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*MIGRANTS, BORDERS AND HOSTILE NATURE: THE CASE OF THE
DARIEN GAP (COLOMBIA/PANAMA) AND THE SONORA DESERT
(MEXICO-US)*

Geography of Conflicts

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ABBREVIATIONS AND ACRONYMS

| | |
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| AME-D | Darien Special Management Area |
| BSF | Border Security Force |
| CAPF | Central Armed Police Forces |
| CRED | Centre for Research on the Epidemiology of Disasters |
| COPACA | First Pan-American Highway Congress |
| DGPAD | General Directorate for Disaster Prevention and Attention |
| DHS | Department of Homeland Security |
| DOT | Department of Transportation |
| EACH-FOR | Environmental Change and Forced Migration Scenarios |
| EC FP6 | Sixth Framework Programme |
| EM-DAT | International Disaster Database |
| GCM | Global Compact for Safe, Orderly and Regular Migration |
| IDB | Inter-American Development Bank |
| IFR | Irregular foreign residents |
| IFW | Irregular foreign workers |
| INDERENA | Natural Resource Institute |
| IOM | International Organization for Migration |
| IRCA | Immigration Reform and Control Act |
| MINSA | Panamanian Ministry of Health |
| MRS | Migrant Reception Stations |
| NEPA | National Environmental Policy Act |
| PAHO | Pan American Health Organization |
| PDSD | Program for the Sustainable Development of Darién |
| PTD | Prevention Through Deterrence |

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| SENAFRONT | National Migrant Services of the National Border Police |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNHCR | United Nations High Commissioner for Refugees |
| WMO | World Meteorological Organization |
| YPG | Yuma Proving Ground |

INTRODUCTION

We live in an era characterized by unstoppable and unprecedented mobility.

At the same time, we live in an era of significant climate change, which combined with other social, economic and political factors has a major impact on human mobility. The scale of the problem of climate displacement is now recognized by the international community, and it is destined to increase in the coming years, until it probably becomes one of the major crises of the 21st century. Currently, environmental disasters mostly generate displacements within the borders, but cross-border migrations are growing and will gradually increase, especially considering the long-term environmental degradation processes, such as the submersion of entire islands and regions, or desertification.

Movement and mobility have animated all aspects of human geography, and studying geography without being confronted with mobility issues would be very difficult.

A topic closely linked to that of migration is the role of nature. The geographical element can indeed be fundamental in the success or failure of the migratory passage, as a deterrent and sometimes insurmountable obstacle.

It is the intention of this work, therefore, to introduce readers to some of the ways in which geography deals with mobility. The main objective of this dissertation is to analyze and identify the phenomenon of migration in relation to the environmental sphere, focusing on how nature and natural features, such as swampy terrain or extremely dry scenarios, can affect migratory paths.

Initially, the study is centered on migrants, and specifically on the fact that they still lack an official definition despite reported data indicating how widespread the phenomenon is and despite future predictions indicating that the phenomenon will intensify particularly in certain geographic areas.

The attention then moves on the causes that induce environmental migration, and as a result, on the environmental catastrophes. The work demonstrates how the role of nature is relevant in contemporary mobility and how it has been militarized over the year through an overview of the natural borderscapes worldwide, namely the Greek Turkish border; the French Italian border; the Belarusian Polish border and the Asian borders.

The second chapter of this dissertation focuses on the case of the Darién Gap, a large area of uninhabited jungle that divides Southern Panama from Northern Colombia. This inaccessible region has shifted from being no man's land to a popular migration path for those who attempt their journey to the North in view of a better future in the United States. It represents the missing link of the Pan-American Highway because it is unregulated, remote, and too expensive to build roads there.

Consequently, the difficulty of getting through the Darién Gap is relevant and drug traffickers and paramilitary organizations have become increasingly prevalent in the area. The Darién Gap's inherent hazards, such as its challenging terrain, deadly fauna, and remoteness, together with the persistent fear of kidnapping, murder, or robbery, have combined to create an unsafe environment for migrants trying to cross the border.

The third chapter of the thesis concentrates on another relevant case study that highlights how nature affect the migrant paths: the Sonora Desert.

The area is a desert ecoregion located on the northwestern portion of the United States-Mexico border, yearly crossed by numerous Central American and Mexican migrants that aim to reach the United States. The Sonoran Desert spans across parts of the southwestern United States and northwestern Mexico and is known for its harsh and unforgiving terrain, extreme temperatures, and lack of water. Despite the risks and difficulties of the region, are still many the migrants who attempt to cross the Sonoran Desert to enter the United States in search of better economic opportunities and to escape violence and political unrest in their home countries.

This study is based on desk research of academic literature and selected policy documents and legal cases.

Mobility studies as an inclusive interdisciplinary approach to understanding migration proposes a new paradigm to comprehend the reality of nature-society systems.

An investigation of this nature required an interdisciplinary, systematic focus, leading to the consideration of factors such as ecological conditions, historic knowledge, features of the territory, socioeconomic characteristics, and culture of the population, institutions and exogenous programs. The cases in the present study were surveyed using techniques developed for socioeconomic and environmental studies to identify local knowledge and agricultural practices.

Documentaries have allowed the analysis of the particularities, feelings and experiences of the human groups by means of observation of daily activities. Interviews of people facing the studied paths or interviews of people in close contact with migrants allowed to gain a deeper understanding of the challenges, internal dynamics and concerns surrounding the experience.

CHAPTER I

A current human security challenge: climate change related to migration

1.1 Conceptualizing migration

We live in a world that is constantly moving. Geography is moving.

Globalization seems to be a defining feature of the 21st century, and over the past two decades, a large body of work in geography has been concerned with understanding this movement, the meaning and importance of mobility, as well as how to extend this understanding. This work has had such a profound impact on human geography that mobility has become a pillar of the discipline. There is now a consensus that mobility is as fundamental as space and place, among other concepts. As a consequence, it is now crucial for geography experts to grasp the concept of mobility and engage with it more than ever. Indeed, mobility studies have grown considerably in scholarly importance in the past two decades, with academics spanning a wide range of disciplines in the social sciences, arts, and humanities becoming increasingly interested in movement and orienting their work to address questions posed by evolving understandings of the subject.

Migration is defined as a territorial human beings' mobility which entails different degrees of intentionality and voluntariness¹. We can discuss of migration from a macro-regional perspective or at the micro-level, but in both cases migration studies focus on the following fields of interest: the place of departure's conditions from a social, legal and economic perspective along with the impact of emigration on societies, families and individuals; the spatial and temporal dimensions and patterns of movement's features in space and time which could be circular, seasonal or permanent; the migrants' process of acceptance or exclusion from their host society, along with their impact on host countries, regions or localities; the connection between origin and destination; and the power that countries have exercised over migration and the techniques they have used to manage migration.

It can be voluntary or forced, temporary or permanent. It may occur in phases or cycles and may be unidirectional or more diverse.

In recent times scholars shifted their perspective from a state-centered framework to analyzing human agency, emphasizing differences in migration according to gender, race, class, age and other categories.² Intellectuals realized that the migration sphere does not include only the movement of a person from one country to another, but it entails various effects that needed a direct and critical

¹ International Organization for Migration, International Migration Law, 2011.

attention to this increasing phenomenon. This attention is crucial to have a further and deep knowledge on the cultures and societies.

In general terms, human migration refers to the intersection of a political or administrative unit for a determined period of time. More specifically, with international migration it is meant the action of crossing the borders separating one country from another, while internal migration is the movement from one administrative region, province, municipality, to another within the same country.

Even though the concept of international migrant does not acquire a formal legal definition, the International Organization for Migration (IOM) denotes migrant as “*a person who moves away from his or her place of usual residence, whether within a country or across an international border, temporarily or permanently, and for a variety of reasons*”.³

The above-described term stands out from the definition of refugee, since, according to the United Nations High Commissioner for Refugees⁴, they are considered as more vulnerable individuals, who should not fall under the same definition.

The interpretation provided by the International Organization for Migration includes a series of disparate legal categories of individuals. Amongst them can be listed economic migrants, also recognized as worker migrants. In fact, some people move to another country aiming in finding a stable work or more prosperous opportunities. Others flee from conflicts, religious persecution, political persecution, human rights violations, or terrorism. Another category of moving crowds, which, differently from the others classified, are not precisely defined under international law, are international students or retirees who voluntarily travel to another country for personal reasons. In this sense, it should be noted that the final decision of migration often can be connected to a collective choice of a community, rather than an individual one.

Lastly, the group of our interest in this work, is the one composed of the climate-induced migrants who move in response to the adverse consequences of climate change, natural disasters or other environmental factors that will be thoroughly explained later on.

Over the past decades, the most common difference that has raised among migrants is the one between regular and irregular migrants. It is the singular state that decides whether a person can enter into its territory or not, therefore, in the global context, an irregular migrant is “*a person who, owing to irregular entry, breach of a condition of entry or the expiry of their legal basis for entering and residing, lacks legal status in a transit or host country*”.⁵ Irregular migrants may be a problematic definition, for this reason the author Clandestino suggests to analyze the definitions of irregular

³ International Organization for Migration (IOM), established in 1951, is part of the United Nations System as the leading inter-governmental organization in the field of migration.

⁴ The United Nations High Commissioner for Refugees (UNHCR) is a UN agency established in 1950 to aid and protect refugees, forcibly displaced communities and stateless people.

⁵ European Commission from IOM Glossary on Migration, 2nd. Ed. 2011.

foreign residents (IFR) and irregular foreign workers (IFW) instead, as follows: “*IFR are foreign nationals without any legal resident status in the country they are residing in, and persons violating the terms of their status so that their stay may be terminated. IFW are foreign nationals working in the shadow economy, including those with a regular residence status who work without registration to avoid due taxes and regulations*”.⁶

However, everyday experiences demonstrate that these definitions are not comprehensive. A person can also begin with a legal migration status and end up their journey as irregular migrant for a series of legal reasons.

It needs to be underlined that everyday experiences demonstrate that these definitions cannot always include each very different situation. A person can also begin with a legal migration status and end up his or her journey as irregular migrant for a series of legal reasons.

Since the earliest times, humanity has been moving. Means, destinations, and intensity of flows were surely different from nowadays, but all scholars agree that migration is a phenomenon that has existed for ages.

The movement of people across boundaries is historically a common phenomenon. The reasons can be found mainly in the economic sphere, as well as the necessity to join relatives, the search for job or of better facilities. While migration has both short-term and long-term impacts, most studies point to economic motives as the primary driving force behind the recent spate of migration. A major pull factor is also the relative improvement of different facilities and living conditions.

It should be noted that people have moved to other countries both legally and illegally and it has been the corrupt alliance between illegal individuals and groups that has caused most of the problems related to migration. Cross-border illegal migration is the primary cause of unbalanced population growth and distribution between urban and rural areas in developing countries. Additional negative consequences of illegal migration are related to moral deterioration, debt crisis, workload on migrant or rejection by the settled community. The concept of ‘illegal migrant’ has been recently criticized by the literature, since the migrant as a person cannot be perceived as illegal himself.⁷ It is their actions and activities that can make them as such. As illegality is often associated with crime, some authors suggest to substitute the term with ‘undocumented’, ‘unauthorized’ or ‘irregular’. However, the ambiguity of the above-mentioned terms persists. ‘Undocumented’ is strictly related to the lack of documents or to a person who has not been documented, but illegal migrants do not denote such situations. A migrant who applies for asylum without documents is not considered as illegal.

⁶ Wolff S., *The Security Sector Governance–Migration Nexus: Rethinking how Security Sector Governance matters for migrants’ rights*. Pp. 5-9. London: Ubiquity Press, 2021.

⁷ C.B. Keely, *Illegal Migration*, Scientific American, 1982.

Likewise, an unauthorized migrant is not automatically illegal. Finally, the term 'irregular' does not specify the regulations to which it applies.

Therefore, the concept of illegality is the one that will be used in the following lines since it refers to the way in which migrants relate to the construction of what is legal.⁸

Currently, Western states have developed a definition of illegal migration as: crossing borders without the consent of authorities; crossing a border in a seemingly legal way though using false documents or using legal documents in a false way, or by making use of bogus marriages or impostor relatives; staying in a country after the expiration of legal status.⁹

However, since illegality is a fluid concept, its meaning changes over time and space due to increased control over mobility by the state. Indeed, it is important to note that the term 'illegal migrant' implies an agential capacity not so much confined as it is suspect due to its presumed, yet contestable, illegitimacy.

Across multiple regions, migration has been associated with criminality, especially as smugglers have become more prevalent as legal migration options have been closed. In this sense, 'illegal migrants' are considered culpable for the growing difficulty of regulating human mobility.

Many migrants encounter problems during the initial period of adjustment and adaptation, as well as while traveling through rain forests and coastal areas. Especially at the first stage of transportation towards the desired destination, the majority of migrants face innumerable challenges and difficulties. The risk and damage are catastrophic, as per the case that we are going to analyze in the next chapter: the Darien Gap.

1.2 Overview of the history of migratory movements

Since the earliest times, humanity has been moving. Means, destinations, and intensity of flows were surely different from nowadays, but all scholars agree that migration is a phenomenon that has existed for ages.

Besides the individual or small-scale migration, it can be said that mass migration, which refers to the transit of a considerable number of humans from an area to another, has been particularly influential to the contemporary history.

One of the first long-distance mass movement which reported an unprecedented and unusual high rate, is the one that dates back to the 17th century during the period of industrial growth.

⁸ M. Samers, *Here to work: Undocumented immigration in the United States and Europe*, SAIS review, XXI (1), 2001.

⁹ Heckmann F., *Illegal migration: What can we know and what can we explain? The case of Germany*, IMR 38 (3), 2004.

The main movement was in Europe and precisely, people fled from the Southern Europe to Northern Europe which was more industrialized. However, it is important to notice a significant number of European citizens lengthened to the United States or even Australia in pursuit of a flourish future.

The countries' need of labor force to face the industrial development, together with the need of individuals to achieve higher quality opportunities, were the driving causes of what has been defined by historians as the age of mass migration, occurred from 1850 until the outbreak of the First World War in 1914. Moreover, this period was characterized by a low level of migration policies in favor of open borders regimes which encouraged the movement. During this period, approximately thirty million people travelled to the US; *“by 1910, 22 percent of the US labor force was foreign born, compared with only 17 percent today”*.¹⁰

In between the two World Wars (1918-1939), the migratory flows have considerably slowed for two main reasons: the Great Depression in 1929 in the United States and the dictatorships established in some European countries.

A substantial revival of migration from Europe has been recorded since World War II, mainly related to war displacements of population. Indeed, the reconstruction years, from 1945 until the first decades of the 1950s, the flows restarted, especially from Southern Europe to the northern European countries such as Germany, Belgium, United Kingdom and France, even though the leading destination of European migrants remained the United States. These overseas migrations historically contributed to strengthen the political, economic or cultural relationships among countries, by providing also the solution to European refugee issues.

The period from the mid-1950s until 1974 was characterized by development and economic growth. Migration, mainly from former colonies of the Global South to motherlands and refugee migration, was intense and generally considered positive from the economic perspective, both of the sending and receiving countries. Focusing on the Mediterranean area for example, it can be said that migration flows contributed to alleviate pressures on the labor market, which was previously characterized by low productivity and high rates of unemployment.

Movements were then restricted and limited with the oil crisis from 1973 to 1974. This crisis had a considerable impact on migration since it reduced the need of labor. North-Western European governments blocked migration and the only allowed entrance was for family reunification. However, these policies directed at regulating migration actually remodulated it. In fact, worker migrants have settled permanently in order not to lose their residence permit and then started to reconcile with their families creating a chain migration. This led to an increase on the number of foreign residents.

¹⁰ Abramitzky, Ran, Leah Platt Boustan, and Katherine Eriksson, *A Nation of Immigrants: Assimilation and Economic Outcomes in the Age of Mass Migration*, National Bureau of Economic Research Working Paper 18011, 2012.

An increase of asylum applications during the same time frame was recorded in Europe, particularly after the fall of the Berlin Wall.¹¹

The above-described period lasted until the fall of the Iron Curtain in the late 1980s and, by the end of this era, migration flows direction pointed towards former emigration countries in Southern Europe. With the end of the Cold War, together with the reestablishment of order after the wars in former Yugoslavia, the European Union gained more influence and control over migration flows and barriers to intra-European mobility were removed. This abolition of borders, through the signature of the 1992 Maastricht Treaty¹² surely eased movements among European countries.

The religious fundamentalism, the growing xenophobia and the homeland security barriers characterized the 21st century. These new aspects threatened the immigrants' freedom of movement. Concurrently, the demand for a migrant workforce is growing - in prosperous countries, for housework or caring for the elderly - as migrants themselves are desperately seeking to enter societies that allow them sustainable lives.

Research data shows that the gap between the Global North and Global South hemispheres is growing as the powerful North imposes tariff barriers and unequal terms of trade. Therefore, the policies of countries that are reluctant to admit more immigrants just reinforce the conditions for immigration from the North and the South.

All these different periods are crucial to understand the migration flows in Europe and worldwide since they help to recognize the behaviors of populations over the years and their attitudes towards migration and movements, especially from a demographic perspective.

The conducts of the past may facilitate us to explain and address the current situations migrants face today. As we learnt, human displacement started long time ago, but its expression and influence changed over time as the world developed and advanced towards globalization.¹³

Nowadays, migration is an international phenomenon which is easily turning into a challenge since a universal awareness of how to handle it has not yet been reached.

People move as never before. According to the World Migration Report 2022¹⁴, we reached the current rate of 281 million international migrants in the world, which is equal to 3.6 percent of the global population. This amount has expeditiously increased since the end of the century when the number of international migrants was estimated to be almost 173 million globally. This means that more than ever, currently people live in a country which is not the one in which they were born.

¹¹ Randall H., *Migration to Europe since 1945: Its history and its lessons*, The Political Quarterly, 74(s1), 2004.

¹² The Maastricht Treaty, formally known as the Treaty on European Union, which was signed on February 7th, 1992, created the European Union.

¹³ McAuliffe M. and Masako Goossens A., *Regulating international migration in an era of increasing interconnectedness*, Edward Elgar Publishing, Cheltenham, 2018.

¹⁴ World Migration Report 2022, published in December 2021.

Surely, the expansion of globalization has accelerated the migration phenomenon, leading towards social inequalities and the stimulation of climate change.

International migration flows are said to still be on the rise. For studying reasons and government research, it is important to quantify the capacity of these flows in order to assess their impacts on the society both at the economic and social level.

However, databases for such valuations are still insufficient. While many of these data problems derive from a lack of commitment and resources from those responsible for migration data, others originate from the complexity of the concept of migration itself and the differing approaches governments have taken to defining international migration.

It is therefore important to examine how countries deal with international migration, how they identify who migrants are and what data they include in their accounting systems.

1.3 Environmental migration, driving causes and recent developments

Anyone who decides to deal with migrations cannot but accept that migration is “*an extremely varied and complex manifestation and component of equally complex economic, social, cultural, demographic and political processes operating at the local, regional, national and international level*”¹⁵. For this reason, when we talk about environmental migration, the phenomenon takes on an exponential degree of complexity, which makes it difficult to design a linear and deterministic relationship between the environment and the displacement of the populations that inhabit it. However, it is important to emphasize that even the authors who, on the contrary, consider it possible and necessary, in some specific cases, to identify a direct or indirect relationship between environment and migration do not deny the incidence of additional factors to the environmental one. For example, Myers constantly emphasizes in his essays how endogenous problems, related to demographic pressure, poverty, malnutrition, urbanization, institutional crises, ethnic conflicts and exogenous problems, namely public debt, conventional conflicts are closely linked to environmental factors¹⁶.

Traditionally, as already briefly mentioned, the theories on the causes of migration can be classified according to the focus used in macro, meso and micro-sociological theories. The first focuses on the macrostructural factors that cause the migration phenomenon, like society, population, culture, economic system, theories at a micro level give importance to individual and family motivations. The

¹⁵ Castles S. and Miller M., “*The age of migration: international population movements in the modern world*”, 1993. New York, The Guildford Press in: Loneragan Steve, “*The Role of Environmental Degradation in Population Displacement*”, Environmental Change and Security Project Report, 1998.

¹⁶ Myers N., “Environmental refugees”, *Population and Environment: a Journal of Interdisciplinary Studies*, 1997.

meso level, instead, acts as a bridge between the different theoretical approaches, underlining the centrality of interpersonal relationships in perpetuating migrations. The environment is undoubtedly a macro factor.

Environmental emergencies are regularly taken into consideration as an important driving force of migration. Still, historic proof suggests that this dating is not new and has in all likelihood existed since a long time. It is important to stress that while many people migrate out of choice, many others migrate out of necessity.

The World Meteorological Organization (WMO)¹⁷ has sadly stated that 2021 has been one of the seven warmest years on record. Noting that 2019 was already recorded as the warmest year since 1980, the trend suggests a continuous, if not an accelerated pace of global warming.

Currently, scientific evidence demonstrates that the average surface temperatures are rising, “*with the best science currently suggesting most if not all of the observed warming is due to human activity*”.¹⁸ Since 2018, greenhouse gas emissions in the atmosphere reached record levels. An important portion of CO₂ emissions are absorbed by oceans, contributing to the acidification of the waters which affects the marine ecosystems, increasing the risk of coastal flooding and erosion.

Basing the reasoning on the assumption that climate change influences the prevalence of natural disasters, automatically it can be said that the risk of droughts, storms, tropical cyclones is extremely high.

Furthermore, the heat in the atmosphere and in the ocean surface led to higher wind speeds found in tropical storms. Areas that are usually unaffected by the sea are becoming more vulnerable due to rising sea levels as waves and currents become stronger.

In the last 20 years, the number of natural disasters doubled, approximately two billion of people suffered and currently suffer for the consequences of climate change. In 2021, 401 natural disasters worldwide were recorded in EM-DAT¹⁹, more than the previous data. The Asian Pacific region experienced the highest number of natural catastrophes, also in relation to its size and natural features. The Centre for Research on the Epidemiology of Disasters (CRED) gives a definition of ‘environmental disaster’, intended as “*a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering*”.²⁰

¹⁷ The World Meteorological Organization was established in 1950 and it is a specialized agency of the United Nations to promote research activities on weather.

¹⁸ Galgano F. (ed.), *The Environment-Conflict Nexus*, Advances in Military Geosciences, Springer International Publishing AG, part of Springer Nature, 2019.

¹⁹ The International Disaster Database, Centre for Research of the Epidemiology of Disasters.

²⁰ Ibidem.

Nonetheless, the reactions are not properly proved, and the implications not yet completely understood, despite the fact that the occurrences of environmental disaster and migration appear to have increased. The main issue is that this situation, as mentioned, is presumably to emerge more aggressively in the long run with global warming. These sudden environmental modifications are influencing migration drivers, intended as “*the complex set of interlinking factors that influence an individual, family or population group’s decisions relating to migration, including displacement*”²¹. These drivers then will shape migration outcomes. Climate change forecasts for the twenty first century imply that even more people than today are predicted to leave their own country for extreme weather-related events, including floods, droughts, storms, and related changes in temperature standards. All natural calamities that will force people to move in search of security.

The 2018 Global Compact for Safe, Orderly and Regular Migration (GCM)²², acknowledges that migration is a reality within the context of disasters, climate change, and environmental degradation. In this sense, debates and reflections on the direct link between migration and environmental change is crucial in order raise awareness on the need to support both migrants and receiving states

In fact, with growing consciousness and concern about the dangers and impacts of climate change, a debate on the direct link between migration and environmental change was inevitable.

