort'.
Macro-micro decision-making model (Gardner, 1981)

Potential placement of environmental hazards: as a locational characteristic in conflict with 'what people value.'

Environmental factors as a continuum (Hugo, 1996)

Potential placement of environmental hazards: acting on a continuum from slow-onset stresses to rapid-onset disasters

Environment as one of the migration drivers on the macro level (Black et al., 2011)

Potential placement of environmental hazards: as one of multiple migration drivers, interacting on different levels, intervening obstacles and facilitators and household characteristics impact the decision to stay or migrate

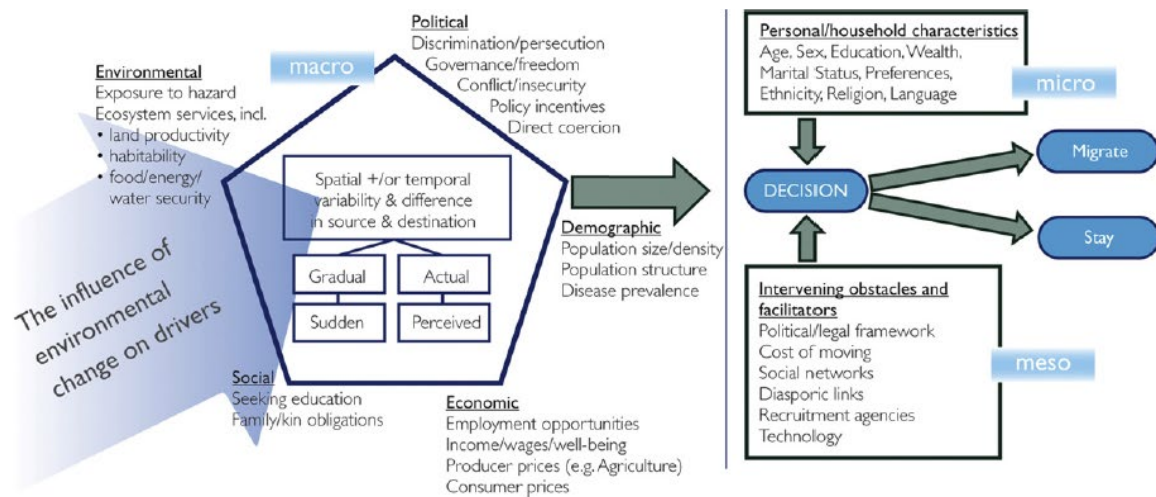
Source: Laczko and Aghazarm, (2009), p. 71 (including addition in light of Hugo and Black et al. theories); Hunter et al., (2015), pp. 379-282)

4.4. Conceptual Framework: Climate-Induced Migration

As the literature increasingly moved away from deterministic views, migration came to be understood as the outcome of complex interactions between environmental, economic, social, and political factors (Piguët, 2013, pp. 156-158). System characteristics, such as population density, infrastructure, and economic conditions, shape vulnerability to climate hazards, while household composition and individual characteristics influence migration decisions in response to changing environmental conditions (Alex de Sherbinin et al., 2007, pp. 39-41). An equally important role in decisions to migrate play social capital and networks, facilitating access of potential migrants to information, resources, and opportunities (Hunter et al., 2015, p. 384). Furthermore, the discourse on climate migration emphasises migration as an adaptation strategy, which may be an opportunistic way of viewing environmental refugees and migrants, as it would relieve the UN and its agencies of the duty to develop measures to protect them. As Felli (2013) formulated it, there has been a neoliberal shift in the discourse towards 'climate migration that should be understood as a way to manage the insecurity created by climate change' (p.356).

Black et al. (2011, pp. S4-S7) introduced a conceptual framework illustrating migration as the result of interactions among five main families of drivers at the macro level, intervening facilitators and obstacles at the meso level, and household and personal characteristics at the micro level. Environmental change may directly trigger migration or indirectly affect other drivers, such as economic insecurity or political instability.

Figure 2 Conceptual Framework of Drivers of Migration



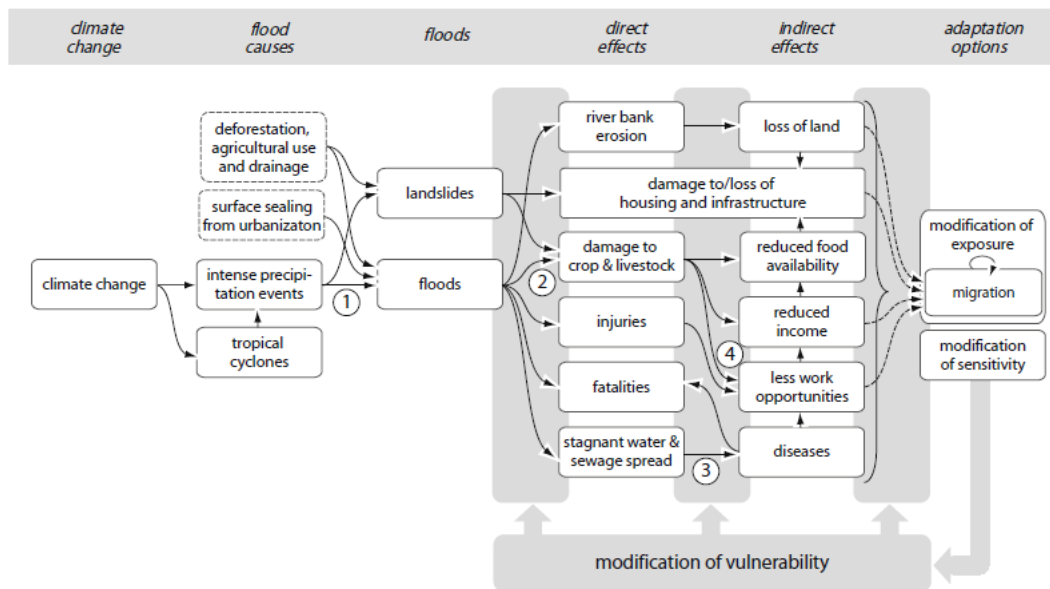
Source: Black et al. (2011), p. S5

As shown in the graphic above, the five elements of drivers resemble push-pull factors that interact over time and space with different actual and perceived intensities. On the other hand, this concept recognised households' agency as essential in determining whether to migrate or stay. First, economic drivers typically stimulate mobility, which does not mean a general movement of people from poorer to richer parts but rather a movement between relatively poorer and richer areas, with scale and direction determined by the personal circumstances of migrants. Second, political drivers entail conflict, security issues and development projects, which can act as push factors, but those most affected may lack the resources to migrate. Third, demographic aspects tend to interact with other factors, especially economic, so that, for example, a high number of people without livelihoods and employment opportunities is likely to trigger migration, with a higher inclination among younger people. Fourth, social drivers include cultural and family expectations and practices, exploration of educational opportunities, etc., with initial migration usually leading to further movement through the creation of so-called 'transnational spaces' between sending and receiving areas, with remittance flows potentially contributing to economic growth. Especially in countries of the NTCA dependent on agriculture and fisheries, the availability, accessibility, and stability of ecosystem services are crucial for livelihoods and overall well-being.

Black et al. identified several climate-related processes affecting migration through both direct and indirect pathways, including sea-level rise, altered rainfall patterns, temperature extremes, and ecosystem degradation (Black et al., 2011, p. S8). These processes are likely to influence agricultural productivity and rural livelihoods, thereby exacerbating economic and political instability. Rapid-onset events tend to cause short-distance displacement, while long-distance migration depends heavily on household resources and social networks (Black et al., 2011, pp. S7-S9). Thus, the presented conceptual framework can be helpful in understanding the role of environmental change leading to migration decisions, while considering other essential drivers, intervening facilitating mechanisms and obstacles, and family characteristics.

In a similar vein, Perch-Nielson (2008, pp. 376-377) uses a simple conceptual form of box-and-arrow to illustrate further the relevant factors, depicted as boxes, and influences, shown as arrows, that connect climate change, particularly its possible migration-affecting mechanisms such as cyclones, floods, droughts and sea level rise. The author elaborates on simple linkages between the chosen climatic events of floods, sea level rise and migration. Thus, her conceptual model below links climate-induced flooding to migration via intermediate impacts, including loss of housing, reduced income, health risks, and livelihood disruption. The strength of the influences varies strongly, with decreasing effects from left to right of the graphic. Perch-Nielson examines some of the linkages portrayed with numbers in the model between intense precipitation events and flooding, resulting in damage or loss of housing, crops, livestock, infrastructure and in negative impacts from the loss of crops and livestock, injuries and diseases on work opportunities, and reductions in income. To establish which of the flood effects contribute to migration, Perch-Nielson (2008, pp. 377-380) further analysed relevant theoretical work on migration and case studies.

Figure 3 Conceptual Model of the Influence of Climate Change on Migration through Flooding



Source: Perch-Nielsen (2008), p. 378

In relation to the flooding effects and the common drivers of migration elaborated in the literature review, labour market factors such as loss of land, damage to/loss of housing and infrastructure, and reduced income and work opportunities tend to be the typical migration drivers. Case studies substantiate these findings. In terms of adaptation options, they can be divided into two categories: adjustment of human sensitivity to natural hazards or prevention of exposure to specific natural events, including migration. Sensitivity is the extent to which a particular exposure affects a system. The model highlights vulnerability as a key mediating factor, demonstrating that exposure alone does not determine outcomes. Adaptation responses range from local coping strategies to migration, with the choice constrained by financial resources and political barriers (Perch-Nielsen, 2008, pp. 379–384). Last but not least, if migration is opted for as an adaptation option, the move is usually a short to medium distance. If international migration occurs, it is usually hindered by political obstacles (Perch-Nielsen, 2008, pp. 379–384).

It will be interesting to examine the factors driving long-distance migration from the studied area affected by climate change, which seem to contradict the results of the studies Perch-Nielsen examined. In light of the literature reviewed in the above section, it can be assumed that established social networks between the sending and receiving countries, i.e., the USA, drive international migration, with the availability of financial resources of concerned households making this adaptation option possible.

4.5. Understanding Vulnerability as a Migration Driver and Barrier

Vulnerability appears to be an important element in Perch-Nielsen's model, demonstrating the nexus between climate change's impacts and migration in the above section, since it determines the actual impact of environmental stressors on the affected population.

Similarly, understanding the presence of multiple migration drivers at various levels, including climate change, is critical for making the decision to migrate or adopt other coping strategies. Patterns of vulnerability are equally essential for understanding population mobility as a reaction to environmental risks (Adamo, 2009, pp. 15-16).

According to de Sherbinin et al. (2007), vulnerability 'is the degree to which a system or unit is likely to experience harm due to exposure to perturbations or stresses' (p.41). This concept was developed as an acknowledgement that focusing solely on disruptions and stresses of different types, such as socioeconomic, environmental, technological, etc., does not sufficiently explain how systems of affected communities respond to them. Three main elements characterise vulnerability: exposure to stresses, shocks and crises, lack of capacity to cope with them, and risks and consequences of slow or insufficient system recovery (de Sherbinin et al., 2007, p. 41).

Vulnerability research emerged in the 1980s to address the shortcomings of hazard-centred explanations by integrating social, economic, and political dimensions. Sen's entitlements approach highlighted power relations and access to resources, while socio-ecological frameworks such as Turner et al.'s vulnerability–sustainability model and Wisner et al.'s pressure-and-release framework emphasised the historical and structural roots of vulnerability (Hunter et al., 2015, pp. 389–390).

Vulnerability varies across contexts and demographic characteristics, including age, gender, ethnicity, and access to resources (Kolmannskog, 2008, p. 11). Women, children, indigenous populations, and persons with disabilities tend to face higher exposure and lower adaptive capacity. Gendered impacts are particularly pronounced, as women often assume additional responsibilities following the migration of household members or migrate themselves as part of risk-reduction strategies (Acketoft, 2008, p. 2). In the NTCA region, high levels of gender-based violence further compound vulnerability (Abrego & Menjivar, 2023, pp. 160–161).

In line with the definition provided by McLeman and Smit (2006, pp. 36-38), vulnerability, in the context of climatic events, is understood as the interplay between exposure and adaptive capacity

differing within a specific spatial and temporal context as a response to a particular environmental trigger. The definition emphasises the dynamic character of the concept, which is strongly influenced by the financial resources of affected households and may lead to different types of migratory responses (Black et al., 2011, p. S4).

On the other hand, the negative economic impact following rapid natural events or slow-onset climatic processes often exacerbates the vulnerability of affected people and prevents potential migrants from investing in long-distance migration. Black and other academics point out that internal and regional migration will likely increase due to climate change impacts (Kolmannskog, 2008, p. 13). In this sense, vulnerability can function both as a driver of migration and as a barrier. While environmental stress may incentivise migration, economic losses following disasters often reduce households' capacity to finance long-distance movement. Empirical studies demonstrate that the poorest and most food-insecure populations may become immobilised, while intermediate groups adopt selective migration strategies (Etzold et al., 2014, pp. 25–26). Consequently, vulnerability shapes not only who migrates, but also who remains trapped in deteriorating conditions.

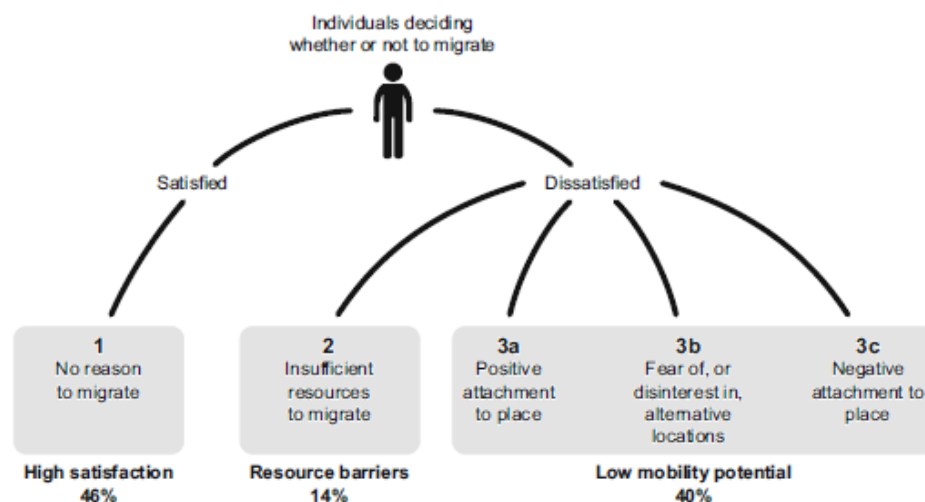
Academic papers, which include policy recommendations, all urge governments and other national, regional and international structures and institutions to work towards increasing the resilience of communities, particularly those vulnerable to and affected by the effects of climate change, by building climate-resilient livelihoods, providing adaptation funding, and establishing frameworks to protect the rights of persons displaced by climate change (Warner et al., 2009, pp. IV-V).

4.6. 'Trapped' Population: Reasons for Non-Migration

The concept of 'trapped' populations refers to individuals or groups who lack the capacity to migrate away from adverse environmental conditions. The UK Foresight Report introduced the term to describe people exposed to worsening risks but constrained by limited resources, social obligations, or mobility potential. According to Adams (2016, pp. 430-433), limited mobility potential can be subdivided into positive attachment to a particular place, lack of interest or fear in exploring other locations, and negative attachment to a place due to existing commitments and obligations.

Adams's research (2016, pp. 433-439) in the Peruvian Andes shows that non-migration often results from resource barriers and a lack of socio-economic development rather than satisfaction with living conditions. The categorisation of reasons for non-migration illustrates the importance of place attachment and perceived mobility potential. The figure below can serve as a theoretical framework for analysing non-migration in the context of climate change impacts, distinguishing between people satisfied and dissatisfied with their living areas. It shows the main categorisation of reported reasons for non-migration and demonstrates the importance of positive and negative attachment of individuals to a particular location (Adams, 2016, pp. 433–439). Understanding existing mobility characteristics is valuable to predicting population responses to further impacts of changing climatic conditions (Adams, 2016, p. 443).

Figure 4 Reported Reasons for Staying in Locations



Source: Adams (2016), p. 438

Crucially, immobility should not be equated with preference or well-being. Individuals may remain despite dissatisfaction due to economic constraints or low self-efficacy. On the other hand, it cannot be assumed that the lack of means or a low perceived sense of self-efficacy automatically implies dissatisfaction with the current location. From a policy perspective, this underscores the risk of assuming migration as a universal adaptation strategy. Recognising immobility as a distinct outcome highlights the need for place-based adaptation measures and the protection of populations unable or unwilling to migrate (Adams, 2016, pp. 442–445).