The two general opponents in this debate are classified as: those who work to define and empirically prove the connection of migration and environmental crisis; and those who denies a direct link between migration and environmental change and points to the complexity of the migration process. However, they still cannot ignore the impact of climate change.

Nevertheless, it remains a fact that, lately, important consideration has been given to this relationship between environmental change and migration. Civil arguments have begun to focus on concerns about the incompetence of countries to make successful decisions to limit and control the crisis through targeted regulations.

It is however not always clear how environmental migration is defined. This is also related to the fact that it is extremely arduous to isolate the environmental elements from other factors that influence migration. Moreover, the line between forced or not forced migration is very subtle, even in the environmental sphere.

The definition of environmental migration is not universally acknowledged and, to date, a legal interpretation for people who move because of environmental causes does not exist. However, the most accepted is the one provided by the International Organization for Migration in 2007²³, which

²¹ Definition in IOM’s 2019 edition of the Glossary on Migration, 2019.

²² The Global Compact is the first negotiated inter-governmentally negotiated agreement, prepared under the auspices of the United Nations, covering all dimensions of international migration in a holistic and comprehensive manner.

²³ This definition was first presented to the IOM membership at 94th Council Session, it also appears in the World Migration Report in 2008 and various other publications.

states that: “*Environmental migrants are persons or groups of persons who, predominantly for reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad*”. This denotation was developed in order to be able to work within a precise framework and it tries to capture the complexity of the issue. It is indeed purposely vast and open to all the different varieties of environmental-related movements. The definition also outlines that there are diverse forms of expression in terms of environmental migration: forced and voluntary, temporary and permanent, internal and international, individual and collective, in proximity and of long distance. These above listed features of migration are related and depend also on the nature of the events and their evolution over time. For instance, a difference is evident among sudden-onset events such as floods, storms, cyclones, etc. These catastrophes may allow a migrant to consider a temporary movement. On the other hand, there are natural events that force the individual to leave their place of habitual residence.

It additionally relies upon to the interactions with the political, cultural and socio-economic factors that may aggravate or alleviate the crisis and, therefore, have an impact on the choice or necessity to move.

With the absence of a legal definition, it has been decisive to define more specifically the categories that fall within the realm of environmental changes induced migration. For instance, there is a distinct definition of climate migration, a subcategory of environmental migration, which stresses that the cause of migration is strictly related to climate change. Even though this definition has not a legal value, it has been used in the Cancun Agreements on climate change adaptation at the 2010 Conference of the States Parties to the UN Framework Convention on Climate Change (UNFCCC). In the Cancun Agreements three different forms of movement related to climate change has been classified: displacement, migration and planned relocation²⁴. The latter definition is delineated by the IOM,

“in the context of disasters or environmental degradation, including when due to the effects of climate change, [refers to] a planned process in which persons or groups of persons move or are assisted to move away from their homes or place of temporary residence, are settled in a new location, and provided with the conditions for rebuilding their lives. The term is generally used to identify relocations that are carried out within national borders under the authority of the State and denotes

²⁴ Framework Convention on climate change, 2011.

*a long process that lasts until “relocated persons are incorporated into all aspects of life in the new setting and no longer have needs or vulnerabilities stemming from the Planned Relocation”.*²⁵

A difference is devoted also to the concept of disaster displacement, which is a term that

*“refers to situations where people are forced to leave their homes or places of habitual residence as a result of a disaster or in order to avoid the impact of an immediate and foreseeable natural hazard. Such displacement results from the fact that affected persons are (i) exposed to (ii) a natural hazard in a situation where (iii) they are too vulnerable and lack the resilience to withstand the impacts of that hazard”.*²⁶

This expression mainly relates to the type of movement of people which is triggered by an unexpected event in the environment. The concept of disaster displacement is adopted by the Internal Displacement Monitoring Centre²⁷ in offering annual estimates on new inner displacements withinside the context of calamities.

Another term which differs from the above-examined descriptions is the one of human mobility.

It is *“a generic term covering all the different forms of movements of persons. The term human mobility reflects a wider range of movements of persons than the term “migration”. The term is usually understood as also encompassing tourists that are generally considered as not engaging in migration”.*²⁸

Human mobility includes the three forms of climate change induced movement from the Cancun Agreement, mentioned before, namely, displacement, migration and planned relocation.

An essential distinction has to be stressed also among two crucial terms: climate refugee and environmental refugee. This latter term was used the first time back to the 1970s, but only in the 1980s it became of common usage, when researcher Essam El-Hinnawi used it in the United Nations Environment Programme (UNEP). At first, the two denotations seem to have the same meaning. However, even though their situations and needs may appear similar to those of the refugees, which include crossing a border after a catastrophe and desiring safety and assistance, humans fleeing for environmental reasons, do no longer fall fairly within a specific category provided by the existing

²⁵ IOM, 2019; Georgetown University, UNHCR, and IOM, 2017; UNHCR, the Brookings Institution and Georgetown, 2015).

²⁶ The Nansen Initiative Global Consultation Conference Report, 2015.

²⁷ The Internal Displacement Monitoring Centre or IDMC is an International non-governmental organization established in 1998 by the Norwegian Refugee Council in Geneva.

²⁸ IOM, 2019.

international legal framework. There is also a growing consensus among concerned agencies, including IOM and UNHCR, that their use is to be avoided. The term is refuted as it implies an oversimplified and mono-causal perception of the link between climate change, environmental events and displacement, misleading and failing the recognition of the numerous key aspects that define population movements. Moreover, people moving are protected by international human rights law and 'refugee' is a legal term that should refer mainly to refugees protected under the 1951 Geneva Refugee Convention, which consolidates the idea that the individual, and therefore the refugee, must be considered as a bearer of human rights. The Convention represents the desire to establish a code of refugee rights that covers all the fundamental aspects of life, assimilating the status of refugees to that of citizens of the country of asylum in order to enjoy important protections in sectors such as health care and social security, legal protection, the right to education and work and the widest range of civil, economic and social rights. Therefore, the 1951 Geneva Convention defines with the term refugee a person who escapes from his country of origin, having the well-founded fear of being persecuted for reasons of race, religion, nationality, belonging to a specific social group or for political and who, as a result, seek international protection in a different State²⁹.

The verification related to the application for protection, however, requires that the reasons why refugees are fleeing, are directly or indirectly attributable to the country of origin because, in the event that one is fleeing as a result of events not caused by the state itself and nor by its agents, the application for international protection cannot be recognized and much less applied.

Following what has been stated, this Convention identifies two categories of subjects excluded from the notion of refugee: economic migrants and environmental migrants. With reference to the latter, it is argued that: *"by including in its operative provisions the requirement that a refugee fear prosecution, the Convention limits its humanitarian scope and does not afford universal protection to asylum seekers. Not matter how devastating may be epidemic, natural disaster or fame, a person fleeing them is not a refugee within the terms of the Convention. And by incorporating the five Convention reasons the Convention plainly contemplates that there will even be persons fearing persecution who will not be able to gain asylum as refugees"*³⁰. The aforementioned affirms that environmental migrants are excluded from the international protection offered by the Geneva Convention of 1951, as people who cannot return to their lands because they come from countries subject to climate or environmental changes. Environmental migrants are therefore forced to leave the country, they can apply for international protection, but it is certain that this will be denied to

²⁹ Art. 1, letter A, paragraph 2 of the 1951 Geneva Convention relating to the Status of Refugees.

³⁰ High Court of Australia, Minister for Immigration & Ethnic Affairs, 24 February 1997

them because it is not expressly contemplated in the 1951 Geneva Convention on the status of refugees.

Only recently the issue of environmental migrants has touched the heart of the international community and above all the United Nations, which through a historic judgement³¹, showed their interest in clarifying a fundamental point in the field of international law and climate refugees. An important turning point that, in order to be understood, it is necessary to pay attention to the events that occurred in 2013, when Ioane Teitiota, a man from the island of Kiribati, asked for protection from the New Zealand government because he was forced to leave his country due to sea level rise generated by global warming. Teitiota moved with his whole family to New Zealand, asking for protection from the Court which, however, in 2015, decided to repatriate him to his country of origin³². Although the man's request for refugee status could represent an important turning point in international law, the appeal to the UN Human Rights Committee was also unsuccessful. The judges established that, in this specific case, the life of the man and his family was not at noticeable risk. This decision was based on the prediction of the same Committee, according to which within ten or fifteen years, the Republic of Kiribati, supported by the international community, would adopt measures to protect the entire country and ensure, where possible, the transfer of the population. Teitiota reported³³ the New Zealand Tribunal arguing that the repatriation decision went against the rights to life and freedoms recognized to individuals as such.

Only a few years later, the United Nations Conference on Climate Change met and ended with the detection of an actual sea level rise for the countries bordering the Pacific Ocean, recognizing the not future, but imminent damage against which the Republic of Kiribati had been fighting for some time. Moreover, they recognized a violation of the right to life of the inhabitants because they were not

³¹ Judgement CCPR/C/127/D/2728/2016

³² Par. 2.8 of the judgement: *“After a lengthy analysis of international human rights standards, the Tribunal determined that “while in many cases the effects of environmental change and natural disasters will not bring affected persons within the scope of the Refugee Convention, no hard and fast rules or presumptions of non-applicability exist. Care must be taken to examine the particular features of the case”. After further examination, the Tribunal concluded that the author did not objectively face a real risk of being persecuted if returned to Kiribati. He had not been subjected to any land dispute in the past and there was no evidence that he faced a real chance of suffering serious physical harm from violence linked to housing, land or property disputes in the future. He would be able to find land to provide accommodation for himself and his family.³² Moreover, there was no evidence to support his contention that he was unable to grow food or obtain potable water. There was no evidence that he had no access to potable water, or that the environmental conditions that he faced or would face on return were so perilous that his life would be jeopardized. For those reasons, he was not a “refugee” as defined by the Convention relating to the Status of Refugees”.*

³³ Par. 3 of the judgment, The complaint: *“The author claims that by removing him to Kiribati, New Zealand violated his right to life under the Covenant. Sea level rise in Kiribati has resulted in the scarcity of habitable space, which has in turn caused violent land disputes that endanger the author’s life, and environmental degradation, including saltwater contamination of the freshwater supply”.*

allowed to access the sources of drinking water following the infiltration of the marine one.³⁴ In support of this serious problem, the historic ruling of the UN Human Rights Committee stated that “*without robust national and international efforts, the effects of climate change in receiving states may expose individuals to violations of their rights thereby triggering the non-refoulement obligations of sending states*”³⁵. In other words, the ruling recognizes the extreme risk deriving from the possibility that water could submerge an entire country and that this could result in a real violation of the right to life.

Teitiota did not become the world's first climate refugee, but the Committee's ruling nevertheless recognized the existence of climate refugees and the fact that their lives are in danger. The debate is still open between academics and policy makers.

The judgement confirms the fact that, if there is an immediate threat to life as a result of climate change, and if the individuals cross the border of another country to apply for international protection, they must not be rejected because, otherwise, the State of destination could run the risk of compromising the life and freedom of the subject.³⁶

Although the United Nations ruling represents today an important first step in the field of international law, it does not open the door to waves of climate refugees. It is not binding, but it nevertheless warns governments around the world that climate change will have an ever-increasing impact, even if the recognition of environmental refugees and their demand for protection are still subject to rejection.

This is a problem that also concerns Australia, which was the victim of a forest fire that took place in 2019 causing thousands of displaced people. In general, there is much pressure on world leaders to take serious action to find solutions to the problems arising from climate change, in support of environmental refugees seeking protection.

The last definition that needs to be underlined is the one of trapped populations, those “*who do not migrate, yet are situated in areas under threat, [...] at risk of becoming ‘trapped’ or having to stay behind, where they will be more vulnerable to environmental shocks and impoverishment. The notion*

³⁴ Par. 8.6 of the judgement: “*Based on the information the author presented to the domestic authorities and in his communication, the Committee considers that the author sufficiently demonstrated, for the purpose of admissibility, that due to the impact of climate change and associated sea level rise on the habitability of Kiribati and on the security situation on the islands, he faced a real risk of impairment to his right to life*”.

³⁵ Su Y., researcher of political and international sciences at the University of Guelph, Ontario, Canada. Article published in *The Conversation*.

³⁶ Par.9.3 of the judgement: “*The obligation imposed on States parties to the Covenant, in which it refers to the obligation of States parties not to extradite, deport, expel or otherwise remove a person from their territory when there are substantial grounds for believing that there is a real risk of irreparable harm such as that contemplated in articles 6 and 7 of the Covenant. The Committee has also indicated that the risk must be personal, that it cannot derive merely from the general conditions in the receiving State, except in the most extreme cases, and that there is a high threshold for providing substantial grounds to establish that a real risk of irreparable harm exists. The obligation not to extradite, deport or otherwise transfer, pursuant to article 6 of the Covenant, may be broader than the scope of the principle of non-refoulement under international refugee law, since it may also require the protection of aliens not entitled to refugee status*”.

*of trapped populations applies in particular to poorer households who may not have the resources to move and whose livelihoods are affected*³⁷. In the climate change conditions, people may not have the possibility to move for several reasons. Among them we can list mobility issues, lack of resources, social or cultural reasons like the special bond with the land that ancestor have conveyed to the following generations.

However environmental determinants are usually not the only causa of migration as many factors concur.

In addition, a study on environmental change and migration conducted by the United Kingdom Government's Office for Science, and subsequently referred to as the "Foresight Study", reasoned that "*[it was] almost impossible to distinguish a group of 'environmental migrants', either now or in the future*". Discussing related attempts to estimate the numbers of 'environmental migrants,' the report argued that these are "*methodologically unsound, as migration is a multi-causal phenomenon, and it is problematic to assign a proportion of the actual or predicted number of migrants as moving as a direct result of environmental change.*"³⁸

It is stated that migrations are complex phenomena in which the environment is sometimes not the only triggering factor, it is not when it is denied that it can be. In fact, in the case of environmental disasters of immediate incidence it seems evident that the triggering cause is the environment and in the same way it seems short-sighted not to see a link between the environment and economic, political and social factors.

It is necessary to highlight other structural factors affecting migration, such as poverty. An approach of this type is useful when it emphasizes that the interventions to protect and assist environmental migrants must be reinforced since environmental stresses have an even more tragic impact on populations already affected by other problems, but it is deficient if not accompanied. from as many political recommendations in support of the environment itself, too often accused of pure environmentalism.

Furthermore, not recognizing an 'autonomous' role to environmental changes in the discourse on migration diminishes those environmental variations, affecting directly and indirectly on populations, in some cases are a phenomenon that affects the reproduction of structural factors such as poverty, overpopulation, urbanization etc. creating vicious circles that an intervention on the environment could interrupt or at least mitigate. For these reasons it is important to reiterate that the environment must be considered an incident variable on which to act whether its intervention is direct or indirect.

³⁷ IOM, 2019.

³⁸ Foresight, 2011.

One of the attempts to try to identify to what extent the environmental factor can be isolated as a trigger for migration comes from the research project ‘Environmental Change and Forced Migration Scenarios’ (EACH-FOR) funded by the European Commission from 2007 to 2009 during the Sixth Framework Programme (EC FP6). It aimed to describe and analyze the causes of forced migration induced by environmental change in 22 world contexts.³⁹

Interviews and questionnaires were submitted both to those who had decided to move from the areas under consideration, and to those who had decided to stay. In this way we tried to understand from the former whether the factor had affected the displacement, from the latter which reasons dictated the decision to stay. The study once again revealed the difficulty of isolating a single cause, environmental or other, triggering migration, the potential increase in environmental problems, and therefore also in related migrations, which will inevitably occur due to global warming, the impact of economic availability and the change that has taken place over time in migration models.⁴⁰

1.4 The role of nature in contemporary mobility and its militarization

Recent mobility research stands out from previous geographical work on movement for three key reasons. Firstly, movement is seen as a geographical agent, something that shapes places, relationships, and phenomena. Mobility used to be viewed as somehow in-between places, merely creating geographies elsewhere, without affecting them in any way.⁴¹ As mobility has become increasingly important within geography, perceptions have changed and a more conceptual perspective has emerged. In addition to its expanding and intensifying engagement with mobility, current geographical work on mobility stands out as one of its key characteristics. Several newer conceptual approaches to mobility have influenced this approach, as well as the changing mobility system today. Increasing attention to mobility has spawned a similar proliferation of methods that move with the subjects being studied, which is a third key attribute that makes current geographic work on mobility distinctive.

We live in an era characterized by unstoppable and unprecedented mobility, which involves every component of the global system, including people. At the same time, we also live the time of significant climate change, which combined with other social, economic and political factors, has a

³⁹ The analyzed case studies were: Repubblica Dominicana e Haiti, Messico, Ecuador, Argentina, Marocco, Sahara Occidentale, Niger, Senegal, Ghana, Egitto, Mozambico, Spagna, Balcani, Russia, Kazakhstan, Kirgizstan, Tajikistan, Cina, Vietnam, Bangladesh, Turchia, Tuvalu.

⁴⁰ Jäger, J., Frühmann, J., Günberger, S., Vag, A. (2009) “Environmental Change and Forced Migration Scenarios Project Synthesis Report” in AFIFI Tamer (2012) “Environment, climate change and human displacement” in: UNESCO (2012), *Climate change, water stress, conflict and migration*, Unesco.

⁴¹ Crang, M. ‘*Between places: producing hubs, flows, and networks*’, Environment and Planning A., 2002.

great impact on human mobility. As mentioned, the scale of the problem of climate displacement is now recognized by the international community, which is destined to increase in future years, to the point of probably becoming one of the greatest crises of the twenty-first century.⁴²

Currently, environmental disasters mostly generate displacements within borders, but cross-border migrations are growing and will constantly increase, especially considering the processes of long-term environmental degradation, such as the submergence of entire islands and regions, or desertification.

The social impact of climate change has begun to be assessed in the last twenty years. Before the 90s of the twentieth century, the climatic phenomenon was studied by the scientific community, which only took into consideration the impact on the natural ecosystem.⁴³

Only once the scale of extension of the phenomenon was understood, starting from the 1990s, its social impact was also recognized.⁴⁴ This context includes migratory movements, based on the evidence that areas of the earth made uninhabitable by climatic phenomena - such as rising tide levels, floods or desertification - force populations to flee and resettle in other areas.

Movement is therefore an essential fact of life and a constant element of everyday life.

The concept of climate migration encompasses two elements: human mobility and climate change. Being the first considerations of this phenomenon by environmental science, the prevailing interpretation focuses on the climatic dimension, and not on the migratory dimension, which is associated with a regulatory regime and national and international political obligations. Even today, the attention to the phenomenon by contemporary migratory studies remains limited, leaving the interpretation to the perspective of natural science.⁴⁵

There is no doubt that mobility plays an important role in the world of today, and in the world of geography as well. This has been a fundamental concept of mobility geographies since it was first introduced and has continued to develop.

Before analyzing the militarized role of nature, in the following lines some general concepts of geography will be briefly illustrated. Concepts like space, environment, territory, landscape, place will be explained and examined since they represent useful interpretations to better understand the complexity of migratory phenomena.

⁴² Myers, N., *Environmental refugees: a growing phenomenon of the 21st century*, In Philosophical Transactions of The Royal Society B Biological Sciences.

⁴³ United Nations, Report of the United Nations Conference on the Human Environment, Stockholm, 5th -16th June 1972, UN Doc. A/CONF.48/14/Rev.1.

⁴⁴ IPCC, "Policy Makers Summary of Working Group II (Potential Impacts of Climate Change)", in IPCC First Assessment Report, 1990.

⁴⁵ Kraler, A., Cernei, T. & Noack, M., 'Climate Refugees', *Legal and Policy Responses to Environmentally Induced Migration*, Bruxelles, European Parliament, December 7th, 2011.

First of all, we will talk about ‘space’, intended both as a physical environment and as a ‘container’ of social processes. Subsequently, the concept of ‘territory’ and the related processes, which lead to aspects of territorialization, deterritorialization or reterritorialization.

The analysis will focus on the concept of ‘place’, both as a ‘location’ and above all as a social value and identity reference for the population. We will then review the definitions of landscape, in the specific meaning of the ‘ethnic landscape’ or ethnoscape.

These lexical and conceptual clarifications seem necessary, as these terms are used in different fields, often with different meanings. For geographers, these are conceptual tools, at the basis of the study and analysis approach. In our case, we will present in parallel the theoretical definition and the possible application of these concepts to immigration studies, in relation to their connotative aspects. When we use the term ‘space’, we refer to “*a location/a geographical point on the earth’s surface as defined by longitude and latitude*”. This is the neat interpretation of Cresswell.⁴⁶ Space is what geography is based on, looking at things with a spatial dimension. It is something that human beings approach in the abstract.

For a less concise perception of ‘space’, we have the definition provided by Raffestin⁴⁷ who considers it as “*Support, but also as a resource (...). Space is first of all a given before human intervention (...) it has two faces: one which is the plane of expression, consisting of surfaces, distances and properties; and the other which is the content plane, consisting of the surfaces, distances and structured properties that are signified by the actors. Thus, in close relationship with real space, there is a symbolic "abstract" linked to the action of organizations. It is in some way the space of relationship "invented" by men and whose permanence is inscribed in different time scales from the real "given" space*”.

The word ‘space’ differs from the term ‘place’, which refers to an area that people consider meaningful for some reason. It is linked to territory that human beings anoint and decree meaningful. Latin people used to call *genius loci* which can be translated with sense of place. The place has a deeper content: it is a unique entity, which has history and meaning. Furthermore, it embodies the experience and aspiration of a people and therefore constitutes a reality that must be understood bearing in mind the perspective of people and the meanings they attribute to the place itself.

‘Territory’ is a geopolitical term. It is a unit of contiguous space that is used, organized, and managed by a social group, individual person or institution to restrict and control access to people and places. The word comes from Latin *territorium*, which is associated to *terrere* (terrorize) and *terere* (plow). It is strictly connected to the idea of national state. The territory can therefore be considered as an

⁴⁶ Cresswell, T. ‘*Place: encountering geography as philosophy*’, Geography, 2008.

⁴⁷ Raffestin C., *Per una geografia del potere*, Unicopli, Milano, 1981.

‘artifact’ resulting from the interaction between physical space and anthropogenic action. The process of construction and evolution of the territory is defined as territorialization.

The characteristics of the territory and the methods of territorialization were analyzed by A. Turco⁴⁸ as part of the ‘*Teoria geografica della complessità*’. We can imagine, at the beginning of this process, an original space, with its physical attributes. On this space, man can intervene in different ways, in order to achieve greater autonomy with respect to the difficulties and limits set by the environment. There are therefore multiple possibilities for action, but only some of these will then actually be implemented: the gap between the possible actions and those actually carried out is defined by the author with the term ‘complexity’.

As mentioned above, the process by which human beings, with their actions, transforms physical space into territory is called ‘territorialization’. It is the dynamic process whereby humans and their affairs are fixed territorially in space, by a range of actors but primarily by states. In other words, it is the development of territory construction through physical and symbolic elements.

This practice is composed by three consecutive phases. In the first phase, called the denomination, designators are established which have the aim to indicate certain elements of the environment: in this way it is established a cognitive control over the environment, starting the territorialization process. The second phase is that of reification, which corresponds to the material construction of artifacts, objects, roads, settlements. It is therefore a matter of a physical control of the territory. The third and last phase, that of structuring, corresponds to the creation of real territorial structures endowed with relationships and meaning: it is the phase of symbolic control of the territory. When territorializing relations and power relations between the actors change, the forms of territorialization are no longer adequate. Thus, successive phases of territorialization, deterritorialization and reterritorialization follow. If we analyze a territory, with an approach similar to that of an archaeologist who goes in search of the vestiges of the past, we can identify some elements apparently unrelated to the current territory: they are the signs of past territorialization.

For example, considering cities, in particular the case of the neighborhoods most involved in immigration processes, on which we will focus in this thesis. The city is a territory par excellence, insofar as it is a man-made construction that evolves and takes on different forms over the centuries. The appearance of the city reflects the different economic, political, social and settlement logics that correspond to the different civilizations and historical periods. In the following lines it will be analyzed the way in which some city districts are involved in processes of territorialization, deterritorialization and reterritorialization.

⁴⁸ Turco A., *Verso una teoria geografica della complessità*, Unicopli, Milano, 1988.

Deterritorialization is the process of separation and uprooting of social, cultural and political practices from a location. The phases of deconstruction of the territory correspond to a crisis of the denomination, of the reification and of the structuring. The loss of the internalized place adds two other problems, namely that of representation and that of perceptions of the territory itself.

The deterritorialization process occurs when a specific corporate organization goes into crisis and produces processes of disintegration of its territorial model. Furthermore, there is a process not only of crisis of the corporate structure, but also of transformation of the territory.

For example, if we think about the case of the evolution of cities and neighborhoods subject to social and structural degradation, we can consider it as a process of deterritorialization which is linked to the voluntary transfer of many families to better homes, more spacious and with more greenery. This phenomenon leads to further degradation, leaving behind empty spaces, a continuous decrease in the birth rate and an aging of the neighborhood population.

As a result, there is a new form of occupation of the territory. For example, ethnic shops, ethnic restaurants, phone centers, money transfer services. The city center thus presents itself as a new territory, with new actors and activities visible on the territory.

The process of defining and controlling borders and that of crossing them, either legally or illegally, is fundamentally geographical. In this sense geographers, alongside other scholars (lawyers, artists, architects, graphic designers, working with laws, trajectories), have investigated the spatial and political dimension of bordering regimes.

As deeply stressed above, the environment plays a crucial role in the migration process, but we argue that nature and its features are also essential in shaping migration's dynamics and flows

There are situations in which nature becomes a border agent in struggles, wars, as well as in migration. Migrants are indeed often powerless in front of the landscapes they need to cross during their journey. Natural common elements like rain, snow, extreme heat, can reveal to be weapons for border crossing attempts by illegal migration. In other words, illegal migration is either made possible or not by natural elements.

Within this perspective, geography and its features can be perceived as a crucial factor for migrants that need to face wilderness.

In 2012, the British politician Theresa May aimed to “*create here in Britain a really hostile environment for illegal migration*”.⁴⁹ As a consequence to her statement, the UK Home Office hostile environment policy was issued. This policy refers to a set of programs according to which people without permission leave to remain in the United Kingdom are subject to a hostile environment

⁴⁹ Hill, Amelia “*Hostile environment: the hardline Home Office policy tearing families apart*”. The Guardian, 28 November 2017.

policy, which consists of a wide range of administrative and legislative measures designed to limit their ability to stay.

This hostile geography for illegal immigration consisted in policies regarding both the natural environment and the urban setting. It has been widely criticized as inhumane, ineffective, and unlawful, and has been labelled one of the harshest immigration policies in British history.

However, this example explains how the very idea of nature can be militarized.

Observing militarized landscapes superficially, many people might assume that military practices and environmental concerns are incompatible. There is no doubt that modern militaries use explosives, munitions, fuels, and solvents that spread chemical and radiological contamination, as well as destroy landscapes and devastate the terrain in the course of combat, maneuvers, and training.

Moreover, some landscapes can no longer be considered as natural due to the implementation of bases, military camps, airstrips or port facilities.

The military certainly has impacts on the environment, but the relationship between the military and the environment is far more complex than just destruction. Environmentalists, tourists, wildlife managers, and travel writers have recently praised many former militarized areas for their pristine nature.

The geographer Derek Gregory well explains this concept in his paper 'Natures of war', published in 2016. In his work the author examines the double nature of wars: optical wars depend on intelligence, surveillance and serving with airplanes, helicopters and other means that were possible thanks to the improvement of technology. They were war planned on maps and did not involve anything 'dirty'. But the environment can also become militarized and nature a weapon functional to armies and states. In addition to being a source of conflict and financing, nature is also a means of conducting military and paramilitary violence. There is a dialectic between the militarization of nature and the shaping of conflict contours and the matters that leave their mark on the bodies of the soldiers who are both the perpetrators of the violence as well as its victims.

Gregory developed three case studies to symbolize the idea of militarization of nature: the mud of the Western Front I the First World War (1914-1918); the deserts of North Africa in the Second World War (1940-1943); and the rainforests of Vietnam (1962-1972).

Based on the findings of these three case studies, we can identify some of the key bio-physical formations that have been adversely affected by armed conflict in the 20th century. These cases affirm relations between the application and manifestation of modern war and their on-going importance to its current revolution.

The iconic image of the Western Front is a sea of mud pock marked with craters and riven by the stumps of shattered trees. It was a vivid presence both physically and imaginatively, but it was not

universal. A few miles behind No Man's Land lay an agrarian landscape that would have been familiar to most European troops, though not to the considerable contingents from other continents, and many of them took refuge in a reassuring rurality whenever they were removed from the front line.

The interdependence between human death and environmental death marked the climactic co-production of a militarized nature that mediated war on the Western Front in multiple ways. Its most immediate effect, which was registered within weeks, was infection.

The presence of bacteria in the heavily manured soils of France and Belgium combined with the use of high explosive shells which drove debris deep into the body ensured that many wounded soldiers contracted sepsis, tetanus or 'gas gangrene'.

It was the corporeal encounter with mud that, perhaps more than any other, defined trench warfare on the Western Front. Mud was mixed with barbed wire, bombs and bully-beef tins, and with organic wastes, dead animals and decomposing bodies, to form what Ernst Jünger described as "*a garden full of strange plants*"⁵⁰. This 'slimescape', confounded the neat and ordered lines of the battle space envisioned on the staff officers' maps and plans.

Sight was no longer the master sense for those on the front line, especially the infantry, because the terrain had been pulverized and its contours successively reworked by each barrage and offensive that it became ever more unrecognizable and its elements ever more transitory.

Among the other senses that had to be heightened we have sound, which was altered by artillery and bombs, aggressive and intrusive smellscapes and touch, characterized by the predatory touch of the slimescape. As Rommel believed, the WWII took its most advanced form in North Africa, the only theatre where the pure tank battle between major formations was fought. There was 'tankable' terrain, which was the desert. Military forces prided themselves navigating by the sun and the stars and hardly ever relied on "useless" maps. Pristine, untouched inland desert was defined as "*the most 'deserty' desert in the world*" with no recognizable features, that could be plotted on a map.

On the Western front military violence had made the once familiar landscape illegible to European eyes, but here it was the pristine landscape that was unreadable. So everything studied on the papers was not going as predicted. That was a lifelessness of the landscape. Minefields were and remained the most terrible agent of militarized nature in the Western Desert.

Lastly, in Vietnam maps did not render the difficulties of terrain. According to Gregory (2010) "*this cartographic imaginary translated tirelessly from headquarters to helicopter, and as on the Western Front and elsewhere it was entirely divorced from the cartographies inculcated by the soldiers whose bodies had to move through what they came to construe as a desperately hostile nature*".

⁵⁰ Jünger E., *The storm of steel*, 1920.

Air superiority did not signal the triumph of the new industrial "techno-war" endorsed by US as the establishment of outposts for helicopter landing was a difficult operation. The jungle is full of green and clear an area was not that easy. Then there was malaria, which peaked during the monsoon season and plagued troops in the Central Highlands. All of these burdens, physiological and psychological, convinced many soldiers that their greatest danger was from nature itself. Soldiers were taken aback by the pervasive sensation of rot. *"Covering everything was the smell of slimy, rotting vegetation [...] Our clothes and our bodies were beginning the rotting process of the jungle."* He recognized this as a physical danger - *"every scratch was a breeding spot for bacteria which could result in the rapid growth of jungle rot"*. They reacted with 'agent Orange' a pesticide to protect themselves. The conclusion to this powerful essay is that Gregory considers nature as a medium through which military violence is conducted.

1.5 A general view of the natural borderscapes worldwide

Since the beginning of the new millennium we have been witnessing a continuous mutation of the geopolitical scenarios, especially in the Middle East and in sub-Saharan Africa, where the constant instability creates inhuman living conditions, poverty, internal civil wars, the impossibility of building a worthy future as well as serious violations of basic human rights, widening the gap between these geographical areas and the rest of the world.

These situations of high risk, combined with the inability of Western countries to intervene positively in the area, have produced strong repercussions on the movement of masses of populations towards new horizons, thus historically determining a new phase of international migration. This phenomenon has inevitably created consequences both in the host countries than in the new forms of acceptance and integration.

In fact, we are facing global social mobilizations of different kinds, such as internal and international migrations, at different territorial levels, making both the analysis and the developments complex. This is valid for effects that migrations generate in the short term, but above all in the long term.

Indeed, currently the migratory phenomenon is one of the most critical aspects at a global level, given its new characteristics and the degree of relational impacts that occur in all sectors that constitute contemporary society, in a substantial and conflicting manner, especially in relation to local scale, generating new social phenomena, transforming both the systems in which they are inserted and the territorial perception by the host society.

Plachter claimed that *“the idea to cross national borders by joint protected area programmes is one of the noblest and convincing ones in current days.”*⁵¹ Today's world is characterized by globalization in many ways, including the spread of technology, trade, transportation, ideas, communication, and many other aspects.

Taking advantage of the global trend of enhanced communication and networking, nature conservation has also been able to remove international state border barriers, resulting in an exchange of ideas and a cooperative management approach, as well as easy or severe barriers to migrants.

This paragraph will examine few examples of borders in which the geographical features play a relevant role for migrants. There are situations in which the nature is an ally of migrants, helping them with the crossing of the border, while other geographical areas could be an obstacle to the people's escape.

Before getting into details of worldwide borderscapes example, it is noteworthy the concept of transboundary migratory corridors.

Transboundary migratory corridors are *“areas of land and/ or sea in two or more countries, which are not necessarily contiguous, but are required to sustain a biological migratory pathway, and where co-operative management has been secured through legal or other effective means”* as well defined by Sandwith et al.⁵² The European Green Belt and Meso-American Biological Corridor, which protect migratory routes, are good examples of transboundary conservation practices.

Conservationists and other specialists involved in the creation of transboundary initiatives can use the above typology as a guide.

As well as the Carpathian Protocol's definition, the EUROPARC Federation's definition of transboundary migratory corridors at the European level describes protected areas adjacent to state borders in territories of two or more parties.⁵³

One of the most distinctive characteristics of transboundary migratory corridors in comparison to protected areas without transboundary characteristics is cooperative management, which is often called co-management.

In other words, a protected area physically adjacent to another protected area across an international border will not be 'recognized' as a transboundary migratory corridors unless there is a certain level

⁵¹ Plachter, H., The World Heritage Convention of UNESCO - A Flagship of the Global Nature Conservation Strategy, UNU Global Seminar Series, Inaugural Shimane-Yamaguchi Session, Yamaguchi, Japan, 2005.

⁵² Sandwith, T., Lockwood, M. and Gurung, C., Linking the Landscape. In: Lockwood, M., Worboys, G. and Kothari, A. (Eds.). *Managing Protected Areas: A Global Guide*, UK and USA: Earthscan, 2006.

⁵³ Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity to the Framework Convention on the Protection and Sustainable Development of the Carpathians adopted in Kiev on 22 May 2003.

of cooperation between the two. For an area to be considered transboundary, co-management by a number of stakeholders is one of the key prerequisites.

During the 2003 IUCN Vth World Parks Congress, EUROPARC Federation launched a valuable system of verification and certification called 'Transboundary Parks - Following Nature's Design'.

Under this system, transboundary migratory corridors in Europe are evaluated and certified according to a set of Basic Standards Criteria, which define measurable activities.

It is clear from the certified transboundary migratory corridors that the majority of the Basic Standard Criteria are fully utilized, like common vision, cross-cultural interaction, ecological monitoring, etc. Looking at examples of borderscapes around the world, three case studies appear as particularly significant: the Greek-Turkish border, the Italian-French border, the Polish-Belarusian border.

1.5.1 Greek Turkish border

Geographically speaking, the border between Greece and Turkey is defined by a land section in Thrace and a maritime indented section in the Aegean Sea characterized by the numerous Greek islands, some of which are located in the immediate vicinity of the Turkish coasts of Asia Minor (Figure 1).

The Greek-Turkish border is located in the broad context of the "Western Balkan Route", which crosses the Balkan countries by land following various secondary routes, across of North Macedonia, Kosovo, Montenegro, Albania, Serbia, Bosnia and Herzegovina, Croatia and Slovenia, up to the gates of central Europe. It is the natural continuation of the "Eastern Mediterranean Route", which leads from Turkey by sea to Greece, from which one can access the Balkan peninsula.

The two routes, if combined, are more simply defined "Balkan Route", which became well known in the international media starting from the summer of 2015 when, following the clashes due to the Syrian civil war and the strengthening of the closure of the European borders along the Mediterranean guaranteed by the Triton mission⁵⁴, tens of thousands of fleeing people were forced to travel along it, in search of a safe country in which to seek political asylum.

The Balkan Route has become the main route for forced migrants coming mainly from the Middle East and beyond. In fact, for a long time the Balkan Route, albeit with a more marginal role, has been configured as a migration path among the main ones: "for centuries the western Balkans have been a frontier region where migration between Europe, Asia and Africa has taken place. The region has

⁵⁴ The Operation Triton was carried out by the Frontex, the European Border Control Agency. It was a border security operation for the European Union, with the goal of maintaining control over the borders in the Mediterranean Sea. The operation, which replaced Operation Mare nostrum, was launched on November 1st, 2014, and calls for voluntary contributions from 15 of the 28 UE member states.

served alternatively as a transit area and a point of origin for migration, it has sometimes served as both simultaneously”.⁵⁵

Made for minds, *Greece and Turkey in border dispute*, 2020.

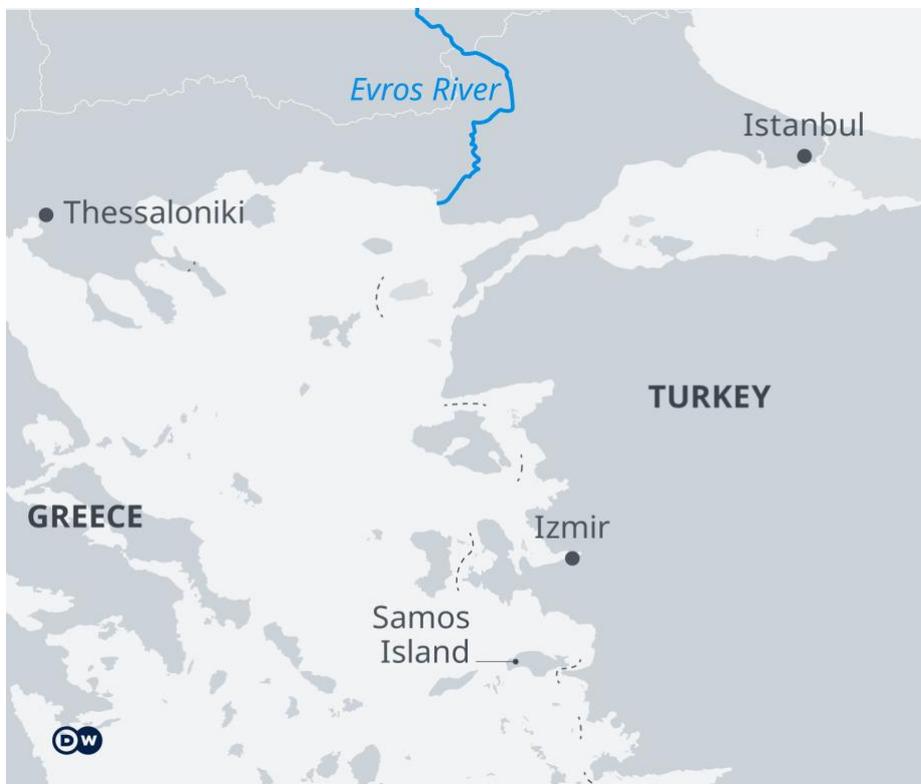


Figure 1. Greek Turkish border

More specifically, the naturalness with which this route was used by refugees from Syria, Afghanistan and Iraq above all, is due in particular to its being already known to traffickers who, if they first enriched themselves from the passage of opiate drugs and weapons, they now have taken advantage from the very profitable business of human trafficking.

The sudden increase in migratory flows across the border between Turkey and Greece which began in the spring of 2020 has given rise to a very delicate situation from the humanitarian and diplomatic point of view, as well in terms of diplomatic relations between Greece and the European Union on the one hand and Turkey on the other. The triggering event can be identified in the declaration of February 29th, 2020, by Turkish President Recep Tayyip Erdogan, announcing the opening of the border between Turkey and Greece. Following this declaration, numerous asylum seekers and refugees kept in Turkey under the agreement between the country and the EU contained in the famous

⁵⁵ Cocco E., “Where is the European frontier? The Balkan migration crisis and its impact on relations between the EU and the western Balkans,” *European View*, 2017.

Joint Declaration of July 2016⁵⁶, began to concentrate at the border in order to resume their journey to European countries. In March, the World Organization for Migration reported the presence of about 13,000 migrants along the approximately 200 kilometers of the border that divides Greek and Turkish Thrace⁵⁷. Although the number of migrants in the area has significantly decreased in recent months, crossing attempts and aggressive push-backs by the Greek police are still on the agenda⁵⁸. The potential for massive new waves remains enormous, as Turkey continues to host around 4 million asylum seekers, 3.6 million of whom come from Syria⁵⁹. The aspirations of migrants, however, have so far been frustrated by the firm refusal by the Greek authorities to recognize this opening, with the deployment of sizeable police contingents in charge of monitoring the border and rejecting attempts to breach it.

Far from being an improvise move, the Turkish president's decision to open the border to migratory flows to Europe came after months of warnings and threats. The reasons for the measure can be traced back to the news on the ongoing negotiations concerning the next budget of the Union, which so far have not seen any agreement emerge on further funds to be allocated to Turkey.

Unfortunately, today's situation has not improved. For years, news and images of thousands of migrants trying to enter Greek territory to ask for some forms of official protection have been arriving from some border areas between Turkey and Greece.

Nearly one hundred men were found in October 2022, naked, abandoned on the Greek-Turkish border, on the Greek bank of the Evros River.

Turkey regularly accuses Greece of violently pushing back migrants entering the country by land and sea. Instead Greece accuses Turkey, which hosts the largest number of refugees in the world, of pushing migrants forward to put pressure on the EU.

The UN refugee agency said it was "*deeply saddened by the shocking news*", condemning the "*degrading treatment*" and calling for an investigation⁶⁰.

As we have seen, it is not the first time that the ancient rivalry between Athens and Ankara occupies the field of the treatment of migrants at the border, with mutual accusations of incivility and invocations to respect for human rights. This conflict, which takes place in the sphere of media

⁵⁶ The Declaration provided that the EU would support with financial resources amounting to 6 billion euros, not directly the Turkish government, but rather the relief organizations operating in the territory. In return, the Turkish authorities would take charge of the 3.6 million refugees who arrived in the country (mostly from Syria) and intended to continue to European countries - effectively interrupting the flow along the so-called Balkan route. In particular, the Declaration provided that "all new irregular migrants who have made the crossing from Turkey to the Greek islands starting from 20 March 2016 will be repatriated to Turkey". On the other hand, "for every Syrian repatriated to Turkey from the Greek islands, another Syrian will be resettled from Turkey to the EU taking into account the vulnerability criteria of the United Nations". *European Council released in March 18th 2016, EU-Turkey Statement, March 18th 2016.*

⁵⁷ IOM, *More than 13,000 Migrants Reported Along the Turkish-Greek Border*, March 1st, 2020.

⁵⁸ Hamdi Firat Buyuk, "Migrant Numbers Decrease on Turkey-Greece Border", *Balkan Insight*, March 12th 2020.

⁵⁹ UNHCR, *Turkey Fact Sheet*, October 2019.

⁶⁰ UN Refugee Agency on Twitter, October 16th, 2022.

representation, takes on increasingly grotesque and contradictory characteristics in the light of the systematic violence of both sides.

In fact, according to data collected by Aegean Boat Report⁶¹, in the first nine months of 2022, Greece pushed back more than 18,000 people to the maritime border. Many of them had already landed on the Greek islands, being arrested, robbed and tortured by the Hellenic police before being released into the sea, sometimes without life jackets and with their hands tied.

At the same time, the land border along the Evros River, on the border between Greece and Turkey, is one of the most militarized border areas in Europe, inaccessible to activists and journalists, the scene of push-back newspapers and violence of all kinds (Figure 2).

Migrants are forced to walk for days in the darkness of the night and the woods to avoid the Greek commandos, until they reach Macedonia and Serbia, in fear of being spotted by the police or the locals. The recent Lighthouse Report investigation has shown how the Greek police use asylum seekers themselves to carry out violent push-back operations.

It is inevitable to underline that, also in this case, the geographical characteristics of the border that delineates the two countries play a fundamental role in the passage of migrants, making these movements possible.

As mentioned, Turkey shares a 120-kilometer land border with Greece largely bordered by the Evros River and in a wooded and sparsely inhabited area.

Crossing the river is particularly complicated because the waters are cold and not very transparent. They have very few things with them, in the area it is not easy to find sources of electricity, and food is guaranteed only by some local Turkish associations and by impromptu aid from the UN refugee agency. At night, temperatures drop to a few degrees Celsius.

Migrants clash daily with Greek policemen and soldiers deployed to defend the border, even in a violent manner. It is unclear how many migrants actually managed to enter Greece and apply for protection, but the Greek authorities have tightened controls and forces guarding the border, and are discouraging any entry.

It is also important to underline the flow of migrants to Lesbos, the Greek island close to the Turkish coast where there are already tens of thousands of asylum seekers, who periodically manage to reach its shores starting from Turkey with small boats.

While the numbers in Lesbos are still quite low, the real problem is on the land border between Turkey and Greece, especially since the Greek government, unlike the Turkish one, has decided not to open the borders, refusing even to examine asylum applications.

⁶¹ Aegean Boat Report, *Pushback Nr. 1630*, August 26th, 2022.

Bulletin Français de la Pêche et de la Pisciculture, *Confirmation of occurrence of the narrow-clawed crayfish? *Stacus leptodactylus* Eschscholtz, 1823 in the River Evros in Greece, 2007.*



Figure 2. Evros River

1.5.2 French Italian border

Another relevant natural border which is linked to the migration phenomenon is the one that divides France from Italy. The border is 515 km long (Figure 3). Geographically it divides south-eastern France and north-western Italy and runs between the regions of Valle d'Aosta, Piedmont and Liguria on the Italian side, and those of Rhône-Alpes and Provence-Alpes-Côte d'Azur on the French side. The land border straddles, from North to South, the Graian, Cozie and Maritime Alps up to the northern coast of the Mediterranean Sea; the maritime one takes part of the Mediterranean itself, going down to the Strait of Bonifacio, the narrow border between Corsica and Sardinia.