4.7. Climate-Induced Migration and Conflict

The nexus between climate-induced migration and conflict represents another important area of academic research. The potential causation between migration and conflict also seems to affect the studied area of NTCA since there is evidence suggesting that the influx of environmental migrants from El Salvador to Honduras ultimately led to a war between the two countries in 1969 (Reuveny, 2007, p. 660).

The relationship between climate-induced migration and conflict has attracted growing scholarly attention. Environmental conflict research traditionally distinguishes between neo-Malthusian perspectives, which link resource scarcity to violence, and cornucopian approaches emphasising innovation, technological progress, and cooperation. Despite differing assumptions, scholars agree that conflicts arise from multiple interacting causes and are more likely where political and social institutions are weak. Furthermore, climate-induced migration can spark conflict in receiving areas, which, in turn, can lead to further migration (Kolmannskog, 2008, pp. 18–21).

Reuveny (2007, pp. 658-660) distinguishes four channels which, when occurring concurrently, increase the likelihood of a conflict: competition over limited resources, ethnic tension, distrust between populations of sending and receiving areas, conflicts along existing socio-economic fault lines and other supplementary conditions such as political instability, economic underdevelopment and overreliance on environmental resources. However, climate-induced migration does not necessarily lead to conflicts and can benefit receiving areas through labour force and tax base.

In his study, the author examined samples of climate-induced migration in the most affected areas, exploring their correlation with potential conflict. Of 38 cases of environmental migration, conflict in the receiving areas was present in 19 cases, while only three cases had an interstate character, including migration episodes from El Salvador to Honduras between the 1950s and 1980s. A critical commonality in cases where conflict occurred was the underdeveloped character of receiving areas and high dependence on the environment for livelihood. Moreover, ethno-religious differences and competition over scarce resources further exacerbated conflicts (Reuveny, 2007, pp. 662-668). This further suggests that NTCA countries, where agriculture plays a significant economic role, may be more prone to conflict in the event of increased migration within their areas. The German Advisory Council on Global Change (WBGU) predicts even more conflicts related to sudden disasters such as storms or floods in the future, and Central America,

with weak economic and political capacities, is among the regions at risk, which impedes adaptation and crisis management (Kolmannskog, 2008, p. 20).

5. Historical Analysis of Central American Migration

To assess whether climate change has assumed a growing role in driving migration from the NTCA study area, it is essential to situate the contemporary migratory patterns and the interplay of factors causing migration within their historical context.

As explained in the theoretical part, transnational social networks shape patterns of international migration flows. Such patterns are forged through the export of capital from core nations, bolstered by control and political influence exerted by the government of the advanced capitalist state, which reinforces the bilateral dominant-dependent relationship between the core and the peripheral country (Hamilton and Chinchilla, 1991, pp. 76-79). Such ties have been established between the USA and the Central American region over the past decades of regular military interventions of the USA in the region, overthrowing elected governments and strengthening dictatorships during the 1900s to promote their own economic interests and profits through the running of mining and banana companies at the expense of the socioeconomic conditions of Black and Indigenous populations. A case in point represents the support of the US military for the 2009 coup d'état in Honduras, which led to the destabilisation of the country for over a decade. Similar interventions occurred in Guatemala and El Salvador, where the USA orchestrated several coups to destabilise the countries and ensure that their own economic interests were protected. Central American migration is rooted in this long history of military, political, economic and cultural influence, causing conflicts and economic hardship, but also ties between the regions, which made the USA the preferred international destination thanks to existing links to friends, employers and family (Abrego and Menjivar, 2023, p. 233).

5.1. Trends in Central American Migration

Early migration from Central America to the USA remained limited until the mid-twentieth century, constrained by immigration quotas limiting affecting the Western Hemisphere. Numbers gradually increased during wartime labour recruitment to over twenty-one thousand, and doubled between 1951 and 1960. Internal migration patterns dominated in the early twentieth century, driven by the introduction of two primary export crops, in particular, coffee and bananas. Economic restructuring associated with export-oriented agriculture produced cyclical patterns of rural migration, with smallholders moving seasonally between subsistence farming and plantation labour, often across

borders. Besides economic factors, political situations and events such as repression and upheavals further motivated migration (Hamilton and Chinchilla, 1991, pp. 81-85).

A decisive shift occurred from the mid-1960s onwards. Legal admissions doubled between 1961 and 1970, with admissions exceeding one hundred and thirty-four thousand during the 1970s, while undocumented migration rose even more sharply. By the late 1970s, migrants increasingly fled political repression, violence, and economic deterioration rather than pursuing purely labour-oriented migration. Political upheavals, increased governmental repressions, and militarisation of Central American countries supported by the USA further worsened the economic situation and substantially increased migration flows (Hamilton and Chinchilla, 1991, pp. 89-94).

Civil wars and political instability in the studied countries set off significant migratory flows to the USA, particularly in the 1980s and 1990s. Over 215,000 Salvadorans seeking asylum in the USA received legal permanent residence (LPR) status in the 1980s, and with a further increase in the following decades. Similarly, Guatemala experienced a mass exodus of asylum seekers during the 1980s and 1990s, with rising legal resident admissions since 2001 due to the adoption of the Nicaraguan Adjustment and Central American Relief Act (NACARA) in 1997. Migration from Honduras was gradually growing in the 1980s and 1990s in light of increasing poverty and unemployment, exacerbated by Hurricane Mitch in 1998. Around 66,000 Hondurans received Temporary Protected Status (TPS) following the disaster, with family sponsorship as the primary way for Hondurans to obtain LPR (Tienda and Sanchez, 2013, pp. 57-58).

Another factor contributing to the increase in migration is the modernisation of economies through the introduction of mechanised agriculture, which decreased labour demand and led to a shift in land tenure, with peasants' land being taken over by landowning oligarchy, moving from subsistence farming to cash crops and livestock. The increased dependence on capital markets meant that the 1970s inflation had a greater effect on the economies. The complexity of the situation and processes across different spheres of life manifest themselves in economic, political, and social reasons, acting as 'push' factors for migration. On the other hand, rapidly growing service industries in the USA act as 'pull' factors for the migration of unemployed populations and those working in precarious conditions in Central America (Hamilton and Chinchilla, 1991, pp. 90-91).

Over the five decades from 1960 to 2010, the Central Americans increased their share of all Latin American immigrants in the USA from about six per cent in the 1960s to around 15-16 per cent

since the 1990s. The immigration trend numbers are imperfect, as immigrants are in different situations, ranging from LPRs to refugees and unauthorised migrants (Tienda and Sanchez, 2013, pp.52-55).

In terms of asylee approval rates, Central Americans were granted refuge only in a low number of cases compared to other nationalities, such as Cubans or Nicaraguans, mainly due to the US authorities' refusal to take responsibility for fueling the conflicts in Central America over the years (Abrego and Menjivar, 2023, p. 238). Following natural disasters in the 21st century, over 70,000 Honduran and 229,000 Salvadoran citizens benefited from Temporary Protected Status (TPS). The number of unauthorised migrants has grown since 1960, with over three-fourths of undocumented residents in the USA being from Latin America. US immigration policy has increasingly focused on border enforcement, penalties for unauthorised entry and visa overstay since 1986 (Tienda and Sanchez, 2013, pp. 58-60).

In the following, we will focus primarily on periods of increased and massive migratory flows from NTCA countries to the USA, taking a closer look at the causes and factors underlying these movements.

5.2. Economic Drivers

All three studied countries are former Spanish colonies that gained independence in the early nineteenth century. Despite formal autonomy, Indigenous populations and poor mestizos continued to be dispossessed of land to support export-oriented production of a limited range of agricultural commodities. The resulting land concentration supplied cheap labour to export agriculture and was sustained by the interests of foreign investors, corporations, and land-owning elites. Labour unrest and demands for redistribution were repeatedly suppressed by military interventions, including the involvement of foreign powers (Abrego and Menjivar, 2023, p. 234).

Economic reforms and foreign investments expanded in the 1960s and 1970s, but disproportionately benefited elites. Rising inflation and declining real wages during the 1970s further eroded livelihoods among vulnerable populations. Attempts at land reform and labour mobilisation were met with military violence, culminating in armed conflicts, i.e. in El Salvador (1979–1992) and Guatemala (1970–1996) (Abrego and Menjivar, 2023, p.234).

In the post-conflict era in the mid-2000s, neoliberal reforms intensified economic insecurity. Adopting the Dominican Republic-Central America-United States Free Trade Agreement (CAFTA-DR) in 2005, subsequently ratified by Central American countries, reinforced extractivist development models and weakened labour protections, while large-scale mining, hydropower, and agro-industrial projects displaced rural and Indigenous communities. These processes contributed to environmental degradation and reinforced migration as a survival strategy rather than an economic opportunity. (Abrego and Menjivar, 2023, pp. 234-235).

5.3. Political Drivers

The studied region has a long history of resistance against ruling elites and violent dictatorships, as well as struggles over land and resource distribution, which were militarily suppressed with support from the USA during the 1900s. These interventions intensified in the form of military aid and paramilitary training, while the Cold War fear of Communism contributed to violent civil conflicts in El Salvador and Guatemala, resulting in large-scale displacement and loss of life. By 1984, around 500,000 Salvadorans had fled to the USA, and approximately 1.5 million Guatemalans were displaced, mainly to southern Mexico and the USA. Honduras was likewise affected through its use as a US training base and the 2009 coup, which further destabilised the country and increased emigration.

Despite the end of the armed conflicts, high crime rates and securitised response — often supported by US investments — continued to fuel violence, while social spending on health, education, and labour remained insufficient. Persistent poverty and structural violence have therefore continued to drive significant emigration, particularly from Honduras (Abrego and Menjivar, 2023, pp. 235-236).

5.4. Social Drivers

Social drivers of migration are closely linked to institutional fragility. Weak education systems, inadequate healthcare, and dysfunctional justice systems have hindered post-conflict recovery. As a consequence, former combatants struggle to overcome traumas, lack opportunities to integrate into civilian life and tend to turn to criminal activities instead. Deportation of young people exposed to gang violence in the USA and the shortage of schooling and psychological services in their home countries make them turn to the protection offered by gangs. Furthermore, the countries face poverty, corruption, and gang violence, with high homicide rates driving mass

migration. Gang violence is often quoted as the main reason for migration by refugees. While gangs directly threaten personal security, they are symptoms of broader social dislocation shaped by economic marginalisation, post-war trauma, and historical US intervention (Abrego and Menjívar, 2023, p. 236).

5.5. Demographic Drivers

El Salvador, the smallest and most densely populated country in Central America, is undergoing a demographic shift characterised by slower population growth, declining youth cohorts, and population ageing. Fertility has fallen from approximately six children per woman in the 1970s to the replacement level due to expanded family planning. Migration increased during and after the civil war (1979–1992) and intensified in the 1990s and 2000s following economic decline, natural disasters such as Hurricane Mitch (1998) and the 2001 earthquakes, and family reunification. Today, at least 20 per cent of Salvadorans live abroad, with remittances playing a key role in poverty reduction (Central Intelligence Agency, 2024a).

Guatemala is characterised by extensive poverty, weak health and education outcomes, and high fertility, particularly among Indigenous communities. As the most populous and youngest country in the region, with half of its inhabitants under nineteen, it experiences rapid population growth. Lack of economic opportunities, political instability, and natural disasters have driven sustained migration to neighbouring countries, the USA and Canada, especially during the civil war era between 1960 and 1996 (Central Intelligence Agency, 2024b).

Honduras ranks among the poorest nations in Latin America, with almost half of its population living below the poverty line and one of the lowest per capita incomes in the region. Structural weaknesses in education, one of the world's highest homicide rates and continued population growth of around 1.2 % annually — particularly among rural and impoverished communities — contribute to emigration. Limited non-agricultural employment and an expanding young adult population further reinforce migration, with remittances accounting for roughly one-fifth of GDP (Central Intelligence Agency, 2024c).

The graphic below displays some of the most relevant demographic characteristics in comparison for all three countries. In particular, it shows that almost half of the population in Guatemala, i.e. 47 per cent, lives in rural areas. The percentage is slightly lower for Honduras, where 40 per cent live in rural areas. It is noteworthy that rural areas depend on agricultural production and are most

vulnerable to slow-onset climate change processes. On the other hand, El Salvador is the most urbanised country, with 75 per cent of the population living in cities. Moreover, as shown by the relatively low median age across all three countries, young adults constitute a significant proportion of inhabitants. Indicators on youth unemployment were added to the graphic below to highlight the high levels of unemployment, which often act as migration drivers, as will be demonstrated in more detail when dealing with migration drivers in each country. All three countries are characterised by significant poverty levels, with the Guatemalan population being the most impoverished.

Figure 5 Demographic Drivers of Migration for Honduras, Guatemala, El Salvador



Source: Own Presentation Based on Figures from Central Intelligence Agency (2024a, 2024b, 2024c) and World Bank

Public health challenges in Central America are connected to food insecurity and changing climatic conditions, directly affecting livelihoods and migration decisions. Malnutrition — affecting 16.6 per cent of children under five, the highest prevalence in the Americas — results in stunted growth and long-term losses in cognitive development, educational attainment, and productivity, thereby constraining economic opportunities. Low school completion rates, particularly among low-income and marginalised communities, further limit adaptive capacity and increase reliance on migration as a coping strategy.

Climate change intensifies these pressures through rising temperatures, heat-related illnesses, and the prevalence of vector-borne diseases, such as dengue and the Zika virus, while flooding contaminates water supplies in vulnerable regions. Concurrently, drought negatively affects agriculture, affecting between 20 and 40 per cent of the population dependent on the sector, and reinforcing migration as a response to deteriorating living conditions (Angelo, 2022, pp. 6-8).

5.6. Environmental Drivers

Environmental factors have only recently been systematically incorporated into migration research on Central America. A review by the IOM identified 228 studies on migration resulting from disasters and climate change in the studied area, with Guatemala being the most researched country. Across the literature, climate change, droughts, hurricanes, and floods are consistently identified as key stressors that interact with other challenges, such as poverty, violence, and food insecurity, reinforcing both internal and international movements (Escribano, 2021, pp. 5-6).

Among slow-onset processes, food insecurity has emerged as a particularly significant driver, given the NTCA's high dependence on agriculture. Droughts between 2014 and affected more than half a million families, while by 2021, the number of food-insecure people reached a shocking high of 8 million. Climatic pressures — irregular rainfall, rising temperatures, biodiversity loss, water scarcity, prolonged forest fires, and outbreaks of plant/tree diseases—have substantially undermined agricultural production. A case in point represents the spread of CLR fungus, which reduced Guatemala's coffee yields by 57 per cent during the 2012-2013 harvest season, while 95 per cent of coffee-producing households reported climate-related production losses (Angelo, 2022, p. 5; Escribano, 2021, p. 6).

Sudden-onset natural hazards such as hurricanes and floods further intensify vulnerability by disrupting livelihoods and food systems, often triggering displacement and reinforcing migration

towards the USA. One of the US policy responses to increased migratory flows due to natural disasters was the introduction of Temporary Protection Status for affected populations, further elaborated below.

5.7. Intervening Obstacles vs Facilitators

5.7.1. Legal Framework

Despite extensive economic and military involvement by the USA in Central America, the US immigration policy remained quite hostile towards immigrants and refugees from this area. Throughout the 1980s civil conflicts, Central Americans fleeing violence were predominantly denied asylum and classified as economic and undocumented migrants instead, seen through the prism of threatening communist expansion. As a result, only an insignificant percentage of Central Americans were granted asylum protection, but thanks to a successful class action lawsuit challenging discriminatory practices, Guatemalans and Salvadorans were permitted to reapply for asylum, raising approval rates to around 18 and 28 per cent, respectively in 1992 (Abrego and Menjívar, 2023, pp. 237-238).

Persistent legal insecurity has subjected Guatemalans, Salvadorans, and Hondurans to heightened immigration enforcement, detention and deportation, especially after the Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) of 1996. Latino men from the above countries constitute a disproportionate share of the detained population (Abrego and Menjívar, 2023, p. 238).

As a result of pressure from immigrant rights organisations in the USA, the government introduced and renewed the TPS in 1990 for Salvadorans and later extended it following environmental disasters in 2001, TPS was also granted to Hondurans after hurricanes in 1999. Nevertheless, Guatemalans were never granted TPS, despite the long genocidal civil war and the involvement of the US government, and repeated natural disasters (Abrego and Menjívar, 2023, p. 238-239).

Across administrations, US policies have largely failed to recognise the structural violence and humanitarian needs driving Central American migration. Despite the United Nations recognition of asylum claims — particularly among women and children — the Immigration and Customs Enforcement Agency (ICE) under both Obama and Trump's administrations framed NTCA migrants as national security threats.