After the Treaty of Utrecht in 1713, at the end of the War of Spanish succession, France and Savoy decided that territory should be apportioned according to the “falling water of the Alps”. The current path was mostly set with the Treaty of Turin, when the Duchy of Savoy and Nice were given to France. A long-lasting dispute concerns the paternity of Mont Blanc, which France claims being entirely French, going against the principle of watershed. At the end of WWII France obtained five small but strategic areas. A specific bilateral commission was established to survey the full length of

the border. The terrain was so rough that border stones were very few and distant to each other. In this case, photography evidence helped with the mapping to avoid ambiguity.⁶²

Maps of world, Map of France and Italy, 2020.



Figure 3. French Italian border

The Alps work as a natural barrier between the two countries, not only in terms of cartography, but also in relation to our research which involves the migration phenomenon. Indeed, the natural border created by the mountains is a natural obstacle to unwanted migrants too, to deter migrants through natural terrain. It can be said that in the context of border ecologies, the environment should be seen as instrumental in the enforcement of borders.⁶³

⁶² Ferrari M., Pasqual E., Bagnato A., *A Moving Border: Alpine Cartographies of Climate Change*, Columbia Books on Architecture and the City, New York, 2019.

⁶³ Pallister-Wilkins P., *Whitescapes: A posthumanist political ecology of Alpine migrant (im)mobility*, Political Geography, 2019.

However, we must devote attention to the crisis related to migrants that involves one of the border towns between Liguria and the French region of Provence-Alpes-Côte d'Azur, which is Ventimiglia. Nowadays, crossing the border to reach France has become more difficult. After the tensions between the Italian and French governments over the issue linked to the acceptance of the NGO ship Ocean Viking⁶⁴, the controls of the French police at the border have become even stricter.

There was a period when discussions over Ventimiglia's handling of immigration flows took center stage on a global scale. The city acquired the title of "the other Lampedusa" as a result of how critical the situation has become.

After the 2015 Paris attacks, France turned to militarizing the Hexagon. This led to systematic screenings against migrants entering Italy at the French-Italian border by the border police using racial profiling.

In response to the border blockage, refugees and activists in South-East France staged a number of rallies along the city's cliffs in the summer of 2015. No positive change, however, was made. Over time, what initially seemed to be a temporary remedy turned into "customary" and was wholly against the Schengen agreements.⁶⁵

Since then, migrants have been stuck in Ventimiglia and have been making unlawful attempts to breach the border. The routes vary: some attempt to cross by train, while others do so on foot, with paid helpers, or by strolling along a highway. The highest turnout typically occurs on Fridays, market day, when there are more French visitors to the border town, increasing their chances of sneaking through undetected.

In search of prosperity and peace in Europe, migrants give up their ideal of growing up in their own nation as they flee military wars, authoritarian regimes, or even environmental reasons, to mention a few. Italy isn't really their destination, though; they frequently try to join their families in France or go on to Northern Europe.

The police and thieves game manifests on the border. Due to the lack of a legal structure, the playing field appears to favor the former. Once located across the Alps, *refusés d'entrée*⁶⁶ pass their hours and even nights sleeping on the floor of temporary structures as they wait to be returned to Italy.

Today, hundreds of individuals who are stuck in Italy try their luck at getting to the promised land. The Roja River's beach serves as their bed and their pillows are made of cardboard crates.

⁶⁴ The Ocean Viking is a humanitarian ship incorporated from July 2019 by the SOS Méditerranée association.

⁶⁵ According to Article 23(1) of the Schengen Borders Code a Member State may control its internal borders "for a limited period of not more than 30 days or for the foreseeable duration of the serious threat if its duration exceeds the period of 30 days, in accordance with the procedure laid out in Article 24 or, in urgent cases, with that set forth in Article 25".

⁶⁶ From the '*refus d'entrée*', a document given by the French border police to migrants during refoulement.

1.5.3 Belarusian Polish border

One additional example that stresses the relevance of nature in the migration movements is the border that partitions Belarus and Poland. The dividing line between these two states has a length of 416 km. The demarcation starts at the tripoint with Lithuania in the north and extends to the tripoint with Ukraine in the south. It is also one of the demarcations that divides a country belonging to the European Union from an external one.

On the border between Belarus, Poland, Lithuania and Latvia, thousands of migrants who come from the Middle East are abandoned due to the granting of tourist visas allowed by the Government of Minsk. Among them, we can find people from Syria, Iraq, Yemen and Afghanistan who are trying to enter Europe in the absence of safe alternative channels. A dramatic scene in which the migrants are now stranded in a no man's land with no services, no food, and in the cold, between two armies pointing their weapons at them.

Among the people stranded at the border, we can count numerous children, families and other vulnerable people who try to cross the border every day and are often subject to pushbacks by the police, often even violently.

In the case of Poland, the new legislation directly violates the principle of non-refoulement by allowing people to be removed from Poland even after they have applied for international protection and without an individual examination of whether or not the removal entails a violation of their human rights.

While some of the amendments are temporary and their application geographically limited, they nevertheless risk institutionalizing the illegal practice.

In early July 2022, the Polish government ended the state of emergency declared in September 2021 in 183 cities along the border with Belarus. The ban on staying within 200 meters of the border line has been maintained, while humanitarian groups and the press can once again access the border areas. However, the humanitarian crisis continues, as also underlined by Human Rights Watch.⁶⁷

In fact, Poland keeps active restrictions on entry into its territory and has recently completed the construction of a 186.25 km long wall in the Białowieża forest that determines the shelter area for migrants, even though they are put at risk of hypothermia, dehydration and are exposed to ticks and mosquitoes on a daily basis.

⁶⁷ Bielecka A., Human Rights Watch, *Poland finally lifts State of Emergency at Belarus border*, July 6th, 2022.

“Chronically malnourished, dehydrated, without drugs, in serious condition. Refugees are suffering right next to our homes, near the border between Poland and Belarus⁶⁸. The Polish authorities can pretend there is no humanitarian crisis, but for how long? How long can suffering be ignored?”.

This was denounced by Grupa Granica⁶⁹ and the other associations and informal groups that monitor and provide support at the border.

However, the migrants’ conditions at the border are unfortunately the only tragic aspect that the countries are facing. We should devote attention also to the environmental crisis that the border comes up against and suffer.

“On top of being a humanitarian catastrophe, this wall is an ecological disaster. It is erected in a strictly protected primary forest, Białowieża Primeval Forest, endangering already fragile species and biodiversity”, writes the Abolish Frontex.⁷⁰ Indeed, the wall not only represents a severe and imposing arrest to migrants, but also a threat to the variety of life in this particular habitat and ecosystem.⁷¹

1.5.4 Asian borders

The relevance of nature in migratory passages is not only a European issue, but there are several other cases around the world.

Asian migrations are a complex and diversified phenomenon. Asia is no different from the Americas, Europe, or Africa in terms of multicultural formation. The current social, cultural and demographic configuration is the result of a history made up of displacements of populations that have made the Asian continent a variegated reality unlike what the collective imagination might be led to think.

China, India, the Philippines and Vietnam are the countries from which Asians historically move the most, to the point of making today's Asia the first continent in the world for the number of migrants worldwide. It is estimated that over 66 million people have left in the last sixty years⁷².

The largest Asian communities overseas are estimated to be around 50 million Chinese, over 10 million Indonesian, 10 million Filipinos, 7 million Pakistanis, 6 million Koreans, 5 million Bangladeshis.⁷³

⁶⁸ In the report published on 30 June 2022 by the Helsinki Foundation for Human Rights, 11 months of crisis on the border between Poland and Belarus are summarized. Systematic monitoring of the border area and conducted interviews confirm the violation of human rights not only of migrants, but also of people who provide them with humanitarian aid.

⁶⁹ An informal initiative born in response to the humanitarian crisis on the Polish-Belarusian border. They provide humanitarian, legal and medical assistance and we monitor respect for human rights.

⁷⁰ Abolish Frontex, *Insurance companies Nationale Nederlanden and Aegon profit from Polish border wall*, February 2022.

⁷¹ Science, Poland’s border wall threatens ancient forest, 2021.

⁷² Data of International Organization for Migration, *Asia and the Pacific*.

⁷³ Textor C., Countries with the largest number of overseas Chinese, September 2022.

Precisely, South and South-East Asia are the regions from which most people leave to reach the Middle East and East Asia; India and China, in addition to being countries of origin of migrations, are also countries of transit and destination. Among the intercontinental destinations, the United States or Australia are the main arrival areas, but also Europe and in particular Italy see Asian flows on the rise.

An interesting border is certainly the one between Pakistan and India. The border crosses different terrains ranging from major urban areas to inhospitable deserts. It is defined as one of the most disputed borders in the world according to data provided by PBS⁷⁴, and its total length is 3,323 km. It is also one of the most dangerous borders in the world, according to an article written in Foreign Policy in 2011.⁷⁵

In 1947 the partition of British India led to the birth of India and Pakistan, which at the time was divided into two parts, one of which later became Bangladesh in 1971. The northern areas of the border between India and Pakistan, were devastated by violence where religious differences were politically exploited to divide the Hindu communities from the Muslim ones.

The Calcutta massacre⁷⁶ of August 1946 inaugurated a period of violence that culminated in a real ethnic cleansing, the political intent was to demonstrate the incompatibility between Hindus and Muslims: at least 15 million people were forced to move, giving rise to an uninterrupted forced migration until 1955.

The routes had a double direction: Hindus and Sikhs moved towards India, Muslims towards Pakistan; along the way both communities suffered unprecedented violence and still today, the signs of those migrations are visible in the cities of northern India and Pakistan which preserve neighborhoods inhabited by the new generations of refugees who survived the forced migration process at the turn of the forties and Fifties of the last century.

However, the one mentioned is a border that over the years has been characterized by numerous conflicts that have led to witnessing numerous migratory passages.

The contemporary situation of our interest is the one experienced on the border between India and Bangladesh. The territories which are separated by this barrier are densely populated and in many areas the land is cultivated as close to the fence as possible. In many places the barrier is double-layered and the technology has simplified a whole series of activities that would have required hundreds of working hours for monitoring, reporting and intervention by the authorities. Despite the

⁷⁴ Public Broadcasting Service Release, *Border Jumpers the world's most complex borders: Pakistan/India in PBS*, July 26th, 2005.

⁷⁵ Walker P., *The World's Most Dangerous Borders*, in the Foreign Policy, June 24th, 2011.

⁷⁶ The Great Calcutta Killing took place on August 16th, 1946 characterized by the clashes between Hindu, Sikh and Muslim factions in the city.

risks, the fence does not discourage migrants from attempting to cross, both for those who want to reach India and for those who want to reach Bangladesh.

In recent years, the border between Bangladesh and India has become the symbol of the human cost of the barriers, where there has been an increase in the insecurity of migrants and the violence they have suffered while attempting to cross. Here the problems of the so-called illegal immigration are intertwined with the question of the enclaves.

The task of border protection is entrusted to the Border Security Force (BSF) which is one of India's seven Central Armed Police Forces (CAPF). It was established on December 1st, 1965 "*for ensuring the security of the borders of India and for matters connected there with*"⁷⁷. After repeated infiltrations by terrorists, the organization has received the order to shoot to kill. Year on year, there is an increase in the death rate along the border as the politicians of the respective countries have proclaimed the goal of "zero deaths".

According to Human Rights Watch⁷⁸, in the first decade of the 2000s, Indian border guards injured or shot dead about 900 Bangladeshis trying to cross it. No one has been prosecuted for these killings, despite evidence in many cases showing that the killings were in cold blood against the area's unarmed and defenseless residents.

Surprisingly, some Indian officials support the idea of shooting people who try to cross the border illegally, even if they are unarmed. Almost equally puzzling is the lack of interest in these killings by foreign governments that claim concern for human rights.

Along the borders the violence is routine and arbitrary, the BSF claims self-defense. Today it is estimated that several thousand refugees continue to cross the border every year. In Bangladesh, 12.9% of the population lives below the national poverty line, as defined by the Asian Development Bank⁷⁹. This is an important percentage considering that in 2019 the proportion of population living below the national poverty line accounted to 20,5%.

In addition, storms and floods plague Bangladesh every year, forcing more and more people to leave their place of birth. Compared to other countries in the area, India represents a magnet for migrants, in fact refugees and illegal immigrants have arrived overwhelmingly from Afghanistan, Sri Lanka, Myanmar, Tibet, Pakistan and Bangladesh. There are mass migrations across the Indian subcontinent as people flee poverty, the effects of climate change and religious persecution.

⁷⁷ Government of India, The Border Security Force Act, 1968 No. 47 of 1968, achieved from the original on October 17th, 2014.

⁷⁸ Human Rights Watch, *World Report 2021: India*, 2021.

⁷⁹ Asian Development Bank, *Poverty Data: Bangladesh*, 2022.

CHAPTER II

The Darien Gap, from no man's land to an important migration path

2.1 The geographical features of the Panama-Columbia's jungle

Located between Colombia and Panama, the Darién Gap is one of the world's most hazardous refugee and migrant routes with 5,000 square kilometers of jungle, steep mountains, and rivers (Figure 4).

It is a compact and impassable tropical jungle, which is located in a region that covers part of the Panamanian province of Darién, to the south of this country and to the north of Colombia. It is a strip of lawless and roadless territory that is between 100 and 160 kilometers long, and that in width unites the Atlantic Ocean with the Pacific. For centuries it has had a reputation for being wholly inaccessible, both for locals and well-appointed visitors, from here the name *Tapón del Darién* in Spanish.

The jungle that covers it represents the only interruption of the Pan-American highway that stretches for about 30,000 kilometers, from Argentina to Alaska.⁸⁰ The region is made up of a large area of extremely compact tropical forest, and also has a huge swampy area on the Colombian side, the Atrato River. Indeed, the border runs mostly through rainforests that extends for a length up to 80 km (Figure 5).

It is considered one of the most biodiverse places on the planet. However, its dense vegetation has become the propitious backdrop for the irregular passage of migrants and drug trafficking.

⁸⁰ D. Suman, *Globalization and the Pan-American Highway: Concerns for the Panama-Colombia Border Region of Darién-Chocó and Its Peoples*, *Inter American Law Review*, 2007.

Centro de estudios estratégicos de relaciones internacionales, *¿Qué está pasando en el Tapón del Darién?*, 2022.



Figure 4. The Darién Gap

The Manual, *Inside the Darién Gap, one of the world's most dangerous jungles*, July 30th, 2022.



Figure 5. The Darién Gap Forest

2.1.1 Physical geography

The coastal mountain range of the Serranía del Baudó extends along the Colombian Pacific coast and the southernmost areas of the Panamanian state. The latter country, in its portion of the Darién, is markedly different, as it is made up of mountainous rainforests, with an altitude ranging from 60 m at the bottom of the valley to 1,845 m at the highest point, Cerro Tacarcuna in the range known as Serranía del Darién.

A complex mosaic of dynamic landscapes produced by a variety of Earth surface processes characterize Central America. Few other places on earth display a geomorphic diversity of this degree. Tectonic, lithologic, and climatic regions with extreme variability are overlaid along the length of the Central American isthmus, which makes up only 0.4% of the planet's surface. The resulting physiography is distinguished by a diverse range of geomorphic provinces, each of which has a unique landform assemblage that maintains a particular history of landscape change.

From the rough Maya highlands of Guatemala in the north to the muggy coast ranges of Panama's Darién isthmus in the south, Central America spans a distance of more than 1500 km. With a width that ranges from less than 100 km near the Panama Canal to more than 400 km over the interior highlands of Nicaragua and Honduras, this narrow land bridge connects the two American continents and serves as a crucial dividing line between the Pacific and Atlantic Ocean basins. Central America represents a geomorphic microcosm of exceptional variation, ranging from towering volcanic peaks (>4000 m height) to jungle-covered alluvial plains, and from rough tectonic shorelines to passive-margin lagoons (Figure 6).⁸¹

⁸¹ P. Girot, *The Darién Region between Colombia and Panama: Gap or Seal?*, in *Human Rights and the Environment: conflicts and norms in a globalizing World*, 2002.



Figure 6. The Darién Chucunaque River

The Middle America Trench's northwest trend and the Central American Volcanic Front are what most clearly characterize Central America's physiographic structure.⁸² Alluvial plains and deltas, fold-and-thrust belts, highland plateaus, carbonate platforms, volcanic cordilleras, fore-arc and trench-slope basins, alluvial plains and deltas, intra-arc rift valleys, and first-order contrast in basement lithology have all produced a variety of rock formations over the Central American terrain.⁸³

In contrast, the fast uplift and crustal shortening that occurs over southern Central America is caused by the flat sinking of rough, hotspot-thickened seafloor created by the Galapagos Spreading Center. Due to collision with South America to the east and oblique subduction to the south, there is fast deformation along the edges of Panama.⁸⁴

⁸² R. E. Stoiber and M. J. Carr, *Quaternary Volcanic and Tectonic Segmentation of Central America*, Department of Earth Sciences, Dartmouth College.

⁸³ E. Melendez, *Algunas características ecológicas de los bosques inundables de Darién, Panamá*, Turrialba, 1965.

⁸⁴ A. P. Covich, *Projects That Never Happened: Ecological Insights from Darien, Panama*, University of Georgia, 2015.

In addition to contrasting lithologic and tectonic domains, Central America is home to a diverse range of climatic and ecological zones, from the wet tropical savannahs of the northern Pacific coastal plains with precipitation rates of less than one millimeter per year to the humid tropical rainforests of the Caribbean and southern Pacific lowlands.⁸⁵

With a long rainy season from May to January and a brief dry season from January to May, Panama has a hot and humid tropical climate. Between May and December, the rainy season, which provides an estimated 250-700 millimeters (mm) of rainfall nationwide, occurs. The nation's average annual temperature is 27°C (Figure 7) and its annual average total precipitation is 1900 mm (Figure 8). Yet these differ according to height and geography. Between 31.1°C and 34.5°C are the country's average maximum temperatures, while between 20.1°C and 22.4°C is the minimum temperature range. Forest fires and occasionally strong storms are frequent occurrences in the Darien Gap. Tropical cyclones and sea surface temperatures are the primary determinants of climate variability in Panama.⁸⁶

Climate Change Knowledge Portal For Development Practitioners and Policy Makers, Panama Climatology.

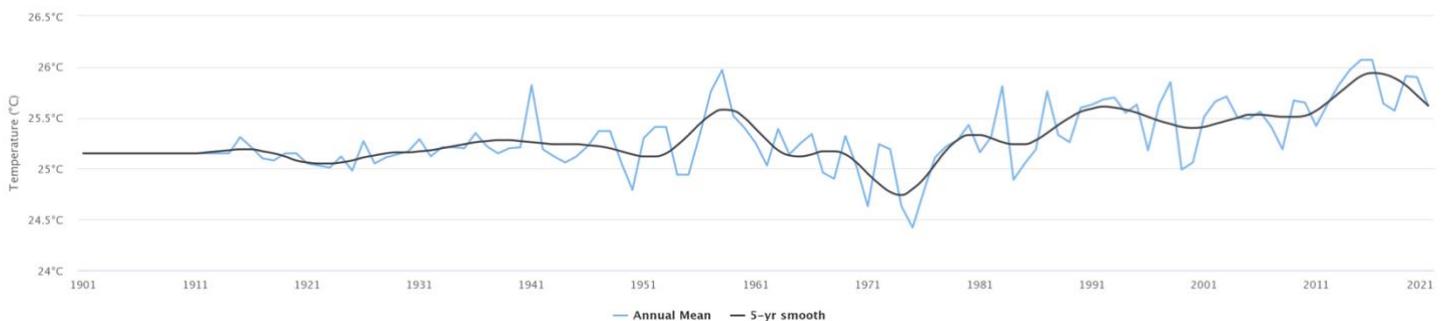


Figure 7. Observed Average Annual Mean – Temperature of Panama for 1901-2021.

⁸⁵ R. Weyl, *Geology of Central America*, Gebrüder Borntraeger, Berlin, 1980.

⁸⁶ Climate Change Knowledge Portal For Development Practitioners and Policy Makers, Panama Climatology.

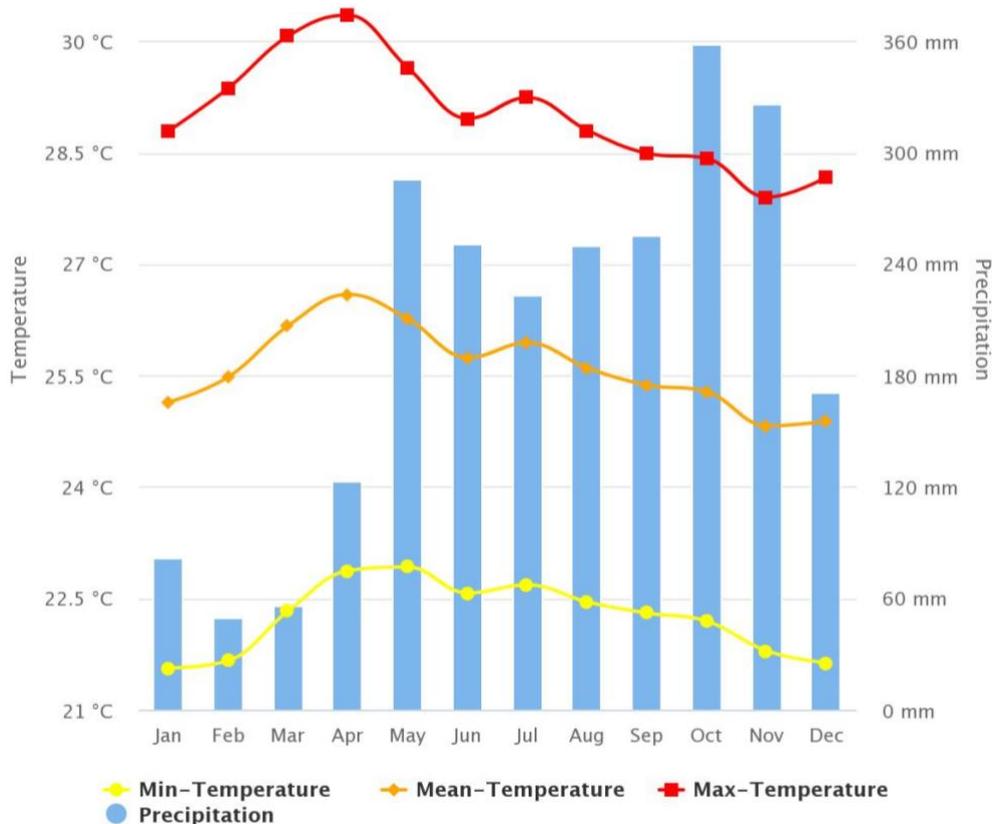


Figure 8. Monthly Climatology of Min-Temperature, Mean-Temperature, Max-Temperature and Precipitation 1991-2020

Seasons are different in the Darién, with a clear dry season from January to April and a rainy season from May to December. Depending on the height, temperatures can range from 17°C in certain high-altitude habitats to over 30°C in lowland regions throughout the day. Average rainfall can reach above 300mm, even in the drier months.

The region is susceptible to natural disasters according to records from the General Directorate for Disaster Prevention and Attention (DGPAD).⁸⁷ More frequent events are reported in the municipalities of Unguía, Necoclí and the areas close to the marine zone due to floods, gales, intense rains, marine erosion and rise in the mean sea level.

Different microclimates, vegetation, and soil types exist in mountainous areas due to climatic and topographic extremes.⁸⁸

The Central American isthmus is a crucial landmass for guiding the biological development of the Americas and may have a significant impact on global climate change. Between the rugged Darien

⁸⁷ General Directorate for Disaster Prevention and Attention, *Disaster Risk Management in Latin America and the Caribbean Region*, 2020.

⁸⁸ Ibidem.

isthmus to the east and the Central Volcanic Cordillera in western Panama, the Panama Canal Zone is located in an area with comparatively flat landscape.⁸⁹ This lowland is made up of a network of river basins with a low gradient that drain nearby hills with peaks lower than 1200 meters.

The widespread faulting and fracturing, also known as the Canal Discontinuity or the Gatún Fracture Zone, which spans the Panamanian isthmus and is 80 km wide, has been blamed for the low terrain of the Canal Zone. This significant crustal discontinuity has been identified as a Neogene-age basement fault. River channel bends, topographic fractures, and prominent geomorphic lineaments are all indicative of a fault-controlled, youthful terrain.⁹⁰

The region is considered one of the most challenging and dangerous areas in the world to traverse due to its rugged terrain, hostile wildlife, and lack of infrastructure. There are several mountain ranges in the Darien Gap that represent a formidable obstacle for those attempting to traverse the region.

Among them we have the Serranía del Darién which is the largest and most significant mountain range in the region, running north-south through the heart of the Darien Gap. It is home to several peaks, including Cerro Tacarcuna, which is the highest peak in Panama. Then there is the Cordillera de San Blas, a smaller range located on the eastern side of the Darien Gap. It is home to several peaks, including Cerro Jefe, which is the highest peak in the range. On the western side of the Gap we find the Serranía del Sapo, known for its rugged terrain and dense jungle; while on the southern part the Serranía del Baudó extends with its high rainfall and rich biodiversity.

Another disturbing natural element for crossing attempters are rivers. The region is crossed by numerous rivers. The largest river is the Tuira River, running approximately 320 kilometers from the Serranía del Darién mountain range to the Pacific Ocean. It is an important transportation route for locals and is known for its rich biodiversity. The second-largest river is the Chucunaque River, which flows approximately 250 kilometers from the Serranía del Baudó mountain range to the Gulf of San Miguel. It is known for its rapids and is a popular destination for whitewater rafting. The Sambu River flows approximately 200 kilometers from the Serranía del Darién mountain range to the Caribbean Sea. It is an important transportation route for locals and is home to a variety of fish species. Lastly, the Juradó River flows approximately 100 kilometers from the Serranía del Baudó mountain range to the Pacific Ocean. It is known for its pristine waters and is a popular destination for swimming and fishing.

Overall, the rivers of the Darien Gap play an important role in the region's ecosystem and are an essential resource for the people who live there. However, they can also present significant challenges for travelers attempting to navigate the region due to their unpredictable currents and other hazards.

⁸⁹ S.P. Horn, *Timing of deglaciation in the Cordillera de Talamanca, Costa Rica*. Climate Research, 1990.

⁹⁰ J. Marshall, *The Geomorphology and Physiographic Provinces of Central America*, Central America: Geology, Resources And Hazards, Bundschuh & Alvarado, 2007.

While there are several rivers in the region, there are only a few significant lakes in the Darien Gap. These include: Lake Bayano, the largest lake located in the eastern part of Panama. The lake covers an area of approximately 100 square kilometers and is an important source of freshwater for local communities. It is also a popular destination for boating and fishing; Laguna del Tigre, a small lake located in the western part of the Gap, near the border with Colombia. The lake is surrounded by dense forest and is home to a variety of wildlife, including monkeys, birds, and reptiles; and Laguna Chucunaque, small lake located in the northern part of the Darien Gap, near the border with Panama. The lake is surrounded by dense forest and is home to a variety of fish species, as well as caimans and other wildlife.

While there are only a few significant lakes in the Darien Gap, they are an important resource for the people who live in the region and are also home to a rich variety of wildlife.⁹¹

The region is also home to a wide variety of plant and animal species, many of which are endemic to the region. Some of the typical animals found in the Darien Gap include jaguars, large cats among the top predators and can be found throughout the region, as well as harpy eagles, large birds of prey are among the most powerful raptors in the world and are known for their distinctive crested heads. They are found in the dense forests of the Darien Gap and are often seen perched high in the trees. Tapirs can also be found, large herbivores known for their distinctive snouts. They are an important source of food for jaguars and other predators in the region. Primates like howler monkeys are among the loudest animals in the world and can be heard throughout the Gap. They are an important part of the region's ecosystem and help to disperse seeds and maintain the forest canopy. Moreover, crocodiles, large reptiles are found in the rivers and lakes of the Darien Gap and are an important predator in the region.

Overall, the Darien Gap is home to a rich variety of plant and animal species, many of which are found nowhere else in the world. The region's dense forests, rivers, and lakes provide a unique habitat for these species and make the Darien Gap a fascinating and important ecological hotspot. They certainly do not represent the main risk for the safety of migrants, however they contribute to fueling the sense of insecurity of these people with their presence.

⁹¹ Ibidem.

2.1.2 Biodiversity and nature protection

Beyond the fact that it is a hindrance to advancement for some of human civilization, the gap, which is the only one in all of America where the Pan-American highway vanishes, was designated a World Heritage Site by Unesco and is regarded as a biodiversity paradise.

The Darién region includes two national parks: the Darién National Park in Panama⁹² and the Los Katios National Park in Colombia.⁹³

The Darién National Park covers 5,790 km. Created in 1980, it is the largest national park in Central America. It was also designated a Biosphere Reserve in 1983 and a UNESCO World Heritage Site in 1981. The short international boundary of the Kuna Yala Comarca and its Caribbean watershed are not included in the protected region, which spans the whole international border of the Darien Province. The park is one of the most species-diverse locations in Central America and is home to 2,440 different species of flora. It also has a high frequency of endemic species. According to some scientists, "*Darien forests... [are] the most diverse ecosystems of tropical America.*"⁹⁴

In close proximity to Darien National Park in Colombia, Los Katios National Park was established in 1974. In 1979, it doubled in size from 52,000 hectares to 72,000 ha in order to safeguard the Atrato River's riparian forest.

In the Choco border region, in addition to the Los Katios National Park, there is another management area. The 61,973 a Darien Forest Reserve was established by the Natural Resource Institute (INDERENA) in 1977. It is situated in the Serrania del Darién Mountains in the municipalities of Acandi and Unguia, near the Colombian-Panama border.⁹⁵

The region has been significantly devastated by deforestation and comprises tiny agricultural villages and native areas. About 500,000 acres of land in the border municipalities are covered under a special management area known as the Darien Special Management Area (Area Especial de Manejo del Darign, AME-D) to permit special management consideration by the Regional Autonomous Development Corporation of Choco.

Native American lands, the Los Katios National Park and its buffer zone, private reserves, the Darien Forest Reserve, and property awarded to Afro-Colombian groups are all included in this special management region.

The advanced deterioration in the forest cover due, especially, to the change in land use for livestock exploitation has modified the landscape of the region. Uncontrolled forest exploitation, agricultural

⁹² UNESCO World Heritage, Darien National Park, <http://whc.unesco.org/en/list/159>

⁹³ UNESCO World Heritage, Los Katios National Park, <http://whc.unesco.org/pg.cfm?cid=31&idsite=711>

⁹⁴ UN Environment Programme, *World Heritage Sites: Darien National Park*, 2007.

⁹⁵ P. Herlihy, *Opening Panama's Darién Gap*, Journal of Cultural Geography, 2011.

activities on unsuitable land and the discharge of various wastes in the main sources have generated erosive processes and deterioration of manifest force through floods, sedimentation of the riverbeds of the lower part and progressive degradation of the quality of the resource in the area.

The Colombian Darién region is part of the Chocó Biogeográfico, considered the world's pantry of raw material for medicines. This region contributes to climate regulation, air decontamination produced by the industrial exploitation of cities through CO² capture. The Atrato River is located in this region, on its way to flow into the Atlantic. With its enormous flow, cradle of ancient cultures, exchange of flora and fauna of the two American subcontinents, they have allowed the creation of centers of endemism through Los Katíos Park and El Darién National Park.

2.2 An historical overview

The Darien Gap, as seen before, is a dense jungle region that spans the border between Panama and Colombia, and has been a major obstacle for transportation and development in the region for centuries. Historically, the area was known for being inhabited by indigenous tribes and for being a dangerous and inhospitable region for travelers.⁹⁶ In the early 20th century, attempts were made to build a canal through the Gap, but these efforts were ultimately abandoned due to the challenging terrain and lack of infrastructure. The Gap remains largely undeveloped and impassable by road to this day. Despite its historic prominence, the Darien region of Central America remains relatively unexplored and unknown.

2.2.1 The colonial period

The border was first established as a regional demarcation in 1508⁹⁷, following the enactment of a royal decree issued to define the territories of the colonial governorates of Castilla de Oro and Nueva Andalucía, following the Atrato River. Vasco Nunez de Balboa, a Spanish explorer and conqueror, first established in the area in 1510.⁹⁸ Balboa crossed the Central American isthmus in September 1513 and saw for the first time the waters of a great ocean hitherto unknown. The new sea was called the South Sea, the current Pacific Ocean. He thus understood that because the American continent lays between the Atlantic and the new ocean, Christopher Columbus could not have reached the coasts of Asia.

⁹⁶ P. Herlihy, *Indigenous and Ladino Peoples of the Río Plátano Biosphere Reserve*, Honduras, Greenwood Press, 2001.

⁹⁷ P. Herlihy, *Opening Panama's Darién Gap*, Journal of Cultural Geography, 2011.

⁹⁸ D. Suman, *Globalization and the Pan-American Highway: Concerns for the Panama-Colombia Border Region of Darién-Chocó and Its Peoples*, Inter American Law Review, 2007.

The first explorers that settled there were Spanish. During the Spanish colonization of Darien indeed the region was plagued by hostile Indian populations, pirate raids and inhospitable living conditions. It also became known for its gold resources.⁹⁹

These populations belonged to the *Kuna*, an indigenous group native to Panama and Colombia.¹⁰⁰ They are known for their vibrant culture, including traditional clothing, music, dance, and art, as well as their history of political and cultural resistance against colonialism and exploitation. The Kuna live primarily in the *comarca*, an indigenous territory, of Kuna Yala along the Caribbean coast of Panama, where they maintain a semi-autonomous status and continue to practice many of their traditional customs and beliefs. They once inhabited the central region of what is now Panama and the nearby San Blas Islands and continue to do so today on marginal lands. They lived in federated villages under powerful chiefs and engaged in warfare with neighboring tribes as well as with one another in the 16th century.

Along the coast, there was extensive trade, primarily by canoe, and slash-and-burn agriculture dominated. Their class system was well-developed, and the metalworking skills of the people were well developed too.

In the 16th century, the advent of descendants of Spanish-speaking slaves who fled the Colombian Chocó gold mines helped to overcome the isolation of the native Kuna people who had been living in the Darien.¹⁰¹ The Colombian Chocó are an Afro-Colombian ethnic group primarily located in the Chocó region of Colombia, along the Pacific coast. They are descendants of enslaved Africans brought to the region to work on the Spanish colonial plantations. Only later, when Spanish settlers from the Canal Zone came to dig gold and harvest timber in the early 20th century joined these communities.

When Spanish missionaries settled the formerly scattered Kuna into towns at Pinogana, Capeti, and Yaviza in 1638, further settlements emerged. At Sabalo, Tucuti, Pavarando, Mercedes, and La Marea¹⁰², smaller placer mining communities also grew. With the assistance of pirates, the Kuna fought Spanish colonization. The Spanish counterattacked by hiring Colombian people and Chocó Indians, who were armed with fearsome blowguns, as mercenaries. They were successful in driving the Kuna into the hinterlands, where the Indians continued to be a formidable force. Due to the

⁹⁹ P. Herlihy, *Participatory Research Mapping of Indigenous Lands in Darién, Panama*, Human Organization, 2003.

¹⁰⁰ J. Howe, *The Kuna of Panama: Continuing Threats to Land and Autonomy, The Politics of Ethnicity*, Harvard University Press, 2002.

¹⁰¹ R. Araúz, *Estudio etnológico e histórico de la cultura Chocó. Centro de Investigaciones Antropológicas de la Universidad de Panamá*, Publicación especial Panama City: Universidad de Panamá, 1966.

¹⁰² R. Carles, *Panama: Its Geographic Panorama and Growth*, Star and Herald Company, 1957.

persistent fear of invasion, the Spaniards ultimately gave up their forts in 1783, turning the area up to the native Indian and Columbian population.¹⁰³

At the end of the 18th century, Darien began an era of stability and tranquility. Over the course of the following 150 years, Chocó Indians from Colombia began to dominate the majority of the river basins after beginning to inhabit the regions that the Kuna had previously abandoned. Some Kuna were left in remote headwaters as a result, but the majority crossed the continental divide to San Blas.¹⁰⁴ Later, other settlements were established at Garachine, Jurado, Jaque, Pinas, La Palma, and Taimati by European settlers. Many of these started to economically outpace the more established Spanish cities. When the isthmus was taken over by the Colombian state in the 19th century, Darién was a distant backwater. During this period, many Europeans settled in the province, which led to the establishment of fishing towns and ports. The provincial capital, La Palma, was established in 1853.

The agricultural colonists from central and western Panama who started coming barely a few decades ago are the most recent ethnic group to colonize Darién. Since then, they have generally lived in interfluvial areas distant from native American and black communities. However, Darién remained secluded and far away until the Gap Highway was built.¹⁰⁵

2.2.2 The Darien scheme

Going back in time, it is relevant to focus on the Scottish interest in the region. Indeed, in the late 17th and early 18th centuries, the Scottish became interested in the Darien Gap as a potential site for a colony and a trading route that would allow them to bypass the powerful English and Spanish monopolies on trade with the New World.

In the late 1690s, the Scottish Parliament approved a plan to establish a colony at the Darien Gap called the "Darien Scheme." The idea was to establish a trading post and colony that could serve as a link between Europe and the Pacific Ocean, providing a faster and less expensive route for shipping goods to and from Asia.

Scottish company's attempt to found a colony in Darién between 1695 and 1700 was a total failure due to various factors. Some of these include attacks by local tribes, lack of support from European powers, and disease.

The Darien Scheme was beset with problems from the start. The Scottish colonists were not prepared for the harsh living conditions in the jungle, and they lacked the resources and support needed to

¹⁰³ E. Jost., *Las guerras y los conflictos del Darien*, Editorial Lealon, 2002.

¹⁰⁴ M. Arosemena, *La estrategia española de la colonización del Darien en el siglo XVIII*, Actas de Hi simposium nacional de antropología, arqueología, y etnohistoria de Panama, 1972.

¹⁰⁵ A. Hernandez, *Migración de colonos en Darien*, Colonización y destruction de basques en Panama, ed. by Stanley Heckadon Moreno y Alberto McKay, 1982.

establish a successful settlement. The English and Spanish also saw the Scottish colony as a threat to their own interests, and they blockaded trade routes to and from the Darien colony.

As mentioned, the large river towns of Samb, El Real, Yaviza, and Tucut, which were established during the colonial period, became dominated by Spanish speaking populations known as the *Darienitas*. These individuals tried to establish a colony known as the Scottish colony of Caledonia. The goal of the colony was to be a commercial hub that would connect the Pacific and Atlantic oceans. Families of the Chocó began settling Darién in the 18th century, and by the early 1900s, when the young Panamanian state was being founded, they had dominated most river basins. Away from the river cities and Kuna regions, they constructed family compounds scattered along rivers and streams. In order to construct a *comarca*, an indigenous homeland and semiautonomous geographical area under the supervision of the Panamanian state, their leaders paired this village-formation approach with the adoption of new political structures in the 1960s.

More specifically, Comarca is a Spanish term used in some countries to refer to a rural or indigenous administrative division or region. In many Latin American countries, a comarca is a type of territorial organization that encompasses one or more municipalities and is used to recognize and protect the rights of indigenous communities. In our case study, in Panama, a comarca is a geographical and cultural region inhabited by indigenous groups with a distinct language, traditions, and government structure separate from the rest of the country.

Scotland suffered a large financial loss as a result of the Darien venture's failure, which is seen as a watershed moment in Scottish history.¹⁰⁶ Indeed, the fallout from this, in the opinion of at least some Scots, resulted in an even worse failure: the loss of Scottish independence when Scotland joined the Union with England in 1707. Although it is impossible to establish a direct causal link between the two historical occurrences, perceptions undoubtedly have their own reality.

William Paterson, a well-known Scottish projector at the time and co-founder of the Bank of England, his most fruitful and enduring endeavor, had the idea to establish a colony in Darién, which is located near the isthmus of Panama.¹⁰⁷

The Scottish Parliament adopted his ideas and established the Company of Scotland in 1695, granting it a wide-ranging commercial monopoly and the authority to annex unclaimed lands. Between 1695 and 1697, preparations for the company's first journey to the allegedly remote location of Darién were made, including fund-raising, the purchase of ships and supplies, and colonist recruitment.

Early attempts to fundraise for the firm were unsuccessful. After a very promising start, the pro-test of English merchants led to government interference and the failure of London finance. This was

¹⁰⁶ G. Pratt, *Papers relating to the ships and voyages of the Company of Scotland trading to Africa and the Indies, 1696-1707*, Edinburgh University Press, 1924.

¹⁰⁷ G. Insh, *The Company of Scotland Trading to Africa and the Indies*, London and New York, 1932.

partially due to the Scottish parliament not genuinely consulting King William about the Company despite adhering to all legalities.¹⁰⁸

The angry English response also resulted in the Netherlands and Germany's finance channels being closed. As a result, the Company was forced to rely only on the financial resources of Scotland, a nation at the time with limited resources and ongoing economic issues.

Yet, they believed that no European authority owned this land and that Scottish control might be negotiated with the locals. The colonists got to work building a town called "New Edinburgh" and a fort called "St. Andrew," creating colony regulations, and choosing a form of governance. A sweeping proclamation signaled the start: "*And now by Virtue of the before-mentioned Powers to us given, We do here Settle, and in the Name of GOD Establish Our Selves, and in Honour, and for the Memory of that most Ancient and Renowned Name of our Mother Kingdom, We do, and will from hence-forward call this Country by the Name of Caledonia: and our selves, Successors, and Associates, by the name of Caledonians*".¹⁰⁹

However, the colony lost three quarters of its initial numbers in the first six months due to inadequate and running out supplies, lost supply and relief ships, and a variety of other challenges like infections, persistent rain and storms, internal strife, and a Spanish onslaught. The Scots were unable to effectively negotiate or form alliances with the native population because they were not aware of the tribal dynamics of Darién.¹¹⁰

The colonists in this case learned of English proclamations to all governors of English colonies in America forbidding assistance of any kind to the Scottish colonists of Darién on the grounds that King William was unaware of the plan and that it was in violation of the peace with his allies, the Spanish. Due to this and a report of a further Spanish onslaught, the colonists made the decision to leave the town in June 1699.

Unaware of this, two other rescue ships with 300 immigrants departed Scotland in August 1699; one of these ships caught fire in close proximity to Darién, and the other turned back to Jamaica. Additionally, a whole second expedition consisting of four ships and 1,300 colonists landed in the area in November 1699. They rebuilt Fort St. Andrew and awaited the Spanish onslaught, which came in April 1700 and resulted in Scottish loss.

Help in English was expressly declined in this circumstance. The Spanish gave the Scots permission to leave with their surviving persons and belongings, but due to the poor condition of their ships, it proved to be a difficult task. At the end of the voyage, only one ship, the Caledonia, was still afloat. The others had either drowned, burned, were otherwise shipwrecked, were abandoned as not

¹⁰⁸ G. Walker, *Writing Early Modern History*, ed. by Garthine Walker, 2005.

¹⁰⁹ G. Insh, *The Darien Scheme*, Historical Association, 1947.

¹¹⁰ B. Lenman, *An Economic History of Modern Scotland*, Batsford, 1977.

seaworthy, or had been taken captive by the Spaniards.¹¹¹ The matter was not finally resolved until seven years later, when the so-called equivalent¹¹² was utilized to make up damages caused by the Darién tragedy within the context of the Union between England and Scotland.

It can be said therefore that Scottish settlers wanted to settle in the area, but they perished from disease and Spanish attacks. Thus, this impregnable jungle remained absolutely virgin to the Europeans, who could not resist its indomitable nature. It is known that it is inhabited by original tribes, although it cannot be calculated for sure how many populations are among the compact vegetation.

As the debate above has demonstrated, Scottish finger-pointing was certainly one-sided: the Darién debacle was the fault of the English or a particular English group. Although there is some truth to this, it is surely not the entire tale. Additionally, there were a few things the Scots might have managed better, such as starting discussions sooner or learning more about the residents, circumstances, and colonial setting of Darién. There was a remarkable amount of military men in the expeditions, which suggests that they may not have been totally honest about the colony's intended use.¹¹³

This was certainly not the first failed colonial venture; it was simply that relatively poor Scotland, which was broke after Darién, found it difficult to visualize this failure. Hence, the requirement for a scapegoat. But the obsession with the English extends deeper than what happened in Darién. From the Scottish point of view, Darién was merely one of many stones, albeit it could have been the one that finally broke the camel's back.

Contact with the Europeans led primarily to the destruction of the Kuna's political superstructure and the modification of their social and religious structures. The majority of their subsistence is still today derived from agriculture, along with hunting and fishing.

Even though the Darien has seen significant destruction, it still retains one of the few surviving remnants of rain forest in Central America and continues to preserve the Kuna and Chocó Indians' cultural legacy.

2.2.3 History of the border and international relations

The border between Panama and Colombia has a long and complex history. As seen, prior to the arrival of the Spanish in the 16th century, the region was inhabited by indigenous communities with their own distinct cultures and traditions. During the Spanish colonial period, the region was divided

¹¹¹ P. Herlihy, *Participatory Research Mapping of Indigenous Lands in Darién, Panama*, Human Organization, 2003.

¹¹² Article XV of the Act of Union: "It is agreed that Scotland shall have an equivalent for what [her] subjects shall be charged towards payment of the debts of England [...] the sum of three hundred ninety-eight thousand and eighty-five pounds ten shillings."

¹¹³ W. Douglas Jones, *The Bold Adventurers: A Quantitative Analysis of the Darien Subscription List*, 2001.

into administrative territories, but the exact boundaries between what is now Panama and Colombia were not clearly defined.

Panama was part of Colombia for 82 years between 1821 and 1903, at which time it was also integrated into the Republic of Colombia, also known as Gran Colombia, a single State that existed legally between 1821 and 1831, which contained the current territories of Colombia, Panama, Venezuela and Ecuador under the integrationist ideal of Simón Bolívar.

It is evident that Panama has been an important territory for Colombia and for foreign powers. Since the time of the Spanish colony, its territory constituted the bridge through which all the shipments of gold and silver that traveled from Peru to cross the Isthmus and reach Portobelo, a port located in the Caribbean where the fleets made a stopover, permanently transited. Spanish on the way to and from Spain to America.