Furthermore, the policies implemented led to the expansion of family detention centres as a response to mass migration in 2014 and the Zero-Tolerance Border Policy, resulting in the forced separation of children from their parents. Attempts to weaken the Flores Settlement Agreement (Flores), which provides guidelines for how to protect and treat children in federal custody, had disastrous consequences for child detainees, leading to deaths in detention, especially among Mayan children from Guatemala. The persistently precarious living conditions of Central Americans who settled in the USA during the 1980s and 1990s reflect the long-term effects of this legal marginalisation (Abrego and Menjívar, 2023, p. 239).

5.7.2. Social Networks

Despite the unfavourable legal framework, the Central American population in the USA has grown substantially. Between 1980 and 2000, the Salvadoran and Guatemalan populations increased by 760 per cent and 642 per cent, respectively. By 2019, approximately 2.9 million Central Americans resided in the USA, rising to 4.6 million when including US-born individuals, while their share increased from 0.5 per cent in 1960 to 7.6 per cent in 2009. Although Guatemalans and Salvadorans account for two-thirds of this population, migration from Honduras has increased since 2010, particularly following the 2009 coup and escalating violence. Recent census data reveal a doubling of the Central American population in eighteen US states between 2000 and 2009 (Abrego and Menjívar, 2023, pp. 239-240).

These trends have produced sizeable transnational communities that strengthen ties between sending and receiving countries. Migrant-led businesses, organisations and institutions, such as the Central American Resource Center (CARECEN) and the National TPS Alliance, facilitate integration, provide legal support, and advocate for migrant rights, thereby lowering migration costs and reinforcing onward migration (Abrego and Menjívar, 2023, p. 241). International migration from NTCA countries to the USA is further driven by family reunification, which has increased to at least four million, marking a more than tenfold increase since 1980 (Angelo, 2022, p. 16).

5.7.3. EU's role in the NTCA region

It should be noted that there are numerous other actors on the international stage that also affect the studied region with respect to migration trends. In particular, the EU's influence since the San José Process in 1984 has focused on the institutionalisation of EU-Central America cooperation, peacebuilding, democratisation, trade, and development, with a recent shift towards climate,

sustainability, and migration governance. In contrast to the US's focus on security concerns and restrictive migration policies, the EU has positioned itself as a normative power, promoting regional integration and bi-regional political dialogue (Bonilla, A. and Sanahuja, J.A., 2022, pp. 49, 74). This cooperation was institutionalised through instruments such as the Central American Integration System (SICA), which encompasses all the studied countries and has made the EU its most significant extra-regional partner. Through a multilateral approach, cooperation has expanded into areas such as disaster risk reduction, climate change adaptation, and migration governance, addressing structural drivers of displacement. However, coordination between SICA's regional agendas and national priorities remains limited, and institutional capacity for autonomous implementation continues to be weak (European Commission, 2022, pp ii-vi).

Through successive regional and bilateral development programmes — including EU support for the Dry Corridor and resilience initiatives — the EU has sought to address the root causes of migration, such as poverty, food insecurity, and vulnerability to climate shocks. Within its 2014–2020 regional cooperation framework, the EU prioritised security, poverty reduction, and sustainable development to mitigate the structural drivers of displacement (Gómez Ramírez, 2018, p. 10). In contrast, US strategies present a more complex mix: though the administration publicly promotes a “Root Causes Strategy” (e.g. through job creation, food security, and local development support) as part of its migration framework, much of its implementation remains heavily weighted toward deterrence, border control, and conditional assistance (Meyer, 2022; Bermeo & Leblang, 2021, pp. 2–4).

6. Case Studies

6.1. Honduras

Since 1980, emigration from El Salvador, Guatemala, and Honduras has been the main driver of growth in the Central American-born population in the USA. In 2021, around 86 per cent of Central Americans living in the USA were born in one of these three countries (see table below). Among them, Hondurans recorded the most rapid growth, increasing by 47 per cent between 2010 and 2021, followed by Guatemalans (33 per cent), and Salvadorans (17 per cent) (Ward and Batalova, 2023).

To explain these migratory patterns in recent decades, the next section applies Black et al.'s multi-level framework to examine how political, economic, and social drivers interact across macro-, meso-, and micro-levels in Honduras, with particular attention to the role of climate change in shaping household-level migration decisions. Drawing on relevant literature, the

analysis identifies key migration drivers and intervening facilitators and obstacles. In the second step, Perch-Nielson's conceptual model is employed to visualise the climate change-related migration mechanisms across all three case-study countries.

Honduras represents a critical case for analysing climate-induced migration, as it combines extreme environmental vulnerability with structural political and economic fragility. While all NTCA countries are affected by climate stressors, Honduras stands out due to the cumulative effects of recurrent natural disasters, weak institutional capacity, and high dependence on climate-sensitive livelihoods.

Figure 6 Number of Immigrants in the USA from Selected Countries

Country	Number of Immigrants	Share (%)
Total	3,820,000	100%
El Salvador	1,418,000	37.1%
Guatemala	1,107,000	29.0%
Honduras	768,000	20.1%
Nicaragua	257,000	6.7%
Panama	113,000	3.0%
Costa Rica	95,000	2.5%
Belize	52,000	1.4%
Other Central America	11,000	0.3%

Source: Migration Policy Institute (MPI) tabulation of data from the U.S. Census Bureau 2011 ACS in Ward and Batalova, 2013

6.1.1. Environmental Drivers

According to the Global Climate Risk Index (1997-2006), Honduras ranked as the most climate-vulnerable country worldwide, when both economic and social impacts are considered. This ranking was largely driven by the devastation caused by Hurricane Mitch in 1998, which killed over 10,000 people, destroyed over 70 per cent of crops, affected nearly one-third of arable land, and severely damaged watersheds and groundwater systems. Subsequent extreme weather events, such as the tropical depression in 2008, further undermined agricultural production, particularly in certain departments. Climate vulnerability is especially pronounced among hillside producers, landless individuals, coffee growers, and cattle ranchers. Beyond individual disasters, climate change in Honduras manifests through systematic shifts in temperature and precipitation patterns. Rising temperatures — most pronounced in May and June — and declining rainfall,

especially between November and April, disrupt the crop cycles, particularly in the valleys already prone to heat and water stress. The south and southeast regions are expected to face the greatest climate-related risks due to the combined effects of increasing temperatures and declining precipitation (Ordaz et al., 2010, pp. 10-11). Together with the western part of Honduras, these areas from CADC, covering around 21 per cent of the country, and representing the zone most affected by climatic variability (World Food Programme, 2017, p. 7).

Climate change impacts in Honduras thus unfold through both rapid-onset and slow-onset processes, often linked to the ENSO effect. Among the rapid-onset events are intense hurricanes and floods, which have devastating impacts on crops, housing, and infrastructure, leading to substantial mortality and displacement. Hurricanes Eta and Iota in November 2020 exemplify this dynamic, causing more than 100 deaths, 300,000 displaced people, and an 80 per cent loss in agricultural production (Center for Gender & Refugee Studies, 2023, pp. 2-3).

At the same time, slow-onset processes such as increasing drought severity, irregular rainfall, and gradual sea level rise have cumulative effects on livelihoods. Consecutive droughts beginning in 2014 led to losses of 96 per cent of the corn crop and 87 per cent of bean harvests, while sea-level rise contributes to soil erosion and the contamination of freshwater resources. These processes intensify food insecurity, water scarcity, erode adaptive capacity and reinforce migration and displacement pressures over time (Center for Gender & Refugee Studies, 2023, p. 3).

Despite the scale of these impacts, climate change entered mainstream migration discourse relatively late. The term Dry Corridor gained prominence only after 2008, with academic attention intensifying following the 2014-2016 drought and the outbreak of CLR during the 2012-2013 harvest season (Reichman, 2022, p. 6). A 2017 study by the United Nations World Food Programme provided empirical support for the climate–migration link, identifying a positive correlation between drought exposure in the Dry Corridor and food insecurity, emigration, and remittance dependence. Nearly half of the households interviewed for the study were food insecure, while 61 per cent received remittances and drought exposure increased the likelihood of migration by 1.5 per cent for households, as reflected in the apprehension numbers of the US authorities (World Food Programme, 2017, p. 16).

Sector-specific research further highlights these dynamics. Studies on the Honduran coffee industry document how excessive rains and recurrent droughts undermine agricultural productivity in the NTCA area. Although such analyses do not always directly link climate change

to migration, they demonstrate how climate-induced income losses — combined with declining coffee prices in the early 2000s — prompted migration (Reichman, 2022, p. 6).

More recent quantitative research by Bermeo and Leblang (2021, p.1) advances this analysis by demonstrating the interaction between climate change and violence. Using US apprehension data for Honduran families between 2012 and 2019, alongside rainfall variability and homicide rates, the authors find that reduced precipitation is associated with increased migration, with this effect amplified in regions experiencing higher levels of violence. This underscores that climate change in Honduras does not operate as an isolated migration driver, but rather as a force multiplier that intensifies existing structural and security-related pressures.

6.1.2. Political Drivers

Honduras is plagued by widespread corruption, which has significantly undermined trust in government and public institutions. Regional experts suggest that sustained corruption and declining confidence in political reform constitute important migration drivers, as perceptions of immobility and institutional failure reduce expectations of improved living conditions. These dynamics are rooted in prolonged political instability since the 2009 coup d'etat against leftist President Manuel Zelaya and were reinforced by a decade of the National Party (*Partido Nacional de Honduras*, PNH) rule, characterised by allegations of corruption, election irregularities, and links between political elites and organised crime. Public disillusionment intensified during this period, with satisfaction with democracy declining from 66 to 36 per cent between 2010 and 2019 according to Vanderbilt's Americas Barometer (Corson and Hallock, 2021).

Institutional weaknesses became particularly visible during the COVID-19 pandemic, when strict government restrictions disproportionately impacted the poorest populations, leading to widespread unemployment and food insecurity. Government initiatives to mitigate these impacts were largely ineffective, as corruption — including the misappropriation of funds for health infrastructure — undermined public health and economic relief initiatives (Corson and Hallock, 2021).

State incapacity was further exposed by the government's inadequate and disorganised response to the damaging impacts of hurricanes Eta and Iota by the end of 2020. Beyond the substantial loss of life and displacement, the disasters caused around 2 billion USD in economic damage — equivalent to 8 per cent of GDP — deepening the economic hardship. These compounded crises translated into heightened migration aspirations, with a January 2021 CID Gallup poll indicating

that 41 per cent of Hondurans aged 25-39 would migrate if they had the necessary resources (Corson and Hallock, 2021).

The election of President Xiomara Castro of the left-wing Liberty and Refoundation (LIBRE) party in January 2022 has not altered these dynamics. Honduras continues to face systematic challenges such as corruption, political interference in the justice system, persistent poverty and serious human rights violations, notably lethal attacks against environmental defenders (Human Rights Watch, 2024b).

Environmental governance failures further intersect with political and economic drivers of migration. Weak state regulation has enabled the extensive issuance of environmental licenses and the inadequate monitoring of extractive industrial projects, including mining, palm oil plantations, and logging. These projects degrade ecosystems by destabilising riverbanks, increasing susceptibility to floods and droughts, contaminating water sources and monopolising arable lands. Communities affected by such projects often face displacement, while Honduras has become one of the most dangerous countries for environmental defenders globally. Security forces, including police and military units supported by US financial aid, have repeatedly been implicated in violent repression of environmental activism (José Méndez, 2020, pp. 438-440; Center for Gender & Refugee Studies, 2023, pp. 4-5).

International efforts to address migration's root causes have prioritised anti-corruption and democratic governance through conditional cash transfers directly to civil society organisations and investments in economic development projects. However, some externally funded projects have themselves contributed to environmental degradation and community displacement. At the same time, regional cooperation and border enforcement have intensified to prevent migrant caravans from reaching the US border (Corson and Hallock, 2021).

It can be concluded that the effects of corruption, pandemic mismanagement, and inadequate disaster response exposed deep institutional dysfunction, reinforcing public dissatisfaction and mistrust. These conditions have strengthened migration as a response to the persistent political, economic, and environmental insecurity.

6.1.3. Economic Drivers

Throughout the 20th century, Honduras experienced a significant economic transformation, shifting from an agrarian to a manufacturing economy. Nevertheless, about half of its 8 million inhabitants continue to live in rural areas and depend on semi-subsistence agriculture. Trade

liberalisation and the establishment of free trade zones, alongside agreements such as CAFTA-DR, facilitated export diversification from the late 1960s onwards, expanding beyond bananas to include beef, cotton, and sugar. Compared with other Latin and Central American middle-income countries, Honduras developed a relatively large manufacturing sector, predominantly textiles, with efforts to diversify further. High levels of foreign investments in manufacturing and telecommunications, combined with the country's strategic location and access to deep-water ports, constituted important economic assets (Hernandez Ore et al., 2016, p. 1).

Despite these structural strengths, economic development has been highly uneven. Poverty remains widespread, particularly in rural areas, where almost 80 per cent of Hondurans lived on less than 7 USD per day in 2021. Educational outcomes further constrain economic mobility: illiteracy stood at almost 14 per cent in 2023, while school attendance rates among adolescents dropped sharply, with only 56 per cent of children aged 12-14 and 29 per cent aged 15-17 enrolled in education. In this context, remittances have become a central pillar of the economy, accounting for 27 per cent of GDP in 2022, underscoring both economic dependency and the structural role of migration (Human Rights Watch, 2024b).

Honduras' persistent poverty is the result of long-term, slow per capita growth — averaging 1.2 per cent between 1960 and 2014, well below the 3.1 per cent average of low and middle-income countries — combined with high levels of inequality. The labour market is characterised by low participation rates, a small formal sector generating only 20 per cent of jobs, and the highest self-employment rates in Central America. These structural conditions limit access to physical and human capital for large segments of the population, constraining inclusive growth and reinforcing vulnerability (Hernandez Ore et al., 2016, pp. 2-3).

Economic fragility is further intensified by exposure to external shocks, particularly among resource-poor agricultural households. Climate-related events such as ENSO-induced drought in 2014 and the spread of CLR in 2012 significantly affected coffee production and the livelihoods of small farmers. These impacts were amplified by the swift expansion of coffee production between 2010 and 2017, during which Honduras became the sixth-largest coffee producer worldwide. Production growth can be attributed to the expansion of cultivated land by 24 per cent — much of it within the Dry Corridor — alongside slight technological improvements and a vertical spread of coffee production to higher elevations better suited for coffee. As 84 per cent of production was in the hands of small and medium-sized farmers, the outbreak of CLR disease had particularly severe effects. In addition, many impoverished households combine coffee

harvesting with subsistence farming in low-lying areas; when the 2014 drought led to crop failures, these households faced acute food insecurity and hunger (Reichman, 2022, pp. 6-8).

Contested development strategies have further exacerbated economic and environmental vulnerability. Initiatives such as the Clean Development Mechanism (CDM), designed to promote environmentally sustainable growth by monetising ecosystem protection, have often produced the opposite effect. In practice, CDM projects have contributed to land dispossessions and human rights violations of indigenous communities. The expansion of the palm and oil processing facilities by Grupo Dinant — framed as a carbon-offsetting initiative — resulted in forced evictions and violent repressions. Despite rulings by the Inter-American Commission on Human Rights (IACHR), the Honduran government has failed to restore ancestral rights, highlighting persistent governance failures (José Méndez, 2020, pp. 439-440).

Thus, Honduras's economic structure, heavy reliance on climate-sensitive agriculture, limited employment opportunities, persistent poverty and unequal development, heighten vulnerability to external shocks such as natural disasters and environmental degradation. Rather than mitigating these risks, certain development and climate-mitigation initiatives have intensified environmental degradation and displacement. Together, these dynamics reinforce outmigration as a rational response to sustained economic insecurity and constrained adaptation options.

6.1.4. Social Drivers

As one of the most violent countries worldwide, insecurity and violence are the third most stated reasons for emigration from Honduras, ranking right after economic hardship and family-related reasons. In 2022, 3,661 homicides were recorded, corresponding to a rate of 38 per 100,000 inhabitants. Between 2014 and 2023, an average of approximately 52,000 migrant returnees were registered yearly, with approximately 6 per cent identifying violence and insecurity as their main reason for migration. Reported forms of victimisation most commonly included: threats, killings, restrictions on mobility, injuries and extortion. Beyond individual migration decisions, violence has generated substantial internal displacement. The National Commissioner for Human Rights (CONADEH) in Honduras reported an average of 2,011 people affected each year by forced displacement from 2016 to 2021, with a peak in 2019. An inter-institutional study found that by 2018, over 58,000 households and more than 247,000 people had been displaced due to violence. The social impact of displacements is unevenly distributed: between 2014 and 2018, 43 per cent of those affected were under 18 years old, and women and girls accounted for six out of

ten displaced individuals within affected households (Programa de las Naciones Unidas para el Desarrollo, 2023; Human Rights Watch, 2024b).