This route was still dangerous and time consuming, so from then on, the kings of Spain contemplated the possibility of opening a canal that would facilitate the transit of gold and silver shipments between the Pacific and the Atlantic through Panama, either through the Darién region or through Chocó. However, at that time Spain did not have the technical or financial capacity to develop said project. Panama, like Nicaragua, acquired significant importance for the United States once this nation overcame a difficult economic situation at the end of 1880. Of course, as Múnera notes, as early as 1869 President Ulises Grant would express the from his country of "*an American channel, on American soil, that belonged to the American people.*"¹¹⁴ This same idea would be ratified by President Hayes in 1880 in a message to Congress stating that "*the policy of this country wants a channel under American control. The United States cannot consent to relinquish that control to any European power.*"¹¹⁵

In the 19th and early 20th centuries, as Panama and Colombia gained independence from Spain, the border between the two countries remained uncertain. This led to disputes over control of the region, including the area of our interest, known as the Isthmus of Panama, which was strategically important for transportation and commerce. In 1903, the United States supported Panama's separation from Colombia and the establishment of an independent Panama, which allowed for the construction of the Panama Canal. The country became a separate nation after decades of fighting for autonomy and negotiations with Colombia and the US. The event marked the end of Colombia's control over Panama and the beginning of Panama's journey as a sovereign nation.

¹¹⁴ A. Múnera, *Fronteras Imaginadas. La construcción de las razas y de la geografía en el siglo XIX colombiano*, Planeta, Bogotá, 2005.

¹¹⁵ *Ibidem*.

In December 1903, the Hay-Bunau Varilla Treaty was signed with the United States which guaranteed the right to build and administer the Panama Canal indefinitely, which was opened in 1914, also reserving the right to intervene militarily in the interest of national security.

The Treaty generated a diplomatic dispute between Panama and Columbia, which reached a break only in 1977, when the population of Panama approved the expansion of the Canal, in order to increase the number of ships in transit. From that moment until today, this stretch of land which is still barely known, has become a dangerous migratory route along which thousands of people risk their lives.

In 2019, Panamanian authorities counted nearly 24,000 migrants from South America who entered the country via the Darién Gap. The number of foreign migrants decreased in 2020 and 2021, due to worldwide restrictions introduced to counter the effects of the global coronavirus pandemic.¹¹⁶

However, with the easing of restrictions, the number began to grow exponentially, also due to the worsening economic conditions in Latin American countries following the pandemic itself: only in 2021, according to what reported by the International Organization for Migrations (IOM), about 91,300 crossed the jungle to move north.

According to statistics from the Panamanian authorities, the number of people who crossed the Darién Gap in the first two months of 2022 almost tripled compared to the same period last year, rising from 2,928 in the first two months of 2021 to 8,456 in 2022, including 1,367 children and adolescents.

On the one hand, the number of Venezuelans causes concern, as it almost doubled compared to the same period in 2021 due to the worsening of the economic and political crisis underway in the country. Over 31% of migrants who crossed the Darién jungle in the first three months of this year comes from Venezuela¹¹⁷ and on the other hand the number of Haitian children, which has tripled in the last five years. According to UNICEF, more than 19,000 children and 3,000 pregnant women made this perilous journey in 2021, three times as many as in the five years combined between 2016 and 2020.¹¹⁸

The United Nations has expressed concern about the growing numbers and the fact that refugees and asylum-seekers, including highly vulnerable groups such as women and children, are forced to face robbery, rape and exploitation by human traffickers, as well as the lack of drinking water during the journey through this lawless and roadless land (Figure 9).

¹¹⁶ UN Refugee Agency, Number of Venezuelans crossing the Darien Gap soars, March 2022.

¹¹⁷ UN Office for the Coordination of Humanitarian Affairs, “*We are tired and desperate*”: Stories from families who survived the Darién Gap, June 2022.

¹¹⁸ UNICEF, *Twice more children migrating through the Panama Darien Gap this year*, June 2022.



Figure 9. Migrants through their paths with children

2.3 The new cultural landscape and administration of the dense jungle

The Panama-Colombia border region is a distinctive biogeographical zone that includes a sizable tract of wet tropical rainforest. It is formed by two administrative divisions: the Darién Province in Panama and Chocó Department in Colombia. The Darién-Chocó region, which is surrounded by the Atlantic and Pacific Oceans, has historically been a frontier for both countries, poorly integrated into their economies, and often overlooked by the government while being of crucial strategic importance. Chepigana and Pinogana, the two districts that make up the Darien Province of Panama, are connected by a common international boundary. In addition, from the two aforementioned districts, two Emberà-Wounaan Indian independent administrative entities, comarcas, were each established in 1983. The Kuna Yala Comarca, one of them, has borders with Colombia and partially straddles the Darien National Park.

The area has a significant cultural variety despite its poor socioeconomic conditions.

In Darien and Chocó, human populations, trends, and cultural traits are very comparable, revealing a human geography that mirrors the natural geography. The Chocó Indians of Panama lead a simple life, gathering food and a place to live from the woods around them. Their means of subsistence include farming, trade, hunting, and gathering. The climate is sweltering and muggy. Their thatch-

roofed, open-sided cottages mix perfectly with the surroundings. Their province of residence is Darién, which spans much of Panama east of the Canal Zone. They appear destined for cultural extinction, much like other native peoples.

The Darién Gap, as described above, is characterized by a terrain which is too unfavorable for the building of infrastructure and roads due to mountains, bogs, and dense rainforest. These geographical features allowed the transformation of this path from no man's land to a way of hope for millions of migrants crossing the gap in search of a better life. Deep into the bush is where Colombia and Panama's invisible border is located. No officials are waiting to examine documents, humanitarian organizations wait to offer food, shelter, and relaxation. Controlling the deeper areas of the Darién Gap is indeed practically difficult without a road. For this reason, migrants are not the only humans risking their lives in the forest. There are also many paramilitary organizations, criminal gangs, and drug dealers in the region waiting to take advantage of the weaknesses of individuals on the move.

It is a major route used to carry firearms and cocaine from South America to the North; because of its seclusion and lack of government authority, criminal organizations that control its entrances at the Colombian border find it to be the ideal location.

In Darien and Choco, wildlife trafficking is another an issue. As will be analyzed later in the paragraph, the construction of the highway will make it even easier for wildlife traffickers to enter new areas and enhance the illegal international movement of protected animals in both directions.

The border between Colombia and Panama for a long period of time has been a great passageway for an incredible amount of illegal activities: from drug smuggling to illegal migration of people seeking to cross Central America to reach the United States. Being an area with very limited population, difficult to access for officials from both countries and of little interest to some; smugglers and groups outside the law take advantage of it to carry out their illegal businesses. In addition to this, it is the connection between South America and Central America, thus creating a corridor for legal and illegal migration of people seeking to go to the United States.

Moreover, the securitization of the Darién Gap is overwhelmed by the clash of interests between Colombia and Panama, which cannot find a middle ground for this and/or the adequate application of the agreements previously made between both countries.¹¹⁹

For Panama, this is an issue that occupies a place on the political agenda since it has humanitarian, environmental and security implications.¹²⁰ This Colombian lack of interest in the protection of the Darién Gap stems from the failed negotiations to create or extend the Pan-American Highway through

¹¹⁹ J. E. Mosquera, *Las guerras y los conflictos del Darién: papel de la explotación de los recursos naturales, la construcción del canal interoceánico y la conexión vial de las Américas en los cinco siglos de conflictos*. Editorial Lealon, 2002.

¹²⁰ F. Salazar, *El tapón del Darién, un nuevo desafío migratorio*. El Orden Mundial en el S.XXI, 2016.

the jungle. Creating this road is the only interest that Colombia has in this territory, however, for Panama this is a reason to keep it closed. Panama argues that opening the traffic would increase crime in the place, in addition to the fact that it would have to mobilize indigenous populations and the construction of a highway would imply deteriorating the jungle, therefore, a large environmental impact on the place.¹²¹

A very important factor for Panama, for which they do not want to open their part of the jungle either, is the militarization in the area by Colombia to be able to combat groups outside the law and thus minimize drug trafficking and people. Added to this, Colombia does not have border control on its side of the border, this lack of control weakens Panamanian control and means that they cannot control the flow of people passing through the jungle.

Finally, for Panama, keeping the Darién Gap closed is for security reasons, since it has no guarantee that Colombia will reinforce and/or guard its part of the jungle. While for Colombia this is a purely economic issue since its interest is to invest in infrastructure in the place to expand its economic performance, this project is stalled by the Panamanian refusal to open it, which is why Colombia does not pay attention to the needs of the Stopper or invest in its safety.¹²²

With the easing of COVID-19 restrictions, more and more people are taking the migratory route north, causing concern from Panamanian and Colombian authorities. After several emergency meetings, already in August 2021 the governments of Colombia and Panama had tried to join forces in order to contain the influx of migrants leaving South America to move north.

The foreign ministers of both countries had in fact announced the introduction of a limit of 650 people per day who could cross the common border. As of September, the number would be reduced to 500, with the long-term aim of seeking more conventional routes that would avoid exposing migrants to the risks associated with crossing highly dangerous areas such as the Darién Gap jungle¹²³.

The agreement would have had the ultimate goal of limiting the operations of criminal organizations, as well as drug and human trafficking in the area. However, the Colombian government so far seems uninterested in applying the provisions of the agreement and the numbers of migrants crossing the common border every day continues to be high.

The ability to move people and things freely within and between countries depends on effective transportation infrastructure. Darien Province and the rest of Panama are just recently connected by

¹²¹ W. F. Laurance, M. Goosem, and S. G.W. Laurance, *Impacts of Roads and Linear Clearings on Tropical Forests*, University of Texas, 2009.

¹²² El Espectador. *Panamá y Colombia refuerzan compromiso para garantizar seguridad en frontera*. El Espectador, 2012.

¹²³ Mixed Migration Center, *Quarterly Mixed Migration Update: Latin America and the Caribbean*, MMC Latin America and the Caribbean QUARTER 3, 2021.

simple and secondary roads. Before the road system was built, the main means of transportation between Darien and Panama City was by wooden cargo ships that traveled from the Municipal Pier in Panama City to the many riverine and coastal settlements in Darien. The large river system was essential for interprovincial transit. Since there is no significant population and well-organized transportation system in the border area, land trade between Colombia and Panama is virtually non-existent. Although there is still some water transportation between the province and Panama City, the Pan-American Highway is moving an ever-increasing amount of commodities and people.

The transportation system in the Chocó Department is also insufficient. The current connection for the Pan-American Highway system from Colombia is made via the route that runs from Medellín to Turbo on the Gulf of Urabá, which is really in the Antioquia Department. Similar to how the current highway in Darién has affected the transportation infrastructure there, this route was finished after World War II. Apart from a small section on the western side of the Gulf of Urabá, there are no roads or bridges west of the Atrato River. The seclusion of the Chocó Department is shown by the route from Medellín to Quibdó, the capital. The 238 mile journey might take from no less than twelve hours to several days, depending on conditions.

2.3.1 Evolution of transport and infrastructure

Large-scale construction initiatives in this area are not lacking. A number of significant projects have been proposed by the Colombian government and private investors, including building the Pan-American Highway through Panama, secondary arterial roads, an oceanic canal, a deepwater port in Tribugá, significant agricultural endeavors, an electric transmission line between Colombia and Panama, gas pipelines, and hydroelectric dams. All prospective initiatives that would have significant regional environmental and socioeconomic effects.

A crucial moment in the region's history occurred indeed in the 1970s, when a highway was constructed through the forest, creating a breach that allowed unchecked colonization to spread over the area. The Gap Highway (Figure 10) and its surrounding settlement boundary resulted in the destruction of rain forest ecosystems and a sharp decline in the availability of wild plant and animal species. Other resettlement initiatives also changed the native terrain, which had mainly persisted undisturbed since colonial times. While there has been population increase in the cultural parks and along the new cattle front, the area's ancient river towns have diminished. The old subsistence foundation of the area has been weakened by these new trends.

The Darien Gap, as seen, is known for its rugged terrain, dense vegetation, and dangerous wildlife. As a result, there are no more human settlements in the region itself. The indigenous communities

who have lived in the region for thousands of years are still living in the surrounding areas, in small villages along the rivers and coastlines that border the Gap. These communities rely on the natural resources of the surrounding forests and rivers for their livelihoods, including hunting, fishing, and agriculture.

It goes without saying that rivers play a crucial role in the area, as they are one of the few means of transportation through the region. The dense jungle terrain and lack of roads make it difficult for people to travel by land, so rivers provide a natural highway for boats and canoes. These rivers are used by indigenous communities for transportation, trade, and fishing. They are also used by drug traffickers and other criminal groups to transport illegal goods between Colombia and Panama.

In addition to transportation, rivers in the Darien Gap also play an important role in the region's ecology. They provide habitat for a wide variety of aquatic species, including fish, turtles, and crocodiles. The rivers also help to regulate the local climate, as they provide moisture to the surrounding forests and help to cool the air. However, the rivers in the Darien Gap can also be dangerous, as they are subject to flash floods and strong currents during the rainy season. This can make travel by river hazardous, and it is important for people to be prepared and take appropriate safety precautions.

There are also several military and law enforcement outposts in the region, which are used to combat drug trafficking and illegal immigration. However, these outposts are typically located in more accessible areas outside of the Darien Gap itself.

The Darien Gap Highway's development did in fact introduce fresh external forces. Truckloads of settlers arrived with upgraded pasture grasses and animals. Threatened by these modifications, the native Americans who lived beyond the pioneer perimeter established settlements to meet the requirements for a comarca, or semiautonomous homeland. Two parks were established to save the area's natural and cultural legacy as a result of the enormous deforestation and ecological degradation that followed, as well as international attempts to preserve a buffer zone against the spread of foot-and-mouth disease from Colombia. The so-called "cattle front" and the "culture parks," two recent additions to Darien's cultural mashup, have significantly changed the area.¹²⁴

¹²⁴ W. F. Laurance, M. Goosem, and S. G.W. Laurance, *Impacts of Roads and Linear Clearings on Tropical Forests*, University of Texas, 2009.



Figure 10. The Pan-American Highway and the Gap

As a result, there were only five tiny populated villages with agricultural colonists in the area before to the Pan-American Highway's inauguration in 1975. In that year, the 10-meter-wide dirt and gravel road with contemporary bridges connected to Yaviza and the Chucunaque-Tuira river system, and it reached Canglón in 1984. It quickly became the province's economic lifeline, and trade networks quickly changed their directions to focus on it. As agriculture and pastures grew throughout the majority of the areas with road access, dozens of new villages appeared. The road has never been improved, and it still has the potential to become inaccessible during the rainy season.

Plans for Darién by the Panamanian government are not quite as ambitious as Colombia's. Recently, the government engaged in the Program for the Sustainable Development of Darién (PDSD), a multi-sectoral development initiative, and renovated its portion of the Pan-American Highway to Yaviza. The PDSD was mostly supported by loans from the Inter-American Development Bank (IDB). Its objectives include enhancing local government capacity, promoting land use planning, and enhancing the transportation system's performance for Darién.

The proposed road connection over the Darien Gap has a long history. The countries of the Western Hemisphere have pushed for road linkages between their countries since the Fifth Inter-American Hemispheric Conference in 1923, in Santiago de Chile. The necessity of developing a hemispheric road network was likewise endorsed by the First Pan-American Highway Congress (COPACA) in 1925. During World War II, the United States recognized the strategic value of the road network and played a significant role in advancing the building of the Texas–Panama route across Central America. The Colombian, Panamanian, and American members of the Darien Subcommittee were assembled by the Executive Committee of COPACA in 1955. This group organized design studies and suggested different options, four in Panama and nine in Colombia, including a southern route crossing the border at connecting Pacific villages in the Choco Department, and a northern route crossing the border at Palo de Letras and finally connected to Colombia. By 1960, the international boundary at Palo de Letras would be crossed by the road, according to an agreement between Colombia and Panama. This route was unanimously approved by the Eighth COPACA in the same year. The project was ultimately finished in its entirety in 1963, with the signature of the Pan American Highway.

Drives from Alaska to Tierra Del Fuego will be possible once the Darien Gap highway is finished. The building of the Inter-American Highway, which connects North, Central, and South America, has long been a priority for US foreign policy, but it has only lately come under environmental scrutiny because to its proposed route via the Darien Gap. The choice and planning of the route would be categorized as a substantial government activity under Section 102 of the National Environmental Policy Act, "NEPA", of 1969¹²⁵ if the Darien Gap were located within the territorial limits of the United States. Since the irreversible alteration of a primitive area raises challenging and unresolved issues regarding the role of impact statements in structuring decisions made on the basis of incomplete data as to their long-term environmental impact, the appropriateness of such an impact statement would undoubtedly be litigated. The Department of Transportation, "DOT", which administers the funds appropriated by Congress for the Inter-American Highway, and the Council on Environmental

¹²⁵ A. Dan Tarlock, *The Application of the National Environmental Policy Act of 1969 to the Darien Gap Highway Project*, Indiana University School of Law, 1974.

Quality have been engaged in a dispute regarding whether DOT must file an impact statement because the highway lies outside of our territorial boundaries.

On the grounds that the Darien Gap environmental effect assessment satisfies NEPA's standards for an environmental impact statement, the Department has submitted an environmental impact "assessment" but declined to file a complete NEPA statement.

The proposed highway poses a number of issues that transcend beyond the concerns of specific Panamanian or Colombian government officials, business leaders, members of environmental advocacy groups, or members of social and racial groupings. Officials in charge of conducting the necessary environmental and social evaluations would have to consider all of these issues before deciding whether to permit the construction of the road or not.

The construction of a new route for land travel between South and North America through a tropical rainforest raises a number of health concerns for people, plants, and even animals.

The possibility of tropical disease epidemics and their propagation to North or South America might rise as a result of road development over the Darien Gap. Yellow fever, onchocerciasis, cutaneous leishmaniasis, visceral leishmaniasis, and Chaga sickness are examples of potential illnesses.

Moreover, road building might have serious effects on this biogeographical area, which is one of the planet's most species-rich regions and is mostly untouched by people.

The biggest hurtful effect of the road building will be the growing colonization of Darien and Choco's wooded areas. Despite the best efforts of the government, the admission of loggers and small farmers into the region will be almost difficult to monitor. Lands will be concentrated in livestock ranches and agro-industry businesses.

These road segments' construction encouraged unchecked settlement and deforestation not just immediately next to the road but also up to ten to twenty kilometers away. Road building through wooded regions has frequently resulted in fast deforestation and unchecked settlement in Latin America. There is no cause to believe Darien and Choco will deviate from this standard.

Unchecked colonization of the area will result in deforestation, destruction of delicate tropical forest equilibria, fragmentation of the rainforest, loss of endemic species of flora and fauna, soil erosion and degradation, changes to hydrology and river flows, and the loss of regions where indigenous peoples have practiced agroforestry and other traditional agricultural methods. Even the effects of global climate change may be impacted by the loss of tropical forests.

Particularly in a remote area like Darien, Panama is acutely equipped to coordinate organized land colonization. Darien's protected areas and comarcas will never be clearly delineated since the state's land title scheme is still in its infancy. It is obvious that Panama would be overrun if an international route were to develop in the area.

Indeed, the Pan American Highway has caused significant environmental and cultural damage as it has advanced southward toward the Chocó homeland. The Cuna Indians resided alongside the Rio Bayano until the highway, which passed directly through their territory, allowed for the growth of nearby businesses. As soon as the construction of a big dam on the Rio Bayano is finished, most of their old area will turn into the bottom of a lake.

The inland Cuna have been transferred, which is a tragic fact of 19th century Indian history in the United States. As secondary roads built off the main highway fling open their hitherto isolated region, it is just a matter of time before their brother tribesmen, the San Blas Island Cuna, too earn their portion of the profits. Within a few kilometers, the Chocó will become the next victims.

The highway's effects and the subsequent exploitation of Darien's natural riches are significant. An area that was previously pollution-free have now experienced air and noise pollution due to construction. Extreme soil erosion will result from lumber firms' deforestation of the hills and valleys. There will be a loss of habitat for endangered animals and plants that depend on the woods.

Tragically, the roadway will have a disastrous effect on the Choco, whose life depends on the forests. The relocation of colonists into Darien following the construction of the highway will "*lead to the annihilation of the [Indian] culture,*" as the Department of Transportation recognizes. Due of their relative isolation from the outside world, many Choco are unaware that the road is being constructed. The Rio Chucunaque and its tributaries, as well as valleys to the southwest, are home to the majority of the Choco people. They engage in a sort of slash-and-burn agriculture and live in a state of relative peace with their surroundings. The forest has not been cleared, and the flora has not been burnt. The Choco relocate to new plots after a few years of farming; the old ones rapidly turn back into forest. Fast-growing tropical trees start to tower over formerly-cultivated regions as the soil regains its richness. The Indians briefly utilize the forest in this way without causing it to be destroyed.

As mentioned, there are still some Indians who hunt exclusively with a lance in isolated regions. The Choco also rely on a fishing season during the rainy season, when the rivers and streams turn brown, because the traditional fishing spear must be used in clear water.

However, the Chocó proved themselves to be open to modification and tried to make some adjustments to contemporary society. Many of the males have traveled to Panama City, and the majority of them know some Spanish and trade is conducted using the national currency. The Chocó, meanwhile, have mostly maintained their native culture. They typically migrate to other areas or move deeper into the forest rather than engage in confrontation with people. Because of this, the higher portions of the rivers are where it can be found the most of the Chocó in Darien. Many come from the nearby Colombian province of Chocó, where Europeans have been progressively driving

Indians from their lands for the previous 100 years by migrating up the river valleys. The last remaining haven for this savage, semi-nomadic people is Darien, with its isolated untamed woods. Another relevant impact to take into consideration is the one on national parks and protected areas (Figure 11).

Two UNESCO World Heritage Sites, Daren and Los Katios National Parks, would be split in half by the high route through Palo de Letras. The preferred Caribbean coastline route would still pass through protected areas in Panama while avoiding direct intrusion into the heart of Los Katios. The Kuna-Yala Comarca and/or the Emberd Comaco Comarca, as well as the northernmost portion of the Darien National Park, would likely have to be traversed using this route. The effects of unchecked colonization and forest disturbance would be seen directly in these protected regions.

The road may make it easier for colonists to enter the area, which might lead to logging and settlement inside protected areas even if the route does not directly cross through one. In addition, it would encourage the introduction of invasive and exotic species into the area and result in unrestricted selective and clear-cut logging, mining, agriculture, and hunting. In terms of demography, the population of Darien Province, Panama, has grown from 26,524 in 1980 to 43,832 in 1990 to 48,378 now.¹²⁶

United Nations Development Programme, *Convention on biological diversity*, Aichi Biodiversity Target 11 Country Dossier: Panama, 2021.