The economic burden of violence is substantial, with estimated costs amounting to around 14 per cent of GDP. High levels of violence are closely associated with social, political and economic exclusion, compounded by weak institutional structure. Government interference in criminal and civil justice systems, limited access to legal protection, and pervasive impunity undermine public trust and reinforce insecurity. These conditions disproportionately affect young people, for whom violence operates both as a direct threat and as a constraint on future opportunities, thereby increasing migration pressure (Banco Internacional de Reconstrucción y Fomento, 2022, pp. 17-18).

Social vulnerability is further intensified by persistent poverty, low educational enrolment, especially in rural areas, and limited employment prospects. A large youth cohort combined with insufficient access to secondary education increases exposure to migration and recruitment by criminal groups. The most vulnerable age group is 13-17, with approximately 70 per cent not enrolled in upper secondary education in 2018 (CES Chair of Education Systems, 2022, p. 36). Reflecting these structural deficits, the World Bank's Human Capital Index estimates that a child born in Honduras will achieve only 48 per cent of potential productivity, compared to a regional average of 56 per cent for Latin and Central America (Banco Mundial, 2024).

6.1.5. Household Level and Decision-Making

To capture the interplay between migration and climate at the local level, it is necessary to examine how households prioritise different drivers when making migration decisions. Household-level analysis highlights that migration rarely results from a single cause, but rather from the interaction of economic, social, and environmental pressures. A study by Cárdenas-Vélez et al. (2023, p. 6781), based on structured interviews in a climate-vulnerable region of the Central American Dry Corridor in the municipality of Nacaome, provides valuable insights into these dynamics. The findings indicate that while potential migrants primarily prioritise economic and social considerations, environmental factors operate as underlying stressors shaping these choices.

Nacaome represents a relevant case for examining climate-related migration dynamics, as recurrent droughts, land degradation, and high dependence on agriculture and fisheries characterise the area. These conditions contribute to elevated climate risk and a comparatively

high migration rate. The study employed semi-structured interviews, which asked respondents to rank migration drivers derived from existing literature, thereby capturing individual perceptions of migration decision-making (Cárdenas-Vélez et al., 2023, pp. 6784-6787).

Among the 53 interviewees, the majority were women (73 per cent) and household heads (63 per cent). Respondents reported predominantly medium to extreme poverty levels, low educational attainment, and high unemployment. Livelihoods were closely tied to agriculture, with 45 per cent engaged in the sector, while 25 per cent depended exclusively on remittances from emigrated family members. Economic factors, such as unemployment and limited job opportunities, were cited as the primary migration drivers by 38 per cent of respondents. Only 5 per cent associated migration with environmental events such as droughts and hurricanes, reinforcing the perception of environmental factors as secondary or indirect influences.

Migration outcomes further support this interpretation. . Of those who had migrated (34 per cent), most had moved internally (84 per cent), mainly to nearby municipalities. Economic insecurity remained the dominant driver for both men (73 per cent) and women (68 per cent), although gender differences emerged in secondary considerations: women emphasised family proximity and healthcare access, whereas men focused on living and fuel costs. In sum, the study finds no direct cause-effect relationship between climate change and migration decisions; instead, climate impacts shape migration indirectly by undermining livelihoods and employment opportunities (Cárdenas-Vélez et al., 2023, pp. 6794-6797).

This interpretation is consistent with broader anthropological research on the Dry Corridor. Reichman (2022) draws on studies such as William Durham's analysis of the Soccer War between Honduras and El Salvador in 1969, which uses an overpopulation narrative to attribute conflict and displacement to land scarcity driven by export-oriented agriculture. Similar work by Catherine Tucker and William Loker highlights how the expansion of coffee agriculture and cattle raising has intensified land scarcity, environmental degradation, and structural inequality among impoverished populations. Overall, such anthropological studies demonstrate that environmental shocks such as droughts, floods and storms are aggravated by socioeconomic factors, intensifying the vulnerability of communities and shaping migration outcomes rather than acting as isolated triggers (Reichman, 2022, p. 7).

6.1.6. Intervening Factors

Social networks and diasporic links constitute key facilitators of migration from Honduras. In 2021, approximately 86 per cent of Central Americans in the USA were born in one of the three studied countries, with Hondurans being the fastest-growing group since 2010. Around 1.3 million individuals identified as having Honduran ancestry or origin, underscoring the presence of a large and established diaspora (Ward and Batalova, 2023). Such communities play a critical role in facilitating both internal and international migration, as evidenced by the study of Cárdenas-Vélez et al. (2023, pp. 6794), in which migrants consistently reported relying on friendship and family networks to facilitate the move. Remittances sent by these communities further reinforce migration systems by sustaining household livelihoods in Honduras, while family reunification remains a primary legal pathway to permanent residence and citizenship; for instance, more than two-thirds of such immigrants used this channel for their US citizenship (Ward and Batalova, 2023).

Honduran emigration intensified notably in the late 1980s and 1990s, marking a shift from its earlier role as a recipient or transitory country. Hurricane Mitch in 1998 constitutes a major turning point, prompting the introduction of TPS status for Hondurans already present in the USA. However, eligibility was limited to those arriving before December 1998, covering approximately 75,000 Hondurans and excluding many affected by subsequent environmental and political crises. As a result, climate-induced migration linked to slow-onset events such as drought or fuelled by the political instability after the 2009 coup d'état, remained largely unaddressed, contributing to the growth of unauthorised migration. The Deferred Action for Childhood Arrivals (DACA) offered a partial legal measure for some young migrants, yet access remained highly selective (Ward and Batalova, 2023; Reichman, 2022, pp. 1-2).

At the same time, migration from Honduras is constrained by significant financial and logistical barriers. According to a joint report by the Migration Policy Institute (MPI), the United Nations World Food Programme (WFP) and other organisations, the average costs of hiring a smuggler to reach the USA range between 4,500 and 7,500 USD per person — an amount prohibitive for many households given widespread poverty (Migration Policy Institute, 2021). These costs immobilise the poorest households or force them to acquire debts from moneylenders (Reichman, 2022, p. 8). In response to both economic barriers and the risks associated with irregular migration routes, we have increasingly witnessed planned mass migratory movements in the form of migrant caravans. Starting in October 2018 and continuing into 2019 and 2020, multiple large migrant caravans, comprising thousands of Hondurans, including families and young adults, embarked on journeys towards Mexico and the USA. These movements reflect both the erosion

of individual migration options and the severity of conditions in sending communities, including poverty, violence, and environmental stress. Caravans were predominantly composed of young individuals aged 18 to 29, highlighting the demographic concentration of migration pressures (Organización Internacional para las Migraciones, 2021, pp. 12-13).

The table below summarises the elaborated migration drivers in Honduras, using the framework developed by Black et al. (2011), presenting environmental, economic, political, and social factors alongside intervening facilitators and obstacles.

Table 2 Migration Drivers in Honduras

Migration Drivers in Honduras

Based on Black et al. (2011) Conceptual Framework

MACRO LEVEL				MESO LEVEL	MICRO LEVEL
Environmental	Political	Economic	Social	Intervening	Household
1. Rapid Onset Disasters -hurricanes -floods	1. Corruption -misappropriation of public funds -involvement in illicit activities -permits for and non-monitoring of extractive industrial projects	1. Expansion of export industry at the expense of local communities -land dispossessions -human rights violations of indigenous communities	1. Violence and insecurity -fatalities, injuries -displacement -significant economic losses -recruitment of young people by criminal gangs	<u>Facilitators</u> 1. Social networks 2. Family reunification	1. Multifaceted nature of migration decisions
2. ENSO Effect – Slow Onset Climate Change Processes -increase in temperature -droughts -decrease in or excessive precipitation	2. Political crises and instability -lack of trust in government -political interference in separation of powers	2. Slow long-term per capita growth and high level of inequality -a large part of the population lacks access to physical and human capital -a significant part of economy represent remittances	2. Weak institutional structure -social, political and economic exclusion of populations -non-partiality of criminal and civil justice system	3. Two legal measures -Temporary Protected Status (TPS) in light of hurricane -Deferred Authorisation for Unauthorised Migrants (DACA) for youth	2. Prioritisation of economic and social factors -unemployment -a better quality of life -not enough income -job opportunities
3. Food insecurity -decreased agricultural productivity -malnutrition	3. Human rights offences such as deadly attacks against environmental defenders	3. High unemployment and poverty -formal sector responsible for only 20 per cent of jobs -highest self-employment rates -over half of the population lives in poverty	3. Weak educational system -low enrollment rate -low educational and productivity levels	<u>Obstacles</u> 1. Unauthorised migration due to absence of legal protection and measures	3. Environment as underlying factor -socioeconomic activities intensify vulnerabilities and environmental degradation -natural hazards destroy livelihoods
3. Outbreak and spread of crop diseases	4. Inadequate and disorganised disaster management	4. Negative impacts of Clean Development Mechanism (CDM) initiatives -forced evictions, killings		2. High cost of moving connected with high insecurities and danger	

6.2. Guatemala

The following section focuses on Guatemala as the second NTCA case study. As with Honduras, recent migration flows are analysed through the interaction of migration drivers, as per the model developed by Black et al., with particular attention to environmental stressors and their indirect effects on livelihoods and mobility decisions.

6.2.1. Environmental Drivers

Guatemala ranks among the world's most vulnerable countries to climate change. According to Germanwatch's Global Climate Risk Index, it placed 16th among the countries most affected by extreme weather events between 1999 and 2018 (United Nations Development Programme (UNDP), 2020). This vulnerability is compounded by high economic exposure: over 80 per cent of its GDP is located in areas at risk from natural hazards, including high-impact events such as earthquakes, volcanic eruptions and hurricanes, as well as low-impact events such as floods and landslides (World Bank Group, 2021). Major climatic shocks — ranging from major tropical storms like Agatha (2010), Tropical Depression (2011), hurricanes (i.e. Mitch in 1998, Stan in 2005, Iota and Eta in 2020), to earthquakes in 1976 and 2012 — have repeatedly caused significant economic losses, substantial damage to infrastructure, housing and people's livelihoods, often forcing households to incur debt and consider migration, particularly to the USA (Hernández, 2012, pp. 20-23; Schoening, 2022).

Structural vulnerability is heightened by Guatemala's socioeconomic profile. Nearly half of the population resides in rural areas, and about one-third depends on natural resources for their livelihoods. These livelihoods have already been weakened by unsustainable agricultural practices, overexploitation, and deforestation, leading to lower productivity. Climate change further intensifies these pressures: rising temperatures and increased rainfall variability reduce yields, particularly for subsistence farmers, who account for at least 40 per cent of the population. As in Honduras, Guatemala is strongly affected by the ENSO cycle. Given that 71 per cent of agricultural production is rain-fed and often takes place on steep erosion-prone terrain, exposure to drought, excessive rainfall and soil degradation is particularly high. These conditions increasingly constrain coffee production, one of the country's main export products (USAID, 2017, pp. 1-4). The 2009 drought illustrates these dynamics, with maize, beans and cassava losses ranging from 50 to 100 per cent, contributing to rising food prices and food insecurity (Hernández, 2012, p. 25). Between 2012 and 2022, agriculture accounted for around 10 per cent of the GDP

and 31 per cent of employment (Statista, 2024), underscoring the significance of climate change impacts on the population's livelihoods.

Periods of drought and food insecurity in the Dry Corridor have consistently coincided with increased emigration. While migration is often framed as a response to limited employment opportunities, recent research highlights the role of climate-induced agricultural stress in shaping these dynamics. A key example is the spread of coffee leaf rust in Guatemala and its impact on migration, as demonstrated in the study of Dupre et al. (2022), illustrating the nexus between climate change and migration.

CLR spread rapidly across Central America during the past decade, facilitated by rising temperatures and increased humidity, while poor farm management practices, including low fertilisation, further exacerbated its impact. In Guatemala, between 59 and 70 per cent of coffee-growing areas were affected in 2012, triggering a national state of emergency in 2013. Between 2011 and 2017, employment opportunities in the coffee sector declined by 33 per cent, driven by the combined effects of CLR and drought that began in 2014. Smallholder coffee farmers, who account for approximately 97 per cent of coffee producers and often lack access to capital and technological measures, were disproportionately affected, experiencing heightened food insecurity and livelihood loss alongside rising migration (Dupre et al., 2022, p. 2).

Based on survey data from ten CLR-affected communities in Eastern Guatemala between 2007 and 2016, Dupre et al. (2022) demonstrate a direct link between crop disease and migration. Nearly all surveyed households experienced CLR-related losses averaging 69 per cent, peaking at 71 per cent between 2010 and 2013. Importantly, 21 per cent of households experienced migration that would not have occurred in the absence of CLR. Both internal and international migration were observed, with the USA as the primary destination. Migration likelihood increased with the severity of crop losses but decreased among households with access to communication technology, as news updates may have provided information about limited opportunities elsewhere. The authors note important limitations, including restricted geographical coverage and underestimation of total migration, as only successful migration attempts were captured and repeated migrations within households were counted once (Dupre et al., 2022, pp. 5-11).

Complementary quantitative evidence is provided by Bermeo et al. (2022), who identify a strong correlation between rising apprehensions of Guatemalan families at the US border and the environmental stresses in rural areas between 2012 and 2019. During this period, apprehensions increased by 400 per cent, reaching 264,000 in 2019, compared to an annual average of 61,000

between 2012 and 2017. This surge correlates with a 136 per cent increase in the proportion of rural households migrating as family units and was closely associated with agricultural stress, linked to the droughts in 2014-2015 and 2018. Those administrative areas experiencing higher levels of agricultural stress consistently recorded higher apprehension rates, reinforcing the conclusion that recent climate change impacts observed in Guatemala in the past decade, such as droughts and crop diseases, have played a significant role in shaping migration to the USA (Bermeo et al., 2022, p. 1).

6.2.2. Political Drivers

In addition to environmental stressors, political instability and widespread corruption have contributed to Guatemala's emigration dynamics. International migration became more prevalent during and after the end of the 36-year civil war (1960-1996) in the late 1970s, initially driven by political repression and later sustained by the limited capacity of post-war institutions to address deep socioeconomic inequalities (Jonas, 2013).

Guatemala's migration patterns are closely related to its high ethnic diversity, particularly the marginalisation of indigenous Mayan and Ladino (mixed) populations. Historically subjected to discrimination, segregation, higher poverty levels, and persecution, Mayan populations were disproportionately affected by state violence during the civil war (Jonas, 2013).

Guatemala's violent civil war, the longest and most intense in Central America, produced two major migration waves. In the 1960s, repression and targeted threats led to the exile of opposition leaders, primarily to Mexico. A second, larger wave emerged in the late 1970s in the western Mayan highlands, where intensified counterinsurgency operations triggered mass displacement, mainly towards Mexico and increasingly to the USA. During the 1960s and 1970s, there were societal efforts to improve rural livelihoods through the formation of cooperatives, agrarian leagues, and church-led educational initiatives, mainly within Mayan communities, which fostered social mobilisation (Nolan-Ferrell, 2021). These initiatives, however, were interpreted by the Guatemalan army as evidence of insurgent Brutal counterinsurgency tactics, including scorched-earth campaigns and acts of genocide targeting the Mayan population, resulting in widespread human rights violations, mass displacement and cross-border flight. Economic precarity, underemployment, and the devastating 1976 earthquake further undermined livelihoods, reinforcing migration pressures. Although labour flows between Guatemala and Mexico predated the conflict, refugee movements during the civil war overshadowed them. Migration to the USA

peaked at 45,917 immigrants in 1989, and in 1992, Guatemalans represented the largest group of asylum seekers in the USA, highlighting the severity of the crisis (Jonas, 2013).

Political instability in Guatemala has been closely intertwined with US geopolitical and economic interests. The influence of the American-based United Fruit Company (UFCo), which controlled considerable parts of uncultivated lands, played a pivotal role in shaping US perceptions of the Guatemalan government. Agrarian reform initiatives were halted by a CIA-backed coup in 1954, which installed military governments aligned with elite and foreign interests.

US political and military support of these governments contributed to the refusal to recognise Guatemalan migrants as refugees during the war. Subsequent US immigration reforms in 1996, which expanded deportations of immigrants involved in crime or convicted, unintentionally contributed to the spread of gang violence upon return to Guatemala (Nolan-Ferrell, 2021).