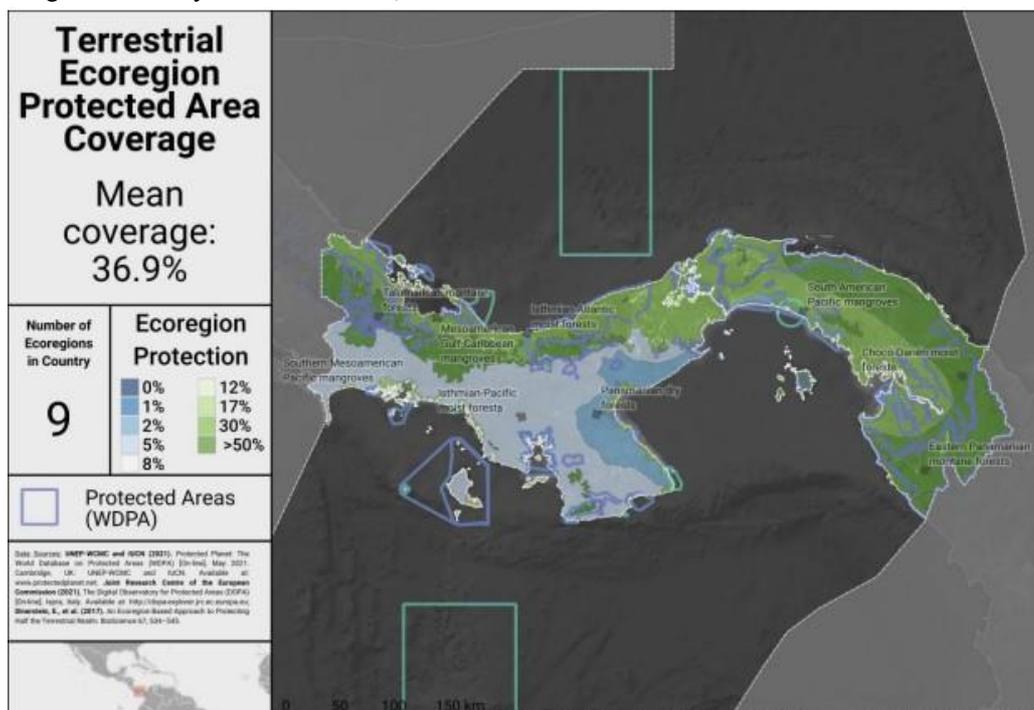


Figure 11. Terrestrial Ecoregion Protected Area Coverage in Panama

¹²⁶ D. Suman, *Globalization and the Pan-American Highway: Concerns for the Panama-Colombia Border Region of Darién-Chocó and Its Peoples*, *Inter American Law Review*, 2007.

Compared to a national average of 2.9%, annual population growth between 1980 and 1990 was 6.5%. It is believed that the Pan-American Highway subsequent colonization chances contributed to the area's explosive expansion in the 1980s. Darien saw yearly population growth between 1990 and 2000 of just 1.07%, which was lower than the national average of 2.19%. Deforestation and the government's elimination of agricultural subsidies caused a slowdown in colonization.

Wildlife populations and water flow inside protected areas can be impacted by human activities even totally beyond their boundaries. Since they would be extensive and need significant investments in staff, infrastructure, institutional development, and coordination, not to mention bi-national cooperation, these indirect effects would be exceedingly challenging to manage.

In addition to the aforementioned effects, the migration of Colombian migrants into Darien who want to flee the turmoil in their country and are also looking for better economic opportunities also plays a part. There are about a thousand Colombian refugees in the Darien area.¹²⁷

In Panama, the displaced individuals have sparked conflict and discussion. Many of the refugees who were forcefully deported by the Panamanian government in 2003 and 2004 would have wanted to stay in Darien, Panama¹²⁸. The highway may facilitate the emigration to Panama of political and economic refugees from Colombia¹²⁹, placing pressure on the country's social services and raising concerns across a broad range of Panamanian society.

Even though the Pan-American Highway has been one of the most crucial American projects, it has never been a common program capable of connecting the continent also from a political point of view. It is in fact a long and time consuming journey which crosses 14 countries, from Canada to Argentina, and different climatic zones, from the arctic tundra to the boreal forest, from prairies to deserts to the tropical jungle.¹³⁰

2.3.2 Tourism development in the area

The current cultural and administrative landscape of the region is also characterized by a new interest and attempt towards tourism. Integrating individual, commercial, and territorial aspects is one of the factors that lead to social development in the region. It is crucial to note the significance of endogenous development models for regional groups.

¹²⁷ Project Counselling Service, *Colombia: Informe de Fronteras*, April 2003.

¹²⁸ A LA MAR, *De Vuelta a Casa: "El Retorno de los Desplazados Juradó"*, Feb. 2004.

¹²⁹ Migración Colombia, <http://www.migracioncolombia.gov.co/>, February 2013.

¹³⁰ US Department of Transportation, *Highways of Friendship, An Intimate Account of the Tour of the Pan-American Highway Commission*, Highway Education Board, 1924.

Natalia Naranjo Ramos¹³¹, Tourism and Development Advisor, explains how tourism could be an opportunity for peace-building in the Darien Gap, region which history have shaped and mixed a very varied population in a natural setting.

The author cites the Darien as a fascinating illustration of how tourist services offered by locals through ecotourism centers, run by communal organizations, and with more than 100 families directly participating, are a chance for the promotion of a local endogenous development.

The significance of tourism is highlighted by the Global Code of Ethics for Tourism which says that “*towards alleviation of poverty and the improvement of the quality of life ... its potential to make a contribution to economic and social development, especially of the developing countries ... the need for the promotion of a responsible and sustainable tourism that could be beneficial to all sectors of society*”.¹³²

Tourism's value chain includes relationships with a variety of actors, including farmers, fishers, health care providers, security personnel, tour guides, transportation providers, retailers, people who work in the handicraft industry, and others involved in general commerce. Tourism is an industry that provides several advantages for the various societal economic sectors.

In addition to that process, tourism aids in recognizing and promoting the importance of local culture, the region, natural resources, and landscapes; aiding communities in taking care of, guarding against, and preserving their land, culture, roots, and identity.

According to the World Tourism Organization, tourism has been expanding in developing nations like Panama and Columbia. This is a huge opportunity to advance and raise the standard of living in these nations. Due to the region's tremendous potential for natural and cultural variety, tourism also offers enormous opportunities to spur local development in both urban and rural regions.

It is possible to build partnerships based on communication and engagement between the locals and the tourists through community-based tourism, which is designed for and by the locals – who, as a result, have control of choices and play an active role.

Community-based tourism is defined by World Wide Fund International as an activity where local communities effectively govern their area, their growth, and their administration.¹³³ Tourism programs primarily benefit the local communities through strong local engagement.

Other local economic activities including agriculture, fishing, artisan crafts, trade, transportation, guided tours, and others are inextricably linked to this type of tourism. Thus, tourism contributes to the local economy's growth, employment, and revenue.

¹³¹ C. Wohlmuther and W. Wintersteiner, *International Handbook on Tourism and Peace*, Centre of Peace Research and Peace Education of the Klagenfurt University, 2013.

¹³² World Tourism Organization, *Global Code of Ethics for Tourism*, Spain, 2001.

¹³³ World Wide Fund, *Guidelines for community-based ecotourism development*, United Kingdom, 2001.

Their needs, their profession, and their financial capabilities and talents may all be better served by innovations and efforts for local employment and opportunities. After that, the process turns into an ongoing endogenous development that seeks to meet the needs of the local populace while making a major contribution to both their community and themselves. When tourism is planned and executed responsibly, it promotes fair economic growth and protects the environment and culture.¹³⁴

Moreover, eco- and community-based tourism often helps to sustainably increase local revenue while protecting the environment and cultural resources. The Darién region's ecotourism centers provide this form of tourism as their primary focus.

Although the Darién's primary economic activity is not tourism, nearby locations such as Capurgana, Sapzurro, San Francisco, and Necocli have been noted. Commerce, banana cultivation, fishing, and agriculture make up the majority of the region's economic activity. The area is a popular destination for family vacations because of the country's considerable banana production and trade. There is also a minimal degree of infrastructure in this area, including some hostels, hotels, campgrounds, and restaurants; locals and residents are typically employed by them, although they are typically not the primary tourists.

In an endogenous development framework, this transformational process of tourism, which enhances individual and entrepreneurial capacities based on local resources, fosters identity, feelings of security, a sense of community, and belonging, contributes to the reconstruction of society and lays the groundwork for peace. The reinterpretation of life to highlight the good elements of daily life and surroundings for tourists helps to strengthen their feeling of community.

2.4 A desperate journey to America, a focus on the migrants and their risks

According to UN projections, only due to climate change, nearly 1 billion people may be uprooted by 2050.¹³⁵ Many more people are emigrating from their home countries due to natural catastrophes¹³⁶, conflict, persecution, job, and family reasons. This rise in population migration is already noticeable throughout the Americas, particularly in Panama, where, migrants are passing via South and Central America on their way to North America from various Caribbean areas, South America, Africa, and Asia.

¹³⁴ E. Rosijane, and M. Badaro, *Tierras de Preto de Filipa Brasil. Identidad, territorialidad y turismo comunitario en la lucha por el reconocimiento*, Estudios y perspectivas en turismo, 2012.

¹³⁵ International Organization for Migration, *World migration report 2020*, 2020.

¹³⁶ The Lancet, Climate migration requires a global response, *Lancet*, 2020.

It can take ten days or more to cross the gap in search of a beneficial future. For many migrants, the Darién Gap represents a challenge in a search for security and opportunity that has lasted for years. Dangerous animals, long and exhausting journeys on foot, poor hygienic conditions that can cause the onset of diseases, abuses and violence by criminal groups ready to exploit the weaknesses of migrants. These are some of the elements that characterize the journey of migrants through the Darién Gap. Migrants crossing the forest have no choice but to walk and ford rivers, dragging themselves, and often their children, over steep and mountainous terrain. The last stretch of the Darién Gap is marshy and migrants who manage to get there must cross it by canoe. People migrating along this path endure dangerous river crossings, sweltering heat, and venomous wildlife in addition to not having access to food or adequate water. Some native settlements located on the periphery of the dense forest offer migrant peoples in route a brief resting area. People who have undertaken the trek frequently describe human trafficking, smuggling, and violence. Additionally, 180 rape incidents were reported to Doctors Without Borders between May and September 2021.¹³⁷

The route that people smugglers use to cross the wilderness keeps varying, but what remains constant is the goal, getting the migrants to the first Panamanian migration reception station available at the edge of the forest. The journey of these tens of thousands of people in the Darién Gap begins weeks earlier in Colombia, in the department of Antioquia, in the coastal city of Necoclí. There they negotiate with the traffickers, wait their turn and are finally embarked towards Capurganá, the Colombian port of the Darién. From here, still by boat, they reach Porto Obaldía the first area of contact of migrants with Panamanian soil and the starting point of the crossing on foot of the forest (Figure 12 and 13).

¹³⁷ K. Vyas, *Rapes of U.S.-bound migrants make a treacherous route even more dangerous*, The Wall Street Journal, September 2021.

El Colombiano, Alcaldía de Turbo y migrantes, Infografía, 2019.



Figure 12. The migrants route in the Darién Gap



Figure 13. Influx of migrants to the coastal town of Necocli

As we have seen, the Darién is one of the wettest regions in the world and deep mud is everywhere, which slows down the journey and increases the risk of danger (Figure 14). After an extremely dangerous and inhuman journey through the dense vegetation of the Darién, which can last from 5 to 10 days, depending on the weather conditions, the migrants arrive in Bajo Chiquito: a territory within the county administration of the Emberá, Wounaan indigenous people, where they are received by the Panamanian Red Cross, the UN and other NGOs. In Bajo Chiquito they are refreshed, they are rescued, an attempt is made to reunite the families since many people remain behind or get lost in the jungle)and then they are transferred by boat to the Herm of Lajas Blancas.

As they leave the gap, migrants are directed to "Migrant Reception Stations" (MRS), which are set up by the National Migrant Services of the National Border Police¹³⁸ (SENAFRONT), a police force created in 2008 that performs on the spot control functions and humanitarian aid.

¹³⁸ The National Border Service, often known as SENAFRONT, from the Spanish: Servicio Nacional de Fronteras, is a division of the Panamanian Public Forces that specializes in border security along land borders. Its goal is to safeguard Panama's land boundaries, uphold the nation's sovereignty and territorial integrity, safeguard citizens' rights and freedoms, preserve the peace, and prevent and investigate crimes that may occur within its purview.



Figure 14. Migrants travel by foot through the jungle as there is no road

In past years the route was slightly different. The central point of arrival of migrants, at least until 2019, was the village of La Peña: a place that quickly became the hub of Senfront and UN agencies operations and where an ERM had been created. However, the overcrowding of the area, together with poor structural and hygienic-sanitary conditions, have sparked riots among both migrants and locals and so the Ministry of Health of Panama and the Pan-American Health Organization have opted to move the operation on Lajas Blancas. La Peña today continues to function as a reception center, but the bulk of the migrant registration operations are carried out in the MRS of Lajas Blancas. The migrants will spend an indefinite time in the MRS of Lajas Blancas, waiting for the pass that will allow them to travel to the other reception center, that of Los Planes de Gualaca, this time on the border with Costa Rica. Indeed, the Republic of Panama offers a transit permit to migrants who want to continue their journey north, receiving them at the gates of Darién and transporting them, once identified and registered, to the border with Costa Rica: a country that will offer them the same treatment of transit permit. While, Colombia has different visa policies for migrants depending on their nationality and the purpose of their migration. Generally speaking, migrants who wish to stay in Colombia for longer than 90 days or who plan to work, study or conduct business in the country will need to apply for a visa. Colombia offers several types of visas for migrants, including work visas, investment visas, family reunification visas, and student visas. Each type of visa has different

requirements, and processing times can vary depending on the type of visa and the individual circumstances of the applicant.

With very few exceptions, everyone entering Panama by foot goes through these MRS. These checkpoints are a component of the worldwide managed flow of migrant workers under a joint initiative between the United States and Panama, where biometric measures are recorded of all visitors to the nation in order to check them for terrorism and maintain a record of who they are.¹³⁹

The length of time spent at the MRS varies according on the person's nationality, medical requirements, and demographics. While residents of some nations can enter Panama easily, residents of other nations may have to wait many months. People from South America and the Caribbean are among those who do not have accelerated procedures, and when they come in Darien, they must first go through arduous, months-long visa procedures.

Foreign nationals frequently spend 3 to 14 days in the Darien MRSs before being moved to another MRS close to the Costa Rica-Panama border, where they stay until they start traveling north.

The number of transit migrants passing through the Darién at the Colombia-Panama border on their way to North America has steadily increased from 2015 to 2021. Between 2000 and 3000 people per month crossed the border into Panama before 2020.¹⁴⁰

These pathways have been used for generations to travel between the two states, but starting in 2016, more individuals decided to cross it every year. As a fact, more than 91,000 migrants entered Panama through the Darién Gap between January and September 2021.¹⁴¹

Following the early stage of the COVID-19 epidemic, when many people were unable to cross international borders and number decreased, there has been a recent increase.¹⁴²

While in the MRSs access to necessary health services is extremely restricted, there is no possibility of healthcare throughout the trip through the Darién region. The days spent in the tropical bush and the individuals they pass along the way expose migrants to hazardous factors during the journey. Along with these factors, there is an increasing incidence of illnesses and medical disorders that were prevalent in the migrants' countries of origin before they started traveling through Darién.

The Panamanian Ministry of Health (MINSA) and a few foreign organizations have recently provided funds to start addressing the health requirements and giving medical care to migrants passing through the MRS. The COVID-19 pandemic has changed the way that health care is provided, putting more

¹³⁹ D. Fitzgerald, *Refuge beyond reach how rich democracies repel asylum seekers*, Oxford University Press, 2019.

¹⁴⁰ International Organization for Migration, *Seguimiento a la emergencia*, IOM, 2021.

¹⁴¹ International Organization for Migration, *Más de 91.000 migrantes han cruzado el Tapón del Darién rumbo a Norteamérica este año*, IOM, 2021.

¹⁴² Servicio Nacional de Migración, *Estadísticas*, 2021.

of an emphasis on SARS-CoV-2 diagnosis and quarantine while ignoring general health, sexual health, mental health, reproductive medicine, and fever control.¹⁴³

The Pan American Health Organization has recommended strengthening national and decentralized health surveillance systems, especially in border-transit areas that can capture the health status and needs of migrants, in their priority actions. This is done by developing comprehensive profiles of migrants' health status and by strengthening national and decentralized health surveillance systems.¹⁴⁴ Besides the health issues that affect the journey, it should be noted that the deepest parts of the Darién Gap are practically difficult to police without a road, and for this reason both paramilitary organizations and criminal gangs are rife in the area. They are prepared to ambush migrants as they travel, to whom threats of rape, violence, and extortion are frequent. The same goes for drowning, exposure, and snake bites.

The jungle is disorienting and those who can afford it hire guides, also known as *coyotes*, to help them on their journey. However, these guides may be human traffickers posing as supportive protectors. According to an investigation by Interpol and the Colombian police, the passage of migrants through the Darién earns the traffickers around one million dollars a week. Furthermore, many are abandoned by coyotes halfway through the journey with no more money, water or food and sexually abuse the women. The lucky ones are intercepted by SENAFRONT agents, which is as mentioned the Panamanian police who monitor the border area, while the others meet the criminal gangs that manage the area.

Among the migrants that try their luck, over 70% are citizens of Haiti, 20% are citizens of Cuba, and the other 10% are from sub-Saharan Africa, Asia, and South America, according to official figures from Panama's National Migration Service.¹⁴⁵ In addition, since 2018, more kids, families, and pregnant women have entered Panama on foot through the Darien forest.¹⁴⁶ People from outside the continent go to South America by land or water, frequently landing in Brazil or Ecuador before continuing on foot all the way to the Panama-Colombia border.¹⁴⁷

Latin American migrants traveling north have had a land route across Central America for hundreds of years. A record number of Haitian and Cuban refugees have recently decided to travel via Central America in order to reach the United States¹⁴⁸ due to the devastation wrought by Hurricane

¹⁴³ J. Pinzón-Espinosa, M. Valdés-Florido, I. Riboldi, *et al.*, *The COVID-19 pandemic and mental health of refugees, asylum seekers, and migrants*, J Affect Disord, 2021.

¹⁴⁴ Pan American Health Organization, *Guidance document on migration and health*, PAHO, 2019.

¹⁴⁵ Servicio Nacional de Migración, *Estadísticas*, 2021.

¹⁴⁶ UNICEF, *Fifteen times more children crossing the Panama jungle towards the USA in the last four years*, 2021.

¹⁴⁷ TVN Noticias, *Alrededor de 17 mil migrantes han transitado por Panamá en lo que va del 2021*, TVN Noticias, June 2021.

¹⁴⁸ S. Held, *"Is this the Next major Refugee Crisis?"* Ozy, 2016.

Matthew¹⁴⁹ and the restoration of diplomatic relations between the two countries. Thousands of Asian and African migrants, particularly from Bangladesh, Nepal, Nigeria, and Somalia, have recently joined these intra-regional migrants in their quest for refugee status in the United States.

As mentioned before, non-Latin American migrants frequently rely on smugglers or agents to organize their travel arrangements as both states have relatively vague immigration regulations.¹⁵⁰ As a result, many start their trips by flying into So Paulo, Brazil, or Quito, Ecuador. In reality, Ecuador eliminated visa restrictions for visitors in 2008, making the Americas a more accessible entry point for migrants.¹⁵¹ Otto Reich, a former assistant secretary of state for western hemisphere affairs for the United States, and others have criticized Ecuador's lax immigration laws, warning that they may endanger Latin American stability and U.S. national security.¹⁵² The Brazilian Ministry of Foreign Affairs notoriously claimed in early 2016 that it "*is not aware of this human trafficking route*" in response to the Ecuadoran Department of Foreign Affairs and Trade's crackdown on illegal immigration.¹⁵³

These migrants typically buy fake passports when they arrive and pay to be carried through the Amazon Rainforest on their way to Colombia. The worst that may happen to these migrants is deportation to their initial site of entry, which is often Ecuador, as it is not illegal to enter Colombia "illegally."¹⁵⁴ A Colombian immigration officer said that all they could do was "*dump them (Non-Colombian migrants) off at the bridge at the border and walk away*"¹⁵⁵ since Ecuador had lately begun to refuse the deportees who were not Colombian citizens.

They can no longer escape statelessness other than by traveling across Central America and the Darién Gap since the governments of Colombia and Ecuador have failed to help individuals who are caught between their nations in an adequate manner. Those who are fortunate enough to make it to the Darién Gap sometimes do there very destitute due to the hefty prices demanded by smugglers, popularly and the regular extortion by criminal organizations and police officers manning checkpoints.

When Panama and Mexico agreed to transport 3,800 stranded Cuban migrants directly to the Mexico-U.S. border in May 2016, it seemed like Panama would lead the effort to rehouse the growing number of refugees.¹⁵⁶ Sadly, with this announcement, Panamanian President Juan Carlos Varela also stated

¹⁴⁹ Hurricane Matthew was a very strong Atlantic hurricane that devastated the southeastern United States and Haiti, as well as causing devastating damage and a humanitarian disaster there.

¹⁵⁰ Brodzinsky, Sibylla and Lakhani, *Global Refugees take Long Detours through Latin America to reach the US*, The Guardian, 2015.

¹⁵¹ J. Motlagh, *A Terrifying Journey Through the World's Most Dangerous Jungle*, Outside, 2016.

¹⁵² S. Schaefer-Muñoz, *Global Migrants Brave Panama's Vipers, Bats, bandits to Reach US*, Wall Street Journal, 2016.

¹⁵³ Ibidem.

¹⁵⁴ Brodzinsky, Sibylla and Lakhani, *Global Refugees take Long Detours through Latin America to reach the US*, The Guardian, 2015.

¹⁵⁵ Brodzinsky, Sibylla and Lakhani, *Global Refugees take Long Detours through Latin America to reach the US*, The Guardian, 2015.

¹⁵⁶ A. Rampietti, *Migrants Stranded in Colombia as Route to US Closed*, Aljazeera America, 2016.

that the main Colombian border crossings within the Darién Gap would be closed until more measures were done to stop the influx of migrants traveling through Panama on their way to the United States.¹⁵⁷

Previously, if an asylum applicant did not show up on any terror watch lists following background checks conducted by local border controls, they could continue traveling north. Over 1,000 Cuban refugees were left stranded as a direct result of his choice, forcing them to try to cross the Darién Gap in order to reach the United States.¹⁵⁸

Those traveling through the bush are allowed to enter without a passport even though Panamanian officials often forbid anyone who does so because there is no Colombian station close to return them. This demonstrates once more how the governments of Latin America have failed to work together and enhance their ability to manage this surge of immigration. In Central America, inadequate immigration laws have compelled governments to enact measures that restrict people's freedom of movement.

The majority of travelers via the Darién Gap in 2021 were from Haiti. Tens of thousands of Haitians attempted to start new lives in Chile and Brazil after the 2010 earthquake that completely destroyed their native country¹⁵⁹. Many more people left Haiti in 2016 as a result of Hurricane Matthew¹⁶⁰, widespread gang activity, and state-sanctioned violence. An estimated 85,000 Haitians went to in Brazil between 2010 and 2017. In order to entice them, the state offered them construction employment before to the 2014 World Cup and the 2016 Summer Olympics.

A number of millions of Haitians who have attempted to cross the Darién Gap throughout the years were already looking for protection and life opportunities in other South American countries, particularly China, and Brazil, in the wake of the 2010 earthquake that devastated their home country. However, in recent years, limitations have been tightened, prejudice has been more prevalent, and economic hardship has affected Haitian migrants in both Chile and Brazil. As briefly noted before, international relations have been impacted by the COVID-19 epidemic, making nations throughout the world unwilling to welcome immigrants. Due to these circumstances, countless families from Haiti and Venezuela are willing to cross the Darién Gap and sacrifice everything for a new life in the United States. Rosi Bantour, a Haitian immigrant, stated, "*Sometimes I think that, if I were not this impoverished, I wouldn't have gotten into this predicament.*"¹⁶¹ She was discussing the Gap in a PBS

¹⁵⁷ Ibidem.