In the postwar period, migration to the USA increased significantly, with the Guatemalan-born population exceeding 1.1 million by 2021, as shown in the figure 6 above. These flows cannot be explained by political instability alone but reflect the interaction of persistent poverty, unemployment, social violence, and the cumulative impacts of conflicts and climate-related stressors elaborated above (Jonas, 2013).

As in Honduras, postwar development strategies have further reinforced displacement dynamics. State support for extractivist megaprojects such as the construction of dams and hydroelectric developments implemented by foreign companies had frequently occurred at the expense of Indigenous communities, leading to land dispossession, repression, and forced displacement (Batz, 2020, pp. 1031-1032).

More broadly, Guatemala's state capacity remains limited. Weak political institutions, insufficient financial resources, and a lack of political will have constrained improvements in living conditions and service provision. Resistance from business elites to tax reform, aimed at raising public revenue to 12 per cent of GDP, has further restricted state capacity. These challenges are compounded by a dysfunctional judicial system, as evidenced by marred corruption investigations into three former presidents and vice presidents. Impunity and corruption continue to undermine governance and reinforce migration pressures (Jonas, 2013; Nolan-Ferrell, 2021).

6.2.3. Economic Drivers

Guatemala possesses significant structural potential for economic development due to its strategic location, abundant natural resources, and young, multi-ethnic population. As a gateway to the Mesoamerican market, the country benefits from access to both the Atlantic and Pacific Oceans, facilitating connectivity to external markets and attracting foreign direct investment. Guatemala is a major exporter of agricultural products, such as sugar and cardamom, and holds valuable mineral resources, which together contribute to its macroeconomic strength (Sanchez et al., 2016, p. 1).

Despite being the largest economy in Central America by population and maintaining relatively stable economic growth averaging 3.5 per cent between 2010 and 2019, this performance has not translated into a reduction in high poverty and inequality levels. As depicted in the above graphs, poverty affects approximately 59 per cent of the population, with estimates at above 55 per cent. Closely connected to the high poverty levels is the high child malnutrition rate, which affects around 47 per cent of children — among the highest rates globally — and is particularly severe in the poorest municipalities (The World Bank, 2024b). These indicators underscore the disconnect between aggregate economic growth and household-level well-being.

The disparity is rooted in Guatemala's long-standing agro-export development model, which has historically favoured large-scale production and reinforced extreme inequality. Since colonial times, land distribution has remained highly concentrated: approximately 2.5 per cent of the country's farms control nearly two-thirds of its agricultural land. Although reformist governments in the mid-20th century introduced progressive labour legislation, including a minimum wage, regulated working hours, and press freedom, these efforts failed to dismantle entrenched land concentration and elite control. Nevertheless, the 1945 Constitution laid the institutional groundwork for later redistributive initiatives, aiming to redistribute wealth and promote equality (Nolan-Ferrell, 2021; Carte et al., 2019).

Empirical research by Carte et al. (2019) demonstrates how extractivist and export-oriented agricultural policies, along with unequal land distribution, have gradually displaced smallholder farming households from rural areas. Limited access to land increasingly forces rural families to rely on rented or borrowed land, which is insufficient for subsistence. Restricted access to farming inputs further undermines productivity and exacerbates food insecurity. While migration emerges as a coping strategy, its outcomes vary: remittances mitigate hunger for some families, while food insecurity persists for others.

The roots of Guatemala's armed conflict (1960-1996) stemmed from these structural inequalities, including land rights issues, poverty, and racial and ethnic exclusion. In the postwar period, the market-oriented reforms — including the deregulation of finance, energy, and telecommunications, and the accession to CAFTA-DR in 2006 — failed to address these underlying issues. Following the adoption of the Peace Accord, market-based land reform primarily benefited the rural middle class but did not result in a meaningful land redistribution. Consequently, the agro-export model intensified, particularly in sugar cane, African palm, and rubber production. Although nearly half of the population resides in rural areas, approximately 27 per cent of such inhabitants remain landless and depend on rented or borrowed land, often insufficient to cover basic needs. These dynamics have sustained rural poverty, food insecurity, and heightened migration pressures, leading more Hondurans to migrate to the USA in the post-conflict period (Carte et al., 2019, pp. 3-4; Jonas, 2013).

Labour market conditions further reinforce these pressures. Post-war administrations have not prioritised the creation of stable, quality employment, resulting in the proliferation of precarious work, characterised by informality, low wages, instability, part-time arrangements, subminimum wage levels, and a lack of social benefits. Studies by the Guatemalan branch of the United Nations Development Program (UNDP) and the Bank of Guatemala indicate that the informal sector accounted for between two-thirds and three-quarters of the workforce from the 1990s into the early 2000s. Combined with one of the highest levels of socioeconomic inequality globally and the lowest Human Development Index ranking in Latin America — 131st out of 187 countries in 2012 — migration to the USA has increasingly been perceived as a survival strategy or a pathway to improved economic prospects (Jonas, 2013).

As a result, emigration has become structurally embedded in household livelihood strategies. Remittances now play a central economic role, accounting for approximately 19 per cent of Guatemala's GDP in 2022, further illustrating how migration both responds to and reproduces economic dependency (World Bank, 2024b).

6.2.4. Social Drivers

Social drivers reinforcing migration patterns are closely intertwined with the state's limited fiscal capacity and its inability to increase social spending. As early as 1950, Guatemala recorded the lowest tax revenues in Central America relative to its GDP, at 6.67 per cent, a structural weakness that persists despite modest increases over time. Consequently, social spending remains significantly below the Central American average. The substantial increase in poverty between

2000 and 2014, when an additional 2.8 million people fell below the poverty line — half fell into extreme poverty — highlights the failure to establish an effective social protection mechanisms (Sanchez et al., 2016, p. 5).

Educational inequality further widens social vulnerability. Rural residents attain, on average, only 3.7 years of schooling, compared to 6.2 years among urban populations. In 2006, disparities in sixth-grade reading scores between impoverished rural and urban middle-class students were the highest in Latin America. Limited access to education and basic services, especially for Indigenous communities, reduces labour market opportunities and constrains intergenerational mobility, helping explain why Guatemala's middle class constitutes less than 10 per cent of the population. Although school enrolment increased substantially by 76 per cent between 1960 and 2013, the overall participation rate remains below the Central American average, underscoring persistent structural barriers (Sanchez et al., 2016, pp. 22, 153-154).

These inequalities are deeply rooted in Guatemala's civil war legacy. The conflict resulted in an estimated 200,000 casualties, Indigenous communities accounting for 83 per cent of casualties, and led to widespread displacement and long-term neglect of rural and Indigenous regions in public services provision (Sanchez et al., 2016, p. 8). In the post-war period, social violence has persisted through high levels of crime, drug trafficking, and the coercive practices of organised crime networks and paramilitary organisations. Studies have shown that the high levels of coercion have compelled entire communities to participate in illicit economies, producing patterns of 'forced displacement from violence and crime' (Jonas, 2013).

Although homicide rates decreased after 2008, they rose again to 33.8 per 100,000 inhabitants in 2015, well above the Latin American average of around 25. Furthermore, Guatemala has recorded one of the world's highest rates of femicide, with over 6,500 reported cases between 2000 and 2011. High levels of violence not only drive displacement and migration directly but also undermine economic development by deterring business activities and investments, reinforcing the structural conditions that sustain outmigration (Jonas, 2013; Sanchez et al., 2016, p. 120).

6.2.5. Household Level and Decision-Making

At the micro level, the household migration decisions in Guatemala reflect the interaction between environmental exposure and economic vulnerability. Evidence from a study on rainfall variability, food insecurity, and migration in the rural community of Cabricán, Western Highlands, illustrates

how economic considerations dominate migration decisions while remaining closely linked to climate change.

Survey data of 136 households and expert interviews showed that 88 per cent of respondents lived below the extreme poverty line, although this figure does not account for subsistence food production. Agriculture, particularly the rain-fed maize 'milpa', constitutes the primary livelihood, with 66 per cent of surveyed households relying on the yearly harvest. A large majority of respondents (74 per cent) reported noticeable changes in rainfall patterns over the past two decades, including more frequent droughts, floods, and extreme weather events, which have directly affected crop production and food security. As a result of rainfall variability, 68 per cent of households experienced a significant decrease in food production, leading to secondary effects such as malnutrition, income shortages, rising input prices, and reduced livestock productivity, etc. Coping strategies during periods of scarcity included modifying food production, selling assets, reducing consumption, and seeking additional income sources, notably through remittances from migrated family members (Milan and Ruano, 2014, pp. 63-64).

Migration outcomes mirror these pressures. Among surveyed homeowners, 25 per cent reported having one or more migrants, with approximately 70 per cent moving to the USA. Economic reasons were consistently cited as the primary reason for migration, although these numbers may be higher due to underreporting linked to eligibility concerns for some governmental support programs. Crucially, focus group discussions demonstrated that while economic factors are foregrounded in migration narratives, they are themselves shaped by changing rainfall patterns and declining agricultural productivity. In highly climate-vulnerable, agriculture-dependent communities such as Cabricán, migration thus emerges as an indirect response to climate change, mediated through food insecurity and livelihood erosion rather than as a direct reaction to environmental events (Milan and Ruano, 2014, p. 66).

6.2.6. Intervening Factors

Although emigration from Guatemala to the USA increased significantly after the end of the civil war, sizeable migration flows were already present earlier. According to the US Census, approximately 226,000 Guatemalan immigrants resided in the USA in 1990. This number increased to 1,136,175 Guatemalan citizens living abroad by 2025, with 97 per cent located in the USA. As elaborated above, post-conflict migration was primarily driven by persistent economic hardship and facilitated by established social networks, which lowered the costs and risks of long-

distance movement (Smith, 2006). Evidence from an Inter-American Development Bank (IDB) study further suggests that family reunification became an important facilitator of migration: 16 per cent of interviewees arrived in the USA as minors to reunite with family members, making reunification the second most cited migration motive (Abuelafia et al., 2019, p. 14).

Legal and policy barriers, however, have strongly shaped migration pathways. During the civil war, the US administration denied approximately 98 per cent of Guatemalan asylum applications, largely due to foreign policy and economic interests rather than assessment of refugee status. This systematic exclusion led to a landmark class-action lawsuit, *American Baptist Church (ABC) v Thornburgh*, initiated in 1985 and settled in 1990. This settlement required the Immigration and Naturalization Service (INS) to review the asylum cases of Guatemalans and Salvadorans who had been denied protection for political reasons. While the agreement granted special procedural protections, it did not provide automatic legal status. Subsequent legislation, notably the NACARA of 1997, extended additional — but comparatively limited — benefits to those with ABC status, offering partial protection from immediate deportation without guaranteeing automatic legalisation (Jonas, 2013).

Attempts to secure broader forms of protection for Guatemalans have largely failed. Efforts to obtain TPS following major natural disasters, such as Hurricane Stan in 2005, were unsuccessful despite advocacy by the Guatemalan government and civil society organisations. This exclusion contrasts with the treatment of other Central American nationals and highlights the uneven and politicised nature of US immigration protection regimes (Smith, 2006).

The absence of accessible legal pathways has not reduced migration pressure but has instead channelled mobility into irregular forms. High poverty levels and unequal distribution of resources compel many Guatemalans to finance migration through high-interest loans, often using future crops, land, or other assets as collateral. By 2011, migration costs averaged around 6,000 USD, which is a very high expense for rural households. Restrictive US migration policies have also resulted in sustained deportations, with approximately 2,500 Guatemalans returned annually. For indebted households, deportation frequently triggers repeated migration attempts as migrants need to repay accumulated debts, reinforcing cycles of irregular mobility (Reichman, 2022, pp. 8-9; Smith, 2006; Milan and Ruano, 2014, p. 67).

At the same time, micro-level evidence complicates assumptions of migration as a preferred strategy. Milan and Ruano's study on rainfall variability, food insecurity, and migration (2014, p. 67) demonstrates that strong place attachment characterises many Guatemalan rural

communities, where households generally prefer to remain if viable livelihood options exist. Migration, therefore, tends to emerge as a last-resort risk management strategy when local opportunities are no longer sufficient to ensure survival.

Below is a visual summary of explicitly mentioned migration drivers in Guatemala based on the conceptual model of Black et al. (2011), presenting environmental, economic, political, and social factors alongside intervening facilitators and constraints. Similarly to Honduras, the main factors are depicted in random order.

Table 3 Migration Drivers in Guatemala

Migration Drivers in Guatemala

Based on Black et al. (2011) Conceptual Framework

MACRO LEVEL				MESO LEVEL	MICRO LEVEL
Environmental	Political	Economic	Social	Intervening	Household
1. Rapid Onset Disasters -high vulnerability to climate change -hurricanes -floods -volcano eruptions -earthquakes -landslides	1. Violent conflicts and political instability -36-year civil war (1960–1996) -repression of opposition -weak governmental structures	1. Agro-export model favouring large-scale production -unequal land distributions and unsuccessful redistribution attempts -forced reliance on renting or borrowing of limited land	1. Poor public services system -social spendings remain significantly below the Central American average -restricted provision of public services and goods in rural and indigenous areas during war	Facilitators 1. Social networks 2. Family reunification	1 Acknowledgment that changes in rainfall patterns led to food insecurity, influencing the livelihoods negatively
2. ENSO Effect – Slow Onset Climate Change Processes -increase in temperature -droughts -decrease in or excessive precipitation -soil erosion	2. Strong US influence and economic interests - installing military governments to protect own interests	2. High level of inequality, including racial and ethnic inequality -poor economic conditions and exclusion -a significant part of economy represent remittances	2. High levels of violence -the world's highest rates of femicide -common crime and coercive practices of drug traffickers, organised crime networks and clandestine paramilitary organisations	3. Two legal measures -reevaluation of asylum claims in light of the ABC lawsuit -legal resident admissions in light of the Nicaraguan Adjustment and Central American Relief Act (NACARA)	2. Prioritisation of economic factors when opting for migration -adoption of other viable strategies for managing risks along with migration
3. Outbreak and spread of crop diseases -losses in crop production and decline in employment opportunities -hunger and food insecurity	3 Discrimination against indigenous populations -persecution, segregation and unequal access to goods and services -higher poverty levels	3. High unemployment and poverty -precarious, instable, insecure, jobs with part-time arrangements, subminimum wage levels, and a lack of social benefit -extensive informal sector -rural poverty, high malnutrition levels and social insecurity	3. Weak educational system -overall school enrolment below the Central American average -disparities exist in terms of education between rural and urban areas -decreased chance of children to break out of the poverty cycle	Obstacles 1. Unauthorised migration due to absence of legal protection and measures -denial of most of the asylum claims during the war -no Temporary Protected Status (TPS) for Guatemalans	3. Environmental drivers as an actual cause of economic factors causing migration
	4. Lack of state capacity and corruption -dysfunctional judicial system -resistance of business elites against implementation of a tax reform	4. Extractivist industrial megaprojects		2. High cost of moving connected with high insecurities and danger	

6.3. El Salvador

Migration has long played a central role in shaping El Salvador's society and economy. By 2018, nearly 1.4 million immigrants from El Salvador — approximately one-fifth of the country's population — resided in the USA, making them the second-largest Latin American group after Mexicans (Rosa Chávez et al., 2022, p. 13).

This section examines climate-induced migration from El Salvador as the third NTCA case study. As in the preceding analyses for Honduras and Guatemala, recent migratory patterns are interpreted through the framework of Black et al., with particular attention to environmental stressors and their indirect effects on livelihoods and mobility.

6.3.1. Environmental Drivers

El Salvador is highly vulnerable to climate change due to increasing rainfall irregularity, , recurrent droughts, and long-term environmental degradation. Despite relatively high annual precipitation, water scarcity is common during dry periods, particularly in the Dry Corridor region shared with Guatemala and Honduras. Between 2012 and 2018, this area experienced recurrent droughts, interspersed with heavy rainfall that triggered flooding and landslides. Climate variability has intensified over time, with intra-seasonal dry spells developing into prolonged droughts. The country's mountainous terrain and extensive coastal zones further heighten exposure to climate-related hazards, while sea level rise poses growing risks to densely populated coastal areas, where more than 30 per cent of the population resides (Rosa Chávez et al., 2022, pp. 15–18).

El Salvador is also exposed to a wide range of natural hazards, including tropical storms, hurricanes, earthquakes and volcanic activity, all of which have repeatedly damaged infrastructure and livelihoods. Extreme weather events — such as hurricanes Paul (1982) and Mitch (1998), tropical depression Low E96 (2009), and tropical storm Agatha (2010) — alongside seismic activity contributed to significant economic losses and played a role in shaping emigration patterns during the 1990s and 2000s. Historical land-use practices further compound climate vulnerability: the expansion of coffee and cotton farming during the 19th and 20th centuries led to extensive deforestation and land degradation. Although El Salvador has the largest share of land suitable for coffee cultivation in Central America, rising temperatures could reduce the production by up to 30 per cent by 2050. Recent studies suggest that a considerable proportion of Salvadoran migrants arriving in the USA in the last decade originates from rural areas, disproportionately affected by climate change impacts and food insecurity (Rosa Chávez et al., 2022, pp.15-18).

Remittance patterns provide additional evidence of climate-related mobility. The volume of remittances received by households increases significantly following extreme weather events, particularly in the most affected regions, suggesting that remittances function as both a response to and an indicator of climate-induced migration (Rosa Chávez et al., 2022, p. 25).

Micro-level evidence further clarifies the mechanisms linking climate change and migration. A study by Ibáñez et al. (2022, pp. 4-5, 11) demonstrates that agricultural production has been negatively influenced by extreme temperatures between 2009 and 2018, leading to increased migration from rural areas to the USA and occupational shifts within domestic labour markets. El Salvador represents a particularly relevant case due to agriculture being the country's second-largest employer — accounting for 87 per cent of agricultural producers — and long-standing migration networks. Temperature was identified as a critical variable because recent research finds stronger effects on crop yields than rainfall variability and because adaptation to rising temperatures is more constrained.

The findings show that temperature shocks increased the probability of international migration by more than 14 per cent above the national average among agricultural households, especially those cultivating annual crops. Landless agricultural workers were disproportionately affected, often responding by moving into non-agricultural sectors or migrating, while landowners were better able to absorb shocks by reducing labour costs or replacing hired workers with household workers. Access to risk-management mechanisms such as formal credits, crop insurance and remittances significantly shaped these outcomes. Households lacking such mechanisms were more likely to rely on migration as a short-term coping strategy to offset income losses caused by temperature shocks (Ibáñez et al., 2022, pp. 6-7). At the same time, structural inequality and limited social capital constrained mobility for the most vulnerable, leading to immobility or short-distance migration rather than international migration (Rosa Chávez et al., 2022, p. 25).

As in Honduras and Guatemala, CLR has severely affected El Salvador's coffee sector. During the 2014-2015 harvest, production declined by more than 30 per cent, resulting in significant job losses, particularly among small-scale coffee growers in the eastern and western regions. These farmers often lacked access to credit or government support to invest in pest control and productivity-enhancing measures. Between 2018 and 2019, the coffee planting area decreased from 141 to 137 hectares and has not increased since. Over five harvest seasons following 2012, employment in the coffee sector fell from 86,500 to 45,000 jobs by the 2017-2018 harvest season. The resulting loss of income and employment prompted migration to urban areas or

internationally, reinforcing climate-related mobility patterns (Lynch, 2019, p. 19; Ferruci, 2023, p. 6; USAID, 2016, p. 12).

6.3.2. Political Drivers

Political developments have been central to shaping migration patterns from El Salvador throughout the twentieth and twenty-first centuries. A significant political event in this regard was La Matanza in 1932, which occurred against the backdrop of the 1931 military coup d'état and the introduction of capitalist production methods that intensified land dispossession. Peasant demands for land redistribution were met with extreme state violence, as the government instructed the killing of thousands of Salvadorans, predominantly Indigenous farmers, thereby consolidating the power of the economic elites and establishing military authority for decades. This alliance of military-economic elites systematically resisted reform, maintained low wages and harsh working conditions, laying the groundwork for persistent emigration.

Between 1950 and 1973, migration patterns reflected three prevailing interrelated dynamics: first, internal migration from western to eastern provinces and neighbouring countries, especially Hondurans; second, displacement driven by agricultural modernisation; third, urban and newly established subsistence areas became attractive migration destinations (Hamilton and Chinchilla, 1991, pp. 85-101; Menjívar and Cervantes, 2018).

The increase in migration was closely linked to elite-driven capitalist expansion, facilitated by infrastructure development, reinforcement of private property rights, and suppression of resistance. In the post-World War II period, the expansion of cotton and sugar production further intensified internal migration and cross-border flows to Honduras. Between 1950 and 1961, rural-urban migration increased markedly, with San Salvador emerging as a primary destination. During the 1960s and 1970s, migration pressures intensified due to economic restructuring, rising social inequality and expanding US influence in El Salvador. The five-day 1969 war between El Salvador and Honduras abruptly ended Salvadoran migration to Honduras, leading to repatriation and return migration. This shift increased land pressures — by 1970, approximately 41 per cent of peasants were landless — and increased unemployment. These pressures contributed to rising social mobilisation, escalating conflict, and ultimately the civil war from 1979 to 1992. As in Guatemala, the USA played a decisive role by providing military aid to successive Salvadoran governments. The war witnessed around 75,000 casualties, widespread human rights abuses committed mainly by state forces, and the displacement of more than one million people internally and across borders. During the conflict, an average of 29,000 Salvadorans migrated annually, a

figure that rose to more than 60,000 per year in the 1990s. A large number of Salvadorians moved to the USA and became eligible for TPS in 1992 (Hamilton and Chinchilla, 1991, pp. 85-101; Abuelafia et al., 2019, p. 16; Menjívar and Cervantes, 2018).

Post-war political and economic reforms failed to address the structural roots of displacement. The adoption of neoliberal policies led to privatisation, reduced social spending, and worsening living conditions. Weak institutional structure and a fragmented post-conflict society fostered the spread of drug cartels and organised crime groups. In parallel, US immigration policies initiated deportations of young Salvadorans who joined criminal gangs during the 1980s and 1990s. Needless to say, their return and limited reintegration opportunities contributed to escalating violence in El Salvador (Menjívar and Cervantes, 2018).

International migration flows to the USA increased in the post-war period. According to the MPI data visualisation, the Salvadoran population in the USA rose from 6,000 in 1960 to 94,000 in 1980, reached 465,000 by 1990, and almost doubled again by 2000 (Menjívar and Cervantes, 2018). Since 1979, migration has reflected a broadening socioeconomic profile, survival and personal safety frequently cited as primary motivations. Many migrants or their family members had directly experienced military violence or repression, death squads, or political violence, illustrating the intertwined nature of economic hardship and political conflict in driving migration (Hamilton and Chinchilla, 1991, pp. 95-101).

In the last two decades, migration from El Salvador has continued to rise, particularly driven by persistent violence. Government responses have largely prioritised repression over prevention. The policy of aggressive law enforcement against gangs, the so-called 'mano dura' (iron fist) approach of militarised patrols and mass arrests adopted by President Flores in 2003, aimed to eradicate violence but ultimately strengthened gang cohesion and institutionalised extortion. Subsequent administrations, including that of current President Bukele, have maintained a security-first approach, at times engaging in covert negotiations with gangs to reduce short-term violence. While temporarily effective, such arrangements reinforce gangs' political power and fail to address underlying social and economic drivers through investment in communities and violence prevention (Noria Research, 2022).

Democratic governance has been further weakened by the increasing concentration of power within the executive. The prolonged state of exception since March 2022, adopted in light of the COVID-19 pandemic, has suspended constitutional controls, including arbitrary detentions, prison abuses, forced disappearances, and violations of due process. According to Transparency

International, El Salvador ranks on a red list of countries with a very high perception of corruption, with an increasing tendency due to the current political situation (Méndez-Dardón, 2022).

Finally, extractivist politics illustrate both continuity and divergence within the NTCA region. The paper on extractivism in the Salvadoran metal mining industry by Artiga-Purcell (2021, p. 1) illustrates that there is a complex interplay between extractive and anti-extractive politics, manifested by a ban on historical metal mining. Pro-extractive politics and allowing for mega projects, with negative consequences for the environment and local populations, are present in all three NTCA countries, but the example of metal mining regulations in El Salvador also shows tendencies in the opposite direction towards anti-extractive politics.

6.3.3. Economic Drivers

Despite being the smallest country in Central America, El Salvador is the most densely populated, a pattern historically shaped by fertile volcanic soils and the central role of agriculture in its economy. It has a long history of mono-crop exportations, including cacao, indigo, and coffee, resulting in extreme economic dependence. In the early 20th century, coffee accounted for up to 95 per cent of export revenues. This dependency intensified during the economic crises of the 1930s, contributing to political instability and culminating in the peasant uprising and massacre of 1932. Attempts to address land degradation and diversify the economy in the post-World War II era were repeatedly hindered by the coffee-producing elites. Industrialisation strategies focused on import-intensive development failed to generate sufficient employment, while infrastructure development facilitated the growth of cotton cultivation, further accelerating deforestation and land degradation. Although El Salvador became highly integrated into regional markets and emerged as the second biggest exporter in the region, persistent trade imbalance, particularly with Honduras, fuelled tensions that culminated in the 1969 war, weakening the Central American common market and significantly decreasing export performance (Rosa Chávez et al., 2022, pp. 5-9).

El Salvador's economic growth was severely disrupted during the civil war period. Following the 1979 coup, reformist measures — including land reform and bank nationalisation — were introduced but conflicted with US strategic and economic interests. Through USAID and multilateral institutions such as the World Bank, liberalisation and structural adjustment policies were promoted, ultimately leading to the re-privatisation of the banking system and restoration of elite control. As in the other two NTCA countries, remittances have become a key part of the economy, emerging as the second-largest source of national income. By 2020, 24 per cent of

households received remittances, and by 2017 these transfers amounted to approximately 5 billion USD, equivalent to one-fifth of the country's GDP. Remittances contributed to reductions in poverty and inequality: the share of the population living on less than 5.50 USD per day decreased from 60 per cent in 1991 to 22.30 per cent in 2019 (Menjívar and Cervantes, 2018; Rosa Chávez et al., 2022, p. 9-13).

At the same time, heavy dependence on remittances reshaped the economic structure. The service sector expanded rapidly, accounting for 70 per cent of added value in 2021, while employment increasingly shifted towards informality. In 2017, 57 per cent of men and 72 per cent of women in non-agricultural employment worked in the informal sector. Although remittances have alleviated poverty, they have also dampened incentives for productive investment, constrained job creation, and reinforced migration as a livelihood strategy (Rosa Chávez et al., 2022, p. 14).

Macroeconomic reforms further shaped these dynamics. The independence of the Central Bank in 1991 and the adoption of the US dollar as its official currency in 2001 contributed to macroeconomic stability, with an annual GDP growth of 2.5 per cent between 2013 and 2019. However, dollarisation also increased the prices of basic and contributing to the involvement of young Salvadorans in gang activities. Trade liberalisation expanded external trade but reduced competitiveness in labour-intensive manufacturing amid lower labour costs in Asian countries. Consequently, the low-cost, low-tech factory sector, the so-called maquila, declined, with its share of manufacturing GDP falling from 13.5 per cent in 2003 to 8.2 per cent in 2015. El Salvador's GDP per capita relative to the USA dropped sharply from 11.4 per cent in 1965 to 6.5 per cent in 2017, with the most pronounced decline occurring during the civil war years. Post-1990 recovery was limited, with relative income levels improving by less than one percentage point, reflecting long-term stagnation in per capita growth (The World Bank, 2024a; Ulku and Zaourak, 2021, p. 5, 9).

Social spending partially mitigated these trends. Public expenditure on education and health increased from an average of 8.3 per cent of GDP between 2002 and 2009 to 9.1 per cent between 2010 and 2017, contributing to a reduction in national poverty from 60 per cent of households in 1992 to 27 per cent in recent years. However, progress has been uneven, with setbacks following the 2008 economic crisis and the COVID-19 pandemic. High levels of taxation and public debt continue to constrain the positive effects of social (Ulku and Zaourak, 2021, p. 11).

Overall, El Salvador's emigration to the USA is rooted in a combination of long-term structural factors: slow and uneven economic growth, the legacy of civil war, neoliberal reforms favouring elites, insufficient job creation, high dependence on remittances, and widening income differentials relative to the USA. Together, these dynamics have entrenched migration as a central livelihood strategy rather than a temporary response to short-term shocks.

6.3.4. Social Drivers

The legacy of civil war left behind a militarised society that has facilitated the expansion of drug trafficking and organised crime. For decades, the country has recorded some of the highest homicide rates worldwide.. Between 1990 and 1995, the homicide level rose from 70 to 142 homicides per 100,000 inhabitants and fell to 52.8 by 2002 following the deployment of the new National Civilian Police. Despite this temporary reduction, homicide levels remained among the highest globally, with 52.0 homicides per 100,000 inhabitants recorded in 2018.. In the 1980s and 1990s, deportations of Salvadorans from the USA exacerbated violent trends, as many deportees were young gang members who reintroduced gang culture back into El Salvador (Menjívar and Cervantes, 2018; Rosa Chávez et al., 2022, p. 8). Two gangs in particular — the 18th Street Gang (Barrio 18) and Mara Salvatrucha (MS-13) — have become central actors for the country's violence dynamics. Although both originated among immigrant communities in the USA in the 1960s and 1980s, respectively, contemporary gang membership is shaped by domestic structural conditions such as high levels of poverty, inequality and unemployment. Over time, gangs have expanded their influence beyond criminal activity, assuming parastatal functions, financing of elections and deals with government representatives, especially during the *mano dura* policy periods. Young people from impoverished families are especially vulnerable to recruitment, as gangs often represent one of the few available pathways to improve their financial prospects and social conditions (Rosa Chávez et al., 2022, pp. 9-10).

The scale of gang influence is substantial. Estimates by the Ministry of Defence suggest that half a million Salvadorans, or close to 10 per cent of the population, are associated with gang activities either through direct involvement or through coercion or extortion of relatives. This negatively impacts the economy as Salvadorans pay the equivalent of three per cent of GDP to gangs, imposing significant costs on households and businesses alike (Ulku and Zaourak, 2021, p. 34). Violence levels today surpass those during wartime, disproportionately affecting low-income and working-class Salvadorans who lack access to private security and migration as a strategy for personal safety and survival (Menjívar and Cervantes, 2018).

Organised crime and human trafficking are central factors driving migration from El Salvador. Criminal groups control human smuggling operations and collaborate with corrupt officials and security forces to facilitate illicit cross-border movement. Although loosely connected to larger transnational criminal organisations, these networks exploit migrants through extortion, kidnapping, and trafficking by human smugglers, commonly referred to as *coyotes*, who charge high fees and bribes throughout the migration process (Global Organised Crime Index, 2023). While smuggling networks rarely generate violence within El Salvador itself, the risks for migrants increase significantly once they enter Mexico, where criminal groups like the *maras* are heavily involved in robbery, abduction and exploitation of undocumented migrants. The presence of such groups along migration routes adds a transnational dimension of insecurity and heightens the dangers associated with irregular immigration (Global Organised Crime Index, 2023; Wolf, 2017, p.10).

Survey-based evidence underscores the centrality of violence in migration decisions. A 2020 study by Ludger Pries et al., based on survey of 359 transit and forced migrants from NTCA region in Mexico, found that while economic hardship remained one of the primary migration motivation, reported by 80 per cent of Salvadoran migrants, nearly 60 per cent identified the fear of violence, extortion, and forced recruitment by gangs as an important factor for leaving their country of origin. Criminal organisations exploit widespread poverty and the lack of state protection, manipulating the population's vulnerabilities to expand their illicit operations, reinforcing a cycle in which insecurity and displacement mutually reinforce one another (Ludger Pries et al., 2024, pp. 90, 99).

The Salvadoran government's measures against gangs' activities have unintended consequences. Intensified security operations have increased the demand for smugglers to assist individuals fleeing both gang coercion and state repression, regardless of actual gang affiliation. As smuggling routes become more lucrative, criminal networks deepen their involvement, exposing migrants to heightened risks of exploitation and human trafficking. This web of organised crime, state policies and corruption is inextricably linked to the migration in the region, demonstrating how deeply intertwined these issues are in driving the Salvadoran displacement crisis (Global Organised Crime Index, 2023).

Social vulnerabilities further compound these dynamics. Chronic underinvestment in the education system, particularly in rural areas, has resulted in El Salvador having the highest

proportion of young people in Central America who are neither employed nor enrolled in education. In 2022, 23.5 per cent of Salvadorans aged 15 to 24 fell into this category. Although the health care system is comparatively well funded, education receives the lowest level of funding among lower- and middle-income countries. Between 2000 and 2018, enrolment rates in primary, secondary and tertiary education were the second-lowest within this group. In 2022, the average years of schooling completed by working-age Salvadorans stood at 8.8 years, notably lower than the Latin American average of 10.1 years. As a result, the low educational levels and the lack of skills among the Salvadoran workforce hamper employment prospects and productivity and increase susceptibility to both gang recruitment and migration (Human Rights Watch, 2024a; Ulku and Zaourak, 2021, p. 37).

Although the poverty levels in El Salvador are lower than in the other two NTCA countries, they remain substantial and are compounded by unequal access to essential goods and services such as education, housing, health care and food. These structural barriers disproportionately affect marginalised groups such as Indigenous communities, children and rural populations, undermining the realisation of economic, social, and cultural rights and reinforcing migration as a coping strategy (Human Rights Watch, 2024a).

6.3.5. Household Level and Decision-Making

The IDB has conducted empirical studies on migrants who arrived in the USA between 2007 and 2017 to better understand migration patterns from NTCA countries and to inform public policies that address the root causes of migration. For the purposes of the thesis, particular attention is given to the motivations reported by Salvadoran migrants during the interviews. Economic factors emerged as the dominant driver of migration across all three NTCA countries, though with notable variation. Among Salvadorans, 68 per cent identified economic reasons as their primary motivation, compared to 75 per cent of Hondurans and 87 per cent of Guatemalans. The search for employment and better wages featured predominantly, with 54 per cent of Salvadorans citing unemployment as the main migration driver (Abuelafia et al., 2019, p. 13). These findings underline the comparatively lower—but still substantial—weight of economic drivers in El Salvador relative to its neighbours.

As the second most important motivation to migrate ranked family reunification, with 45 per cent of Salvadorans reporting it as the main migration driver. Migration from El Salvador also displayed a stronger tendency to reside with relatives upon arrival to the country and to perceive migration as permanent, as reflected in higher rates of asylum-seeking and a lower inclination towards investing in a house in their country of origin. Environmental shocks further shaped migration patterns. Natural disasters account for average annual losses of approximately 2.5 per cent of the country's GDP and have triggered migration surges. In the aftermath of the 2001 earthquake — which caused damage of 1.85 billion USD or 13 per cent of GDP and affected over 1.6 million people — a significant number of Salvadorans became eligible to obtain TPS status in the USA (Abuelafia et al., 2019, p. 16).

At the same time, Halliday (2006, p. 922), in his study on Migration, Risk, and Liquidity Constraints in El Salvador, demonstrated that households affected by the earthquake tended to keep family members at home in the short term, likely due to increased labour demands associated with reconstruction and recovery. This finding highlights the importance of liquidity constraints and labour needs in shaping short-term mobility decisions.

Violence and crime ranked as the third most frequently cited migration driver, mentioned by 41 per cent of interviewed Salvadorans. Compared to the other two NTCA countries, Salvadorans reported higher exposure to violence and criminal activities, with 85 per cent reporting it as a significant concern. Among those citing violence as a migration motive, 45 per cent mentioned the presence of gangs as a significant push factor and deterrent to returning to their home country. Although homicide rates have declined in all three studied countries in recent years, the prevalence of gangs, extortion, and drug trafficking remain high. With an average of 38 homicides per 100,000 inhabitants, the NTCA region continues to far exceed the global average of 6.1 (Abuelafia et al., 2019, pp. 16-17).

Further micro-level insights are provided by Halliday (2006, pp. 894, 921-922), who analysed panel data on the number of migrants from rural households in 1997, 1999, and 2001, focusing on economic shocks such as agricultural circumstances leading to harvest and livestock loss as well as natural disasters during the period. The study demonstrates a clear correlation between agricultural setbacks and increased migration to the USA. Households facing agricultural losses foresaw diminished labour-related returns in the country, widening the wage gap between northern and southern regions and creating incentives to send household members abroad while discouraging existing return migration. In the absence of such circumstances, the likelihood of

migration decreased by 24.26 per cent. These findings support the interpretation of international migration as an ex post risk-management strategy, in which worsened economic conditions dominate decision-making, but environmental events — such as droughts and harvest failures — act as underlying triggers that alter household circumstances and migration incentives.

6.3.6. Intervening Factors

One of the main intervening obstacles to migration from El Salvador to the USA is the high cost of irregular migration. Smuggling networks *coyotes* typically charge between 6,000 and 8,000 USD to facilitate the journey. Paradoxically, the least resourceful migrants often face the highest risks, travelling without sufficient resources and documentation and are therefore more exposed to robbery, extortion, and other forms of violence along the route. By contrast, middle-class Salvadorans are more successful in obtaining tourist visas, reaching the USA by plane and subsequently overstaying their permits. Other Salvadorans benefit from the support of relatives already residing in the USA or from mortgages or other microlending programs. These dynamics illustrate how socioeconomic status shapes both migration strategies and exposure to risk (Andrade-Eekhoff, 2006). At the same time, family reunification and the presence of a significant Salvadoran community in the USA function as important intervening facilitators. Established migrant communities reduce the financial and social costs of migration by covering travel expenses and providing accommodation and support upon arrival. As documented by Abuelafia et al. (2019, p. 16), a substantial share of Salvadoran migrants initially reside with relatives, reinforcing chain migration and lowering barriers to entry despite restrictive policies.

When it comes to the legal framework and status of Salvadorans migrating to the USA, the policies are rather restrictive, with the exception of a few adopted legal measures under the US immigration policy. During the civil war, asylum approval rates were extremely low of approximately half a million Salvadorans fleeing the conflict, only 2 per cent of asylum applications were approved during the 1980s. Following the settlement of the ABC lawsuit in 1985, they received the option to reapply for visas and receive work permits until their cases were further reviewed. Further legal relief was introduced with the 1990 Immigration Act, which introduced the TPS status for Salvadorans after sustained advocacy from Salvadoran communities and religious organisations. By 1992, approximately 187,000 Salvadorans had benefitted from this legal provision (Menjívar and Cervantes, 2018).

Although designed to be a temporary status, It was renewed multiple times, extending also to the aftermath of environmental disasters such as the major earthquakes that hit El Salvador in 2021. Consequently, by 2016, approximately 195,000 Salvadorans held TPS status, having lived in the USA since at least 2001 and fully participating in the professional and private spheres of the receiving society. This long-term presence reduced incentives for return migration, even though TPS status does not offer a path to permanent residency.

Limited opportunities for legal permanence were partially addressed by NACARA of 1997, which enabled some Salvadorans to have permanent legal residence. Additionally, DACA programme provided 26,000 young people and children among the Salvadoran immigrants with an instrument to acquire official status as of 2018, representing the second-largest beneficiary group after Mexicans. Nevertheless, the narrow scope of these legal measures has resulted in the unauthorised residency of approximately 465,000 Salvadorans in the USA, indicating that restrictive policies redirect migration into irregular channels rather than deterring it altogether (Menjívar and Cervantes, 2018).

In line with the analytical framework applied to Honduras and Guatemala, the following figure summarises the primary migration drivers in El Salvador based on the conceptual model developed by Black et al. (2011), presenting economic, political, social, and environmental factors alongside intervening obstacles and facilitators.

Table 4 Migration Drivers in El Salvador

Migration Drivers in El Salvador

Based on Black et al. (2011) Conceptual Framework

MACRO LEVEL				MESO LEVEL	MICRO LEVEL
Environmental	Political	Economic	Social	Intervening	Household
1. Rapid Onset Disasters -high vulnerability to climate change -flooding, landslides -tropical storms and hurricanes, earthquakes and volcanic activity	1. Violent conflicts and military authority -La Matanza event and consolidation of military power -5 day war with Honduras (1969) -long civil war (1979-1992) -repression of opposition and crimes committed by the government	1. Agricultural production and long history of mono-crop exportations -high economic dependence on crop export threatens livelihoods of farmers in times of economic and environmental crises	1. High levels of violence -the most dangerous country in the world in relation to its homicide rates -gang culture ie Barrio 18 and MS-13 and expansion of their influence, establishing parastatal functions -disproportionally affecting the least resourceful and young people	Facilitators 1. Family reunification 2. Social networks	1 Economic reasons, search for employment and better wages as primary driver
2. ENSO Effect - Slow Onset Climate Change Processes -irregular rain distribution, recurrent droughts -water scarcity -extensive deforestation and land degradation -loss of coastal territory due to sea level rise	2. Foreign influence and economic interests - US providing military aid to the government in charge and promoting neoliberal policies benefitting rich elites -structural reforms funded by the World Bank	2. Lack of employment opportunities and extensive informal sector -precarious, instable, insecure, jobs -a significant part of economy represent remittances, reducing poverty but also employment and income opportunities	2. Weak educational system -the highest proportion of young people in Central America who neither work nor study -insufficient funding -low enrollment rates and shortage of schools in rural areas -lack of skills and training	3. Four legal measures -reevaluation of asylum claims in light of the ABC lawsuit -eligibility for Temporary Protected Status (TPS) -legal resident admissions in light of the Nicaraguan Adjustment and Central American Relief Act (NACARA) -The Deferred Authorisation for Unauthorised Migrants (DACA) for children and young migrants	2. Family reunification and intention to relocate permanently as the second most stated migration driver
3. Outbreak and spread of crop diseases -significant negative impact on coffee production -decrease in employment opportunities	3. 'Mano dura' approach towards gangs -militarised patrols and mass arrests, suppression -decrease in violence at the expense of deals with gangs and their political gains	3. US dollar as official currency since 2001 -increase in prices of basic good and services -stagnation in GDP growth	3. Weak institutional system and social spending -limited access to essential goods and services such as education, housing, health care and food, especially for marginalised groups	Obstacles 1. Unauthorised migration due to absence of legal protection and measures -denial of most of the asylum claims during the war -precarious nature of temporary protection programs	3. Experience with violence and crime as a significant push factor
	4. State of exception and corruption -restriction of constitutional controls and access to public information -systematic human rights violations, including arbitrary detentions, abuses in prisons, forced disappearances -high level of corruption			2. High cost of moving connected with high insecurities and danger	4. Worsened economic conditions seem to be the main reasons for households when opting for migrations, but the underlying factors for changed circumstances were environmental events

7. Analysis and Discussion of Results

7.1. Visualisation of Climate-Induced Migration Factors

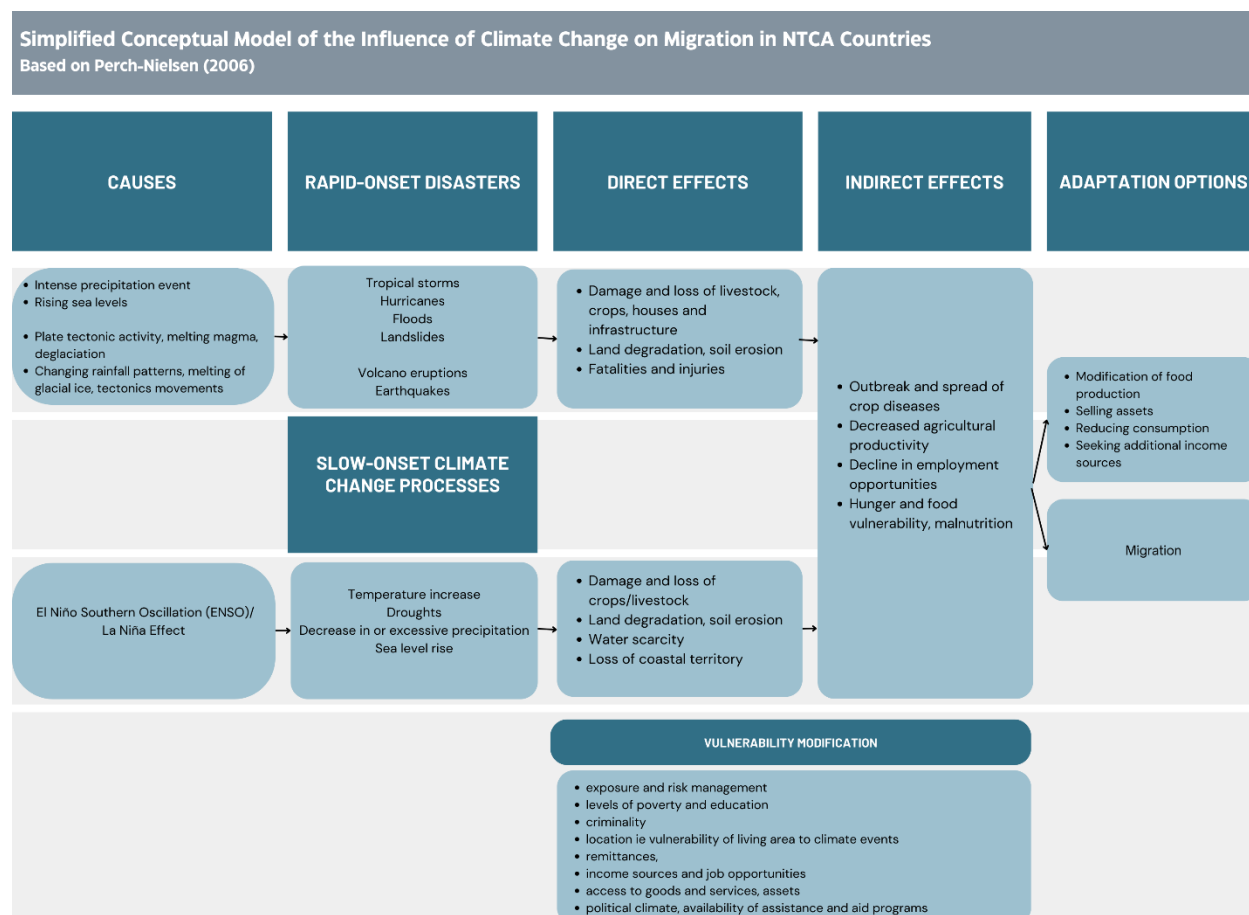
To further illustrate the relevant environmental factors that contribute to migration in all three studied countries, a simplified visualisation based on Perch-Nielson's conceptual model is used below. We can see that the study area is highly vulnerable to climate change impacts, including listed environmental disasters and elaborated slow-onset climate changes. Depending on the relevant climate change process or rapid-onset disaster, the direct and indirect effects, which were elaborated on in the thesis, vary but are listed jointly for the purposes of a summary in the graphic below.

It has been shown that labour market factors, such as decreased agriculture production and decline in employment opportunities due to damage to or loss of crops following droughts and CLR outbreaks experienced in the study area, led to increased international migration. The possibility of acquiring TPS status in the USA, especially for Salvadorans and Hondurans, in the aftermath of environmental disasters also points towards the increase of international migration in case of the effects of slow-onset climate change processes. It must be mentioned that it cannot be generalised that environmental disaster or drought will necessarily lead to an increase in international migration as other migration drivers, the magnitude of the impact and adaptation options of concerned households need to be considered too. For instance, as Halliday (2006) in his study pointed out, Salvadorans tended to keep family members at home in the aftermath of the 2001 earthquake.

The section on vulnerability modification lists elaborated contextual factors, creating conditions which either contribute to the decision to migrate or broaden the options to deal with exposure to stresses differently. For instance, as demonstrated in the study by Bermeo and Leblang (2021), the correlation between the high levels of violence and reduced precipitation in certain areas in Honduras increased international migration to the USA. On the other hand, the high share of remittances in the economies of all three countries enables improved livelihoods and adaptation options for concerned households. The widespread corruption and lack of trust in institutional structures in all three countries motivates migration decisions, especially among young people facing high unemployment rates at the same time. It can be seen that the factors modifying vulnerability to climate-induced stresses are intertwined and can reinforce each other. Among the coping mechanisms are modification of food production, diversification of income sources, selling

of assets, etc., as elaborated by studies mentioned in the thesis. Such mechanisms can prevent migration or be used in parallel to the migration of a family member.

Figure 7 Simplified Conceptual Model of the Influence of Climate Change on Migration in NTCA Countries



7.2. Discussion of Results

Taken together, the country cases show that migration from the NTCA is not crisis-driven but structurally produced through long-term political–economic transformations shaped by external power relations. Migration has become structurally embedded in everyday livelihood strategies rather than confined to moments of acute disruption. This section synthesises how these long-term transformations interact to produce sustained patterns of mobility.

At first, the introduction of neoliberal, export-focused agricultural economies led to seasonal internal migration and the displacement of populations from their lands in favour of big production companies. The interests of foreign investors and land-owning elites were protected by neoliberal policies and the oppression of regular workers and Indigenous communities, maintaining

precarious working conditions and low wages. Furthermore, the modernisation of economies, the privatisation of land, and growing dependence on capital markets decreased employment opportunities and weakened the overall economic situation and livelihoods, especially for farmers. This deterioration in living conditions contributed to migration to urban areas and to international movements in search of employment opportunities and better living standards. This shows that migration under neoliberal restructuring is not a failure of development but one of its predictable outcomes, functioning as a compensatory mechanism for exclusionary economic models.

Secondly, the militarisation of NTCA countries, together with political upheavals and wars, fuelled migration patterns from the end of the 1970s onwards. Movements demanding land and resource redistribution were violently suppressed, often with substantial help from the USA. Prolonged political oppression, combined with underfunded social institutions and weak and corrupt state structures, deepened poverty and inequality, limited access to basic services and goods and fostered gang activities and violence in societies marked by trauma and limited opportunities. Migration in this context is therefore not only economic but political: it reflects the collapse of trust in the state's capacity to provide security, justice and social inclusion.

In terms of demographic characteristics, the common denominators across all three NTCA countries are widespread poverty, large youth populations facing high unemployment, and a high rural dependency, especially in Guatemala and Honduras. The combination of these factors makes a significant share of inhabitants particularly vulnerable to the effects of climate change, with slow-onset processes affecting rural populations who, due to high poverty levels, often cannot afford other mitigation strategies beyond investing in migration. Climate change thus operates less as a new driver than as a force that intensifies existing structural vulnerabilities into displacement.

Thirdly, food insecurity is one of the most significant impacts of the slow-onset climate change processes in the region. ENSO-driven temperature increases, extended periods of drought, and crop diseases such as coffee leaf rust undermine agricultural incomes and employment in regions highly dependent on agricultural production. Migration in these contexts appears economic on the surface, but its roots lie in environmental disruption. Finally, the heightened occurrence and intensity of natural disasters further accelerate by destroying assets and infrastructure, triggering unauthorised migration to the USA and, in some cases, the introduction of TPS status for some of the affected migrant groups. Yet while disasters receive temporary recognition, slow-onset climate degradation remains largely invisible in legal and policy frameworks.

With respect to the intervening facilitators and obstacles, the US immigration policy has been largely unfavourable to immigrants from the NTCA countries, offering little protection or access to permanent legal status. This has often increased unauthorised migration and border crossings, many of which end in detention and deportation or precarious living conditions in the USA. Restriction therefore reshapes migration routes and risks rather than reducing the underlying pressure to move.

Under pressure from civil society and legal actions, limited concessions were made, granting some migrants temporary legal status. Despite the restrictive immigration policies of successive US administrations, growing Central American communities in the USA and their social networks have become key facilitators of migration, with family reunification often cited as a primary motive and the most common pathway to US citizenship. Thus, family reunification, remittances, and social support systems transform migration from a one-time event into a self-reinforcing system.

Overall, migration from the NTCA emerges as a structurally produced outcome of development models, political violence, social exclusion and increasingly, environmental stress. What appears as ‘individual choice’ is, in practice, shaped by long-term economic, political, and ecological constraints that steadily erode local livelihoods and limit viable alternatives to mobility. Migration is therefore better understood as a negotiated survival strategy within unequal political-economic and environmental conditions, in which climate change has become a central force transforming vulnerability into displacement rather than a secondary or temporary trigger.

7.2.1. Common Identified Migration Drivers

This section identifies the main migration drivers shared across the three country cases and analyses how they interact rather than operate independently. While environmental, political, economic and social factors are analytically separated, in practice they function as mutually reinforcing processes that shape both mobility and immobility.

Although the term Dry Corridor only entered mainstream media in 2008, when climate change was considered more often as a factor influencing migration from Central America, all three studied countries have long been highly vulnerable to climate change impacts, including both rapid onset hazards — such as tropical storms, hurricanes, earthquakes, volcanic eruptions, floods, landslides — and slow-onset climate change processes intensified by ENSO effect. These natural hazards have caused large-scale human and material losses, undermining housing, infrastructure and especially agricultural production, thereby reducing employment opportunities,

and increasing food insecurity, which in turn fuels displacement and migration. The introduction of TPS for Hondurans and Salvadorans fleeing major natural disasters in the 1990s and in the 2000s proves the impact of climate change on the increase in migration. Empirical studies have shown a strong correlation between droughts, the spread of CLR in the studied region and increased migration to the USA since 2010. While these migration flows are often framed as economically motivated, the evidence suggests that climate-driven agricultural decline is the structural cause behind rising unemployment and food insecurity and the increasing share of the rural population opting for migration as a result. Some studies suggest that households with constrained risk-management mechanisms are more likely to resort to migration, whereas the most vulnerable populations may be considered ‘trapped’ and lack the resources to migrate. These dynamics are further reinforced by extractive and expansive economic activities that accelerate deforestation, land degradation, and water contamination, amplifying climate vulnerability and migration pressures. Environmental change, therefore, acts less as an isolated trigger and more as a structural force that transforms economic vulnerability into displacement.

In terms of political drivers of migration, all three countries can be characterised by widespread corruption, low trust in governments, weak institutions and persistent political instability, manifested through coup d’état in Honduras or long civil wars in Guatemala and El Salvador. These conflicts involved extensive state and military violence against civilian populations, including killings, persecution and systematic discrimination mostly towards Indigenous communities. High levels of violence combined with widespread impunity of crimes — caused by political interference of governments in the justice system — pushed many into political exile, such as Mayan populations migrating to Mexico from the 1960s onwards and ultimately to the USA, especially towards the end of the wars in Guatemala and El Salvador.

Conflict dynamics were further intensified by the direct involvement of the USA through political and military support of repressive governments in all three countries, which deepened instability and contributed indirectly to the spread of organised crime and gang violence. On the other hand, the USA refused to acknowledge Central American migrants as refugees, as doing so would have implied responsibility for the situation due to their direct involvement in the conflicts. This contradiction illustrates how geopolitical interests not only shaped the conditions that produced displacement but also restricted access to protection, thereby transforming political violence into long-term migratory dependency rather than short-term refuge.

Economic transformations have played a significant role in shaping migration in the NTCA countries. Integration into free trade regimes, modernisation practices and implementation of neoliberal policies — combined with strong dependence on agricultural production — resulted in the expansion of export-oriented agriculture and, in some cases, manufacturing (notably in Honduras) and the service sector (especially in El Salvador). However, this growth model failed to reduce poverty and inequality. Instead, the unequal distribution of land in the hands of economic elites, particularly in Guatemala and El Salvador, drove the displacement of small farmers, negatively influencing food security and livelihoods. Migration here compensates for the failure of domestic development rather than reflecting economic success.

Long-standing conflicts and political instability further deepened the economic situation, characterised by an extensive informal sector, lack of employment opportunities and precarious working conditions across all three countries. States' limited capacity and willingness to provide equal access to basic goods and services and to social policies that redistribute wealth meant that remittances increasingly substituted for social policy. Dependence on remittances thus reflects not economic success but the failure of domestic development models to provide viable livelihoods. Migration became a survival strategy for many Central Americans facing insecure financial situations and unfavourable socioeconomic, political and environmental conditions against the backdrop of job prospects and higher living standards in the USA. At the same time, state-backed extractivist projects, especially in Honduras and Guatemala, led to further displacement of locals, human rights violations and environmental damage, showing how development strategies themselves have become drivers of forced mobility.

Violence and organised crime constitute another major driver of migration from the NTCA, rooted in the long-standing political and socioeconomic exclusion of populations and weak institutional structures. The region ranks among the most violent in the world, with gangs, especially in El Salvador, drug cartels, and other criminal networks contributing to levels of homicide and femicide rates way over the Latin American average. The economic and social costs of violence and crime are enormous; entire communities are either forced to participate in the illicit activities or forced to flee for personal safety. Migration itself does not guarantee safety. Many encounter further violence through extortion, kidnapping and abuse by smugglers and criminal networks along migration routes. Weak educational systems, low school enrolment, lack of schools in urban areas, low social expenditure and widespread poverty across all three countries further deepen vulnerability, particularly among young people. With few legal or economic pathways to social

mobility, gangs and criminal groups fill the vacuum left by absent states, turning violence into both a cause and a consequence of migration. Violence, therefore, functions both as a push factor and as a structural condition that reproduces insecurity along migration routes themselves.

At the micro level, household-based studies using NELM and SLA structured frameworks reveal a consistent pattern across the NTCA: migration decisions are formally justified by economic factors, such as unemployment and lack of job opportunities. Most surveys were conducted in climate-vulnerable, agriculture-dependent regions and show a correlation between agricultural setback and migration. Although households usually frame their decisions about migration in economic and social terms, these pressures largely originate in environmental change. Slow-onset climate change processes and natural disasters undermine agricultural production and available job opportunities, which is then translated into 'economic' migration motives. At the same time, strong place attachment remains visible: households often exhaust manifold coping strategies such as modifying food production and seeking additional income sources, etc., before resorting to migration. Household decisions thus reveal that migration is rarely a first choice but the outcome of exhausted local coping strategies.

With respect to the meso-level intervening factors, social networks and diasporic links between the USA and the study area are key drivers of migration. Large Central American communities in the USA provide information, financial support and accommodation, lowering the social and practical costs of migration. Family reunification has become an institutionalised migration channel and pathway for immigrants to acquire US citizenship. These networks reduce uncertainty and transform migration from an individual risk into a socially embedded strategy. Migration becomes self-reinforcing as social networks transform individual risk into collective expectation.

On the other hand, restrictive US immigration policies constitute major intervening obstacles. Limited legal measures, high costs charged by smugglers and frequent detention and deportation increase the risks and debts associated with migration. Temporary legal measures, such as TPS, recognise natural disasters as grounds for the legal protection of such migrants, but ignore long-term climate change degradation, leaving many environmentally displaced people without protection. Furthermore, migration flows resulting from violent conflicts and consequent asylum claims have been massively rejected until a landmark lawsuit decision, which led to legal concessions towards Guatemalans and Salvadorans. Overall, the restrictive US legal regime,

detentions and deportations of migrants failed to halt the migration flows from the studied area, resulting in an increase in unauthorised migration.

While the USA remains the dominant external actor shaping migration from the NTCA through military involvement, economic integration and restrictive immigration policies, it is no longer the only influential power. Since the San José Process in the 1980s, the EU has emerged as an important actor, engaging the region through political dialogue, trade agreements and development cooperation, especially via SICA. Whereas the US combines economic integration with militarised security and migration control, the EU focuses more on governance reform, sustainability and climate resilience, though with limited effectiveness. Even if it does not shape migration as directly as the USA, the EU acts as an indirect structural actor influencing how climate vulnerability, development and mobility interact

8. Conclusion

This thesis set out to examine whether climate-induced migration in Central America can be understood as more than a secondary or indirect factor, and whether it is developing into a distinct driver of mobility with implications for migration theory and legal protection. The findings demonstrate that, while migration in the region remains multicausal, climate change has increasingly acquired an autonomous role in destabilising livelihoods and triggering displacement, thereby challenging existing approaches in both migration research and refugee law.

In terms of the different types of migration defined in the theoretical framework of the thesis, a wide range of migration patterns could be identified in the study area. These include voluntary and forced internal and international migration triggered by natural hazard events, political persecution, during the civil wars in Guatemala and El Salvador and political upheavals in Honduras, economic transformations such as the introduction of neoliberal reforms and agricultural modernisation, as well as structural socioeconomic conditions including lack of employment opportunities, limited access to basic services and goods, poverty and violence.

The integration of theoretical frameworks by Black et al. and Perch-Nielsen has proven invaluable in revealing the complex, multicausal factors behind climate-induced migration. By analysing the interaction between economic, social, and environmental factors, the thesis demonstrates how environmental change in regions like the NTCA drives migration, not merely as an isolated trigger but as a structural force that reshapes existing vulnerabilities. Black et al.'s framework shows that migration is often an outcome of compounded stresses from climate, social, political and

economic pressures, which interact with individual household characteristics as well as with intervening obstacles and facilitators, shaping decisions to migrate or remain. This layered understanding allows for a more accurate depiction of migration motivations, countering simplistic, monocausal narratives.

Perch-Nielsen's model complements this by illustrating how specific environmental impacts, such as severe flooding and droughts, exert both direct and indirect pressures on livelihoods, leading to economic disruptions, thereby increasing migration pressures. Her model also demonstrates how political and legal barriers often limit international migration, leaving many climate-affected populations confined to internal displacement. These insights reveal that climate-induced migration is a multi-step process deeply embedded in social and economic structures, challenging policymakers to address root causes rather than focusing on migration as an isolated phenomenon.

Contrary to findings of some studies, such as Findley's examination of migration from rural Mali during the 1983–1985 drought, where migration remained largely internal, the NTCA case shows a significant rise in international migration, including long-term, especially towards the USA, during the periods of droughts and CLR expansion between 2009 and 2018. This shows that climate-related migration is highly context-dependent, and the adopted type of migration, if any, depends on various factors, including demographic, socioeconomic, political, and environmental factors in both the sending and receiving areas or countries.

The results of this thesis show that climate change has evolved into a decisive and increasingly autonomous factor in shaping migration from the Dry Corridor countries in the last few decades. Slow-onset climate change processes, intensified by phenomena like the ENSO effect, alongside extreme weather events such as hurricanes, droughts, floods, and the spread of crop diseases like CLR, have systematically undermined the livelihoods of rural populations in Honduras, Guatemala, and El Salvador. These environmental stressors have directly contributed to food insecurity, declining agricultural productivity, reduced job opportunities, and increased poverty levels, thereby driving migration from the region.

While economic and social factors have historically played significant roles in migration decisions, household-level studies demonstrate that these factors are increasingly rooted in the environmental impacts of climate change. Agricultural losses, droughts and natural disasters reshape labour markets, deepen unemployment, increase job scarcity, and precarious working conditions, pushing households to seek better opportunities elsewhere. Moreover, the lack of

effective risk management mechanisms and limited access to resources have further exacerbated vulnerability to climate change, compelling migration as a coping strategy. In this sense, climate change no longer functions merely as a background condition but has become an independent structural driver that transforms economic and social realities, and, in certain contexts, directly triggers migration.

At the same time, international migration from the NTCA countries cannot be understood without considering the long-standing political, economic and social ties with the USA. Considering the migration theory focusing on the meso level factors, social networks between both countries and Central American migrant communities residing in the USA have developed into durable institutional channels that facilitate migration regardless of changing political and economic situations. The disparities in socioeconomic conditions and living standards between NTCA countries and the USA further fueled migration. However, restrictive US immigration policies, limited legal measures for protection, and high costs associated with migration act as significant obstacles, especially for those fleeing environmental degradation and climate-related disasters. Despite legal concessions such as TPS for some migrant groups affected by natural disasters, long-term climate change processes have yet to be fully recognised as legitimate grounds for legal protection.

Overall, the findings of this thesis indicate that climate-induced migration in Central America should be understood as more than a secondary or indirect factor. While migration remains multicausal, climate change increasingly acts as an autonomous destabilising force that reshapes livelihoods and pushes vulnerable populations into mobility. This has important implications for migration research: classical push-pull models and the distinction between ‘voluntary’ and ‘forced’ migration are insufficient to capture gradual, climate-driven displacement. Concepts such as vulnerability, adaptation capacity and ‘trapped populations’ must be more fully integrated into migration theory.

The results also have significant legal and political implications. Current legal frameworks fall short in recognising those displaced by slow-onset environmental degradation and climate change. People forced to move due to climate-related livelihood collapse often fall into a legal grey zone: they are neither recognised as refugees under existing conventions nor adequately protected through humanitarian or migration policies. The empirical evidence from the NTCA region suggests that this gap is no longer marginal but affects a growing number of people. This increases the urgency for a reevaluation of migration policies that can recognise ‘climate refugees’

as a distinct category. Failure to do so risks overlooking populations who, though forcibly displaced by factors beyond their control, lack recourse under existing international protocols.

This thesis, therefore, supports the argument that international law and migration policy must evolve to recognise climate-related displacement as a distinct and legitimate form of forced migration. Addressing climate-induced migration requires both mitigation strategies to reduce environmental impacts and adaptive legal frameworks, such as expanding existing refugee definitions or creating a separate protection status for climate-displaced persons. Legal frameworks need to reflect the realities of climate-driven mobility. Without such adaptation, populations displaced by climate change risk remaining invisible and unprotected despite being forced to move by factors beyond their control.

In conclusion, climate change in NTCA has become a politically and socially transformative force, reshaping migration patterns in profound ways. Recognising climate-induced migration as a structurally significant and increasingly autonomous driver requires not only theoretical innovation in migration studies but also legal and policy reforms that respond to emerging realities. Only by integrating environmental change into migration theory and protection regimes can future migration policies become more just, effective and responsive to the challenges of a warming world.

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