¹⁵⁸ S. Schaefer-Muñoz, *Global Migrants Brave Panama's Vipers, Bats, bandits to Reach US*, Wall Street Journal, 2016.

¹⁵⁹ P. Miraglia, *The Invisible Migrants of the Darién Gap: Evolving Immigration Routes in the Americas*, Council on hemispheric Affairs, 2016.

¹⁶⁰ R. Whelan, "*Hurricane Matthew: Food, Water Shortages Threaten Haiti Victims*", Wall Street Journal, 2016.

¹⁶¹ PBS, *What migrants face as they journey through the deadly Darien Gap*, August 2020.

documentary. Hurricane Matthew in 2016, coupled with rampant criminal gang activity and violence in the country, prompted many thousands more to flee Haiti. However, people from around the world, and particularly from Sub Saharan Africa (Senegal, Ghana, Angola, Sierra Leone, Guinea Conakry Congo) and Southeast Asia (Bangladesh, Nepal) fly to Central America to try to achieve the American Dream overland via this dangerous stretch of land.

In addition, people from Eritrea, Iran, Pakistan, Kyrgyzstan, Sudan and Yemen risked their lives in the Darién Gap, as these countries were on the list that the Trump administration had banned from entering the United States. Despite the Biden administration's immediate commitment to lifting the two travel bans introduced by Trump on the basis of nationality and aimed primarily at Muslim-majority and African countries, many overseas migrants enter the United States clandestinely through this "no man's land" continues to represent the only possibility of success.

The majority of Haitians who are presently crossing the southern border of the United States are not coming from Haiti itself, but instead mostly from Chile and Brazil, where they had first lived. According to media reports, they made the decision to continue their journey to the U.S. for the reasons listed above, even if they had to pass through multiple nations and in some cases, even though they were already citizens of their initial place of migration.¹⁶²

Colombia is a necessary stop for Haitians traveling by land from South America to the United States. Along with refugees and migrants from other countries, many Haitians encounter temporary roadblocks on the western Caribbean coast before being able to enter Panama.¹⁶³ In 2022, Venezuelan migrants made up the majority of those across the Darién Gap. Venezuela is currently experiencing a political and economic crisis. Some individuals originated there. Others have been residing as refugees in South American nations for years.

Haitians and Venezuelans are not the only people who take the risk. The Darien Gap sees also overseas migrants. There is widespread awareness of the Darién Gap worldwide. Authorities in Panama estimated that about 24,000 migrants from regions outside of South America entered their nation through the chasm in 2019.¹⁶⁴ People traveled to the bush to risk their lives in the first half of 2022 from places as far away as Senegal, the Democratic Republic of the Congo, Bangladesh, Uzbekistan, and China. In 2020 and 2021, the number of immigrants from abroad decreased as a result of global travel restrictions related to the global coronavirus epidemic. But now that travel has resumed, individuals are once more traveling across the globe and taking risks in the wild. For many immigrants from other countries, sneaking into the country was their best option. They took a plane

¹⁶² Mixed Migration Center, *Quarterly Mixed Migration Update: Latin America and the Caribbean*, MMC Latin America and the Caribbean QUARTER 3, 2021.

¹⁶³ Migration Policy Institute, *Haitian Migration through the Americas: A Decade in the Making*, September 2021.

¹⁶⁴ The Guardian, *Risking it all: migrants brave Darién Gap in pursuit of the American dream*, The Guardian, April 2022.

to Colombia or another South American nation with more lenient immigration rules. and proceeded to the Darién Gap.

In 2020, Observatory Rights had already dealt with this migratory route by presenting the documentary *Darién Wanderers*, by Irene Masala and Lucas Serna Rodas.¹⁶⁵

In the same year, the Inter-American Court of Human Rights ordered Panama to guarantee all migrants access to essential health services in detention centers.¹⁶⁶ The Court's decision specifically concerned two immigration centers, both in the province of Darién, in which there were serious situations of overcrowding and the presence of cases of Covid-19 among people in a state of unjustified detention. The case was presented to the Court by the Center for Justice¹⁶⁷ and International Law because the detention status of migrants, which has become final due to the pandemic, would violate international human rights standards.

Indeed, in addition to natural disasters, gangs with a reputation for violence, including robbery and sexual assault, pose a threat to those who are most at danger. Among them we can surely consider injured and elderly people. Even something as little as a twisted ankle can be fatal; even physically fit individuals struggle to complete this voyage, battling hunger, thirst, and their own ailments. The Darién Gap is fraught with heartbreak. Given the terrain they must navigate and the hunger and thirst they feel, helping to lift another adult is impossible, even in a group. even if they are someone's father, sister, or wife.

In connection with elderly and injured people, it can be said that the child-related part is the most dramatic. According to UNICEF, the number of kids found in the Darién bush route rose over 400% in a single year.¹⁶⁸ Five thousand kids entered Panama in May 2021 after emerging from the forest and this amount surged to 2,000 kids in May 2022.

Parents in the Darién Gap can use kid carriers provided by World Vision since child's life can be saved by a simple cotton carrier. Carriers not only free up adults' hands to scramble up mountains and transport life-saving supplies like clean water, they also aid parents who cross rivers on foot in keeping their children in their arms. Depending on their age and capabilities, children cross the Darién Gap in various ways. Some are placed in carriers or carried in the arms of their parents, as mentioned, others make an effort to navigate the rivers and dirt on foot. Some stories of the migrants are horrifying since they tell how sometimes a wounded father or guardian was unable to care for their children any longer and they were abandoned by the path to perish.

¹⁶⁵ I. Marsala, *Darién Wanderers: ecco il documentario sui migranti che sognano l'America*, August 2020.

¹⁶⁶ Advice of the Subcommittee on Prevention of Torture to States Parties and National Preventive Mechanisms relating to the Coronavirus Pandemic (adopted on 25th March 2020).

¹⁶⁷ Resolución De La Presidenta De La Corte Interamericana De Derechos Humanos , de 26 de Mayo de 2020, Adopción De Medidas Urgentes, *Caso Vélez Loor Vs. Panamá*.

¹⁶⁸ UNICEF, *Fifteen times more children crossing the Panama jungle towards the USA in the last four years*, 2021.

According to Sandie Blanchett, UNICEF's representative in Panama: "*we observe a lot of children being separated from their parents throughout this dreadful voyage.*" Sometimes people passing by on the route would pick up newborns or very young children and bring them to our reception facilities. Many people who make it through the Darién Gap regret trying it. They will be plagued by what they went through and saw for the rest of their lives. Numerous people have either abandoned their loved ones to die by the side of the route or watched them die in the bush.

As the author Margaret Hunter highlights: "*My clients consistently described this stretch of the voyage as the worst part of their migration journey; the desperation and fear that they felt in the jungle was common to all their narratives*".¹⁶⁹

However, migrants put their lives in danger because the will to have a better future in Canada, Mexico, or the United States is stronger than the risks there are going to face. The best chance of entering another country is by traveling north on the lone overland route out of South America. Riskier routes include planes or boats, when migrants may be turned away at airports or docks.

Governments, NGOs, experts, and media have discussed ways to improve the situation of migrants traveling north. These have included: warning migrants of the agony they would endure if they cross the gap; establishing more welcome and safe migration choices so that families won't have to endure the cruel conditions of the Darién Gap; improving migratory routes across the actual Darién Gap; providing migrants with options and encouragement to return home freely; considering a regional strategy because so many nations are engaged. Addressing the underlying causes and motivators of migration in the nations where families are born, such as providing job opportunities in Haiti.

The natural disasters in some regions of Latin America, the critical situation in Haiti and Venezuela more generally, the economic difficulties deriving from the Covid-19 suggest that more and more people will try to reach the American dream by going through this route. The situation therefore risks precipitating into a real migration and humanitarian crisis, with unprecedented numbers for the coming months and years.

If, on the one hand, the Panamanian government has created infrastructures to temporarily house people in transit and respond to the humanitarian needs of the growing number of migrants crossing this area, on the other, the political will to undertake to contain the flow of migrants and seek workarounds seem rather limited.

Moreover, the Pan American Health Organization (PAHO) has drawn attention to the necessity of enhancing both health surveillance and the oversight of current initiatives aimed at migrants in the

¹⁶⁹ Forced Migration Review, *Latin America and the Caribbean*, October 2017.

area.¹⁷⁰ This quick assessment of migrant people's health conditions and service availability tries to fill this knowledge gap.

Prior studies on transit populations in Central America and Mexico have produced suggestions to legalize unauthorized travel, detect and combat human trafficking, notably that of women and children, and increase the number of migrant shelters as a means of addressing basic needs.¹⁷¹

Additionally, studies advise improved cross-border coordination and collaboration between governmental and nonprofit groups in order to avoid and manage the health issues that transit migrants experience. Additionally, experts advise expanding this population's access to basic healthcare, including testing for HIV and sexually transmitted diseases.¹⁷²

Migration is a phenomenon that cannot and must not be stopped. However, it is important that the authorities involved in the management of crossings of particularly dangerous areas such as the jungle of the Darién Gap increasingly commit themselves to guaranteeing adequate standards of protection and alternative solutions that allow a safe and controlled border crossing.

¹⁷⁰ Pan American Health Organization, *Guidance document on migration and health*, PAHO, 2019.

¹⁷¹ M. Lemus-Way and H. Johansson, *Strengths and resilience of migrant women in transit: an analysis of the narratives of Central American women in irregular transit through Mexico towards the USA*, *Int Migr Integr*, 2020.

¹⁷² A. Martinez-Donate, N. Verdecias, X. Zhang, *et al.*, Health Profile and health care access of Mexican migration flows traversing the northern border of Mexico, *Med Care*, 2020.

CHAPTER III

The Sonora Desert as a crucial natural element in the Mexican migration to the United States

Unauthorized immigration in the U.S. started in 1965 when changes in immigration law closed doors to legal admission from Mexico.¹⁷³ As a consequence, around 500,000 Mexicans each year began arriving in the United States in the late 1960s, 90%¹⁷⁴ of them as temporary laborers and the remainder as authorized permanent immigrants.

The Bracero Program¹⁷⁵ revived networks that connected citizens in villages all throughout Mexico to employment opportunities and travel destinations in the U.S. Non-migrants had access to information and help crossing the border thanks to migrant networks, enabling them to keep moving without permission to jobs that were waiting for them north of the border.¹⁷⁶

A two-decade process of border militarization was launched by the Immigration Reform and Control Act (IRCA), which both raised the strength and funding of the Border Patrol and legalized previous illegal immigrants.¹⁷⁷

The number of Border Patrol agents roughly quadrupled between 1986 and 2000¹⁷⁸, while the agency's budget increased by a factor of seven. The rate of cross-border movement slowly decreased as border enforcement stepped up, forcing immigrants to stay longer in the United States after facing the red tape at the border.

Undocumented population grew from 9.4 million in 2001 to 12 million in 2008¹⁷⁹. The population has consistently remained at or around 11 million since the number of illegal inhabitants decreased by more than 3 million between 2008 and 2009. Mexicans make up over 60% of all illegal residents, followed by Central Americans at 15%, and other countries in Latin America and the Caribbean at 5%.¹⁸⁰ Mexico and Central America are the two main sources of undocumented migration in the Western Hemisphere.

United States is primarily a destination country for immigrants: emigration to the United States, transit migration, primarily by Central Americans traveling north, temporary immigration from

¹⁷³ Massey D.S., Unintended Consequences of US Immigration Policy: Explaining the Post-1965 Surge From Latin America, *Population and Development Review*, 2012, p.p. 1-29.

¹⁷⁴ Ibidem.

¹⁷⁵ When the United States signed the Mexican Farm Labor Agreement with Mexico on August 4, 1942, it initiated the Bracero Program.

¹⁷⁶ Palloni, A., Massey D. S., Ceballos M., Espinosa K. and Spittel M., Social Capital and International Migration: A test Using Information on Family Networks, *American Journal of Sociology*, 2001.

¹⁷⁷ Massey D.S., J. Durand, and N.J. Malone, *Beyond Smoke and Mirrors: Mexican Immigration in an Age of Economic Integration.*, New York: Russell Sage Foundation, 2002.

¹⁷⁸ Ibidem.

¹⁷⁹ Wasem R.E., Unauthorized Aliens Residing in the United States: Estimates since 1986, *Congressional Research Service*, 2011.

¹⁸⁰ Passel J.V. and Cohn D.V., Unauthorized Immigrant Population: National and State Trends, *Pew Hispanic Center*, 2010

Central America and other countries, and more recently, growing numbers of repatriated Mexican citizens.

Before and after migration, certain risk factors and stresses for immigrants exist, as also argued in the preceding chapters. Pre-migration and migration stressors such as prior traumatic exposure in the country of origin, displacement, human trafficking, organized crime, extreme poverty, and natural disasters can be included in this list. These stressors can be exacerbated by separation from nuclear family members, disruptions in extended family and social networks, difficult and dangerous international travel, detention, multiple deportations, and unauthorized border crossings.

Acculturative stress or stress reactions related to the physical, psychological, spiritual, social, financial, linguistic, and familial adjustments migrants experience as they adjust to unfamiliar and new social norms, customs, language, and way of life encountered in a new context can be considered post-migration stressors. Significant role disruptions and family disputes may also be a result of migration and cultural adaptation processes. Families with kids and teenagers are especially at risk. Due to migration, children are frequently and for long periods of time separated from their families, which may cause them psychological pain and make it difficult for them to reintegrate.

This population has been put under a great deal of stress, especially given the increasingly hostile environment for immigrants in the United States, which is characterized by the adoption of restrictive state and local immigration laws and dedicated federal immigration enforcement programs like Secure Communities.

In particular, the Sonora Desert will be discussed in the next chapter, where thousands of people cross the Sonora Desert on foot or use false identification at ports of entry every year in order to enter the United States from Mexico without authorization.

3.1 The border from a geographical perspective

The Sonora Desert (Figure 15) is a vast and arid region located in the southwestern United States and northwestern Mexico. It covers an area of approximately 120,000 square miles, 311,000 square kilometers, including sections of the states of Arizona, California and the Mexican states of Sonora, Baja California and Baja California Sur.¹⁸¹ It is one of the driest and most extreme deserts in North America.

¹⁸¹ Britannica, The Editors of Encyclopedia, "Sonoran Desert", Encyclopedia Britannica, January 27th, 2023, <https://www.britannica.com/place/Sonoran-Desert> (last accessed February 18th, 2023).



Figure 15. The Sonora Desert

The Sonora Desert is, indeed, part of a vast corridor of arid ecosystems. This arid corridor of nearly one million square kilometers is divided into four major deserts: the Great Basin; the Mojave Desert; the Chihuahua Desert; and the Sonora Desert, the area of our interest in this chapter (Figure 16).

The region's eastern border, which separates it from Tlaxcala, is formed by a continuous line of mountains that stretches 80 miles from Satechi, the last village on that side of the province, to Bacoa Sati, the first town. The Gulf of California washes it on the West from the mouth of the Yaqui River to the mouth of the Tomosatzí River. Its southern boundary is the aforementioned river Yaqui, and although the Gulf partially enters the Province of Ostimuri, it also considers the river Chico to be part of its southern boundary in order to mention the five missions that were part of the Sonora circuit and are located on the other side of the Yaqui river.

In order to include the region of the High Pimas, another line may be drawn from the Presidio, through the Sobahipuris, to the union of the San Pedro River, or river of the Sobahipuris, with the Gila river. This line, measuring approximately 70 leagues, runs from the Baseraca Mission, from West to East.¹⁸²

¹⁸² Records of the American Catholic Historical Society of Philadelphia, American Catholic Historical Society, 1894, Vol. 5, No. 2, pp. 114-119.



Figure 16. The Great Basin; the Mojave Desert; the Chihuahuan Desert; and the Sonora Desert

3.1.1 Physical geography of the Desert

The Sonora desert is also known as the Gila Desert, after the Gila River, a significant waterway that flows through the southwestern United States. It originates in western New Mexico, it extends into northern Sonora, and it flows into Arizona, where it meets the Colorado River.

Except for a few locations where it turns slightly south or northwest due to encountering various mountain ranges, the river runs westward for more than a hundred leagues, traversing the Apache lands from east to west and creating some of the most fertile valleys, some of which, like the Florida, are 69 miles in length. Before the arrival of the Spaniards, the Apache dominion included what are now eastern and southeastern Arizona, southeast Colorado, southwestern and eastern New Mexico, western Texas, and northern Chihuahua and Sonora states in Mexico.

The San Francisco River, which rises from the same Mogollon Sierra's north side, joins the San Francisco River 158 miles from its source. It leaves the granaries and travels southwest over rocky mountain ranges until it reaches the Gila as it enters the Florida valley. The Gila leaves the valley and homeland of the Apaches after passing the swampy springs of Sierra Florida, into which it flows approximately ten miles to the left. It then cuts over very rocky mountains, behind which the San Pedro joins it.

Amongst all the rivers that irrigate Sonora, the Yaqui is the largest river system and the most fertile. The Sierras, which separate this Province from Taramara's in the east, is the area where it rises. It emerges through a ravine of the Sierras toward the West at Tamichopa, a settlement and abandoned Baseraca Mission building, and two leagues beyond, at approximately a league and a half, the Guatrinera Brook joins it. Then it bends northward, leaving Santa Maria Vaseraca on its left and Babispe five leagues away.¹⁸³

Before reaching the town of San Matheo, the river flows another twenty leagues south, between some mountain ranges and alongside others. It then merges with the Mulatos river and, after making countless turns among the mountains, breaking through them, and receiving waters from other rivers, it develops across more open ground where it fertilizes corn fields and other cereals that grow in the area. Further down is a ford, which is only accessible when the stream is not swollen; however, when this is the case, the river is crossed by rafts, in which case the San Matheo natives who now reside in Saquaripa are very skilled.

Then there is the Colorado river, which is the longest river in the southwestern United States and northwestern Mexico. It flows for 1,450 miles (2,330 km) and passes through the Sonoran Desert, providing water to many cities and farms.¹⁸⁴

The peninsula that the river creates when it changes its course provides plenty of room for the indigenous to live comfortably. On the other turn of the river, however, when it resumes its course towards the south, the largest of all the nations along the Colorado, which dwells on a most fertile plain that is approximately 143 square miles of area.

The Sonora Desert is a large, hot and arid region, which is surrounded by several mountain ranges, including the Santa Catalina Mountains, the Rincon Mountains, and the Tucson Mountains. These mounts create a barrier that helps to maintain the desert's arid conditions stopping wet winds coming from the Pacific Ocean.

Intense volcanic activity along a stretch of the Gulf of California created a lava flow and a variety of cinder cones surrounding the Pinacate area, which is the highest place in the western half of the

¹⁸³ Records of the American Catholic Historical Society of Philadelphia, American Catholic Historical Society, 1894, Vol. 5, No. 2, pp. 122-132.

¹⁸⁴ *Ibidem*.

ecoregion and rises to 1,206 m in height. The remaining western portion is made up of plateaus and sand dunes that do not elevate much higher than 200 meters above sea level. The western Sierra Madre Occidental's foothills dominate the state of Sonora, Mexico's south-central region. These mountains, which were formed by a network of faults and widespread volcanic activity during the Cenozoic era¹⁸⁵, are between 1,000 and 2,000 meters high.¹⁸⁶

On the dunes, the soil is sandy and alkaline, but as you get closer to the Pinacate and hilly areas, the soil is made up by igneous or metamorphic rocks.

With the exception of a few small valleys, the majority of this province's terrain is mountainous, rough, and uncultivated. These valleys, like the mountain ranges from which they are formed, are primarily narrow glens that, like the rivulets and brooks that fertilize them as we have seen before, run almost always from north to south. There are six interconnected mountain ranges that stretch from North to South across a line drawn from East to West through the middle of what is officially known as the Province of Sonora, from the village of Nacori through the town of Bacadecuatzí to the town of San Miguel. These interconnected mountain ranges form a sort of stairway from the Sierra Madre, which serves as the Province's eastern boundary.

Except for a some more elevate mountains along the coast such as Cerro Prieto and the hills of Picu, generally the relief lose elevation as they it closer to the coast, becoming more regular in form, and having lower elevation. It is the case of the Espuelas, Bacoatzi the Great in the land of the Seris, and the Volcan of Santa Clara, with a few others in the high region of the Pimas.

In terms of climate, the region is one of the driest and hottest in North America, with summer temperatures exceeding 38°C. Winters are mild, with January temperatures ranging from 10°C to 16°C.¹⁸⁷ The desert receives less than 250 mm of precipitation per year, so almost all of the water used comes from underground or from various rivers, such as the Colorado, Gila, Yaqui, which flow through the desert from the mountains and surrounding areas, as seen above.

However, we should notice that, due to its immensity, the Sonoran Desert ecoregion has a diverse climate. It is distinguished by its seasonality and amount of rainfall, since the climate is more mesic in the Arizona upland region, with bi-seasonal rainfall averaging between 100 and 300 millimeters yearly. Around the Gulf of California, the climate is subtropical dry. Although there is a bi-seasonal tendency to rainfall in parts of the region, most days are still bright even then. Frontal storms from the North Pacific Ocean can occasionally provide extensive but light rain to the northwest regions

¹⁸⁵ With the Cenozoic Era is intended the third of Earth's major eras, began around 66 million years ago and continues to the present.

¹⁸⁶ Ferrusquía-Villafranca I., *Geología de México: Una Sinopsis*, T. P. Ramamoorthy, 1993.

¹⁸⁷ MacMahon J.A., *Warm deserts. North American terrestrial vegetation*, Cambridge University Press, 1988, pp. 231-264.

from December to March. The summer monsoon, which lasts from July to mid-September, produces regular but limited strong thunderstorms as well as surges of moist tropical air.

Temperatures are high throughout the ecoregion, especially in the Colorado River Valley, and erratic, rare rainfall creates an arid, dry environment. One of the driest places in North America is the *Desierto de Altar*, in the western Sonoran ecoregion, where droughts can continue for 30 months. This area has fewer than 90 millimeters of yearly rainfall, making it generally extremely dry.¹⁸⁸ Around the lower Colorado River, when summer temperatures can exceed 120 °F (49 °C) and rainfall is less than three inches, is where the desert is the hottest and driest.

The Sonoran Desert stands out from the other three North American deserts, the Great Basin, the Mojave Desert and the Chihuahuah Desert, since it has warm winters with little to no frost in most of the region. The life cycles of the roughly 50% of the biota that are tropical in origin are synchronized with the short summer rainy season. There are over half of the species in the flora that grow from the winter rains, when they are abundant, as we will see later on.

Due to climate change most of the regions at risk of turning into drylands are located near the world's five major desert areas. These are the most threatened areas: the Sonoran Desert in northwestern Mexico and its continuation in the southwestern part of the United States; the Atacama Desert, a thin coastal strip in South America between the Andes and the Pacific Ocean; a large desert area that runs eastward from the Atlantic Ocean towards China and includes the Sahara Desert, The Arabian Desert, the deserts of Iran and the former Soviet Union, the Great Indian Desert in Rajasthan and finally the Taklimakan and Gobi deserts, found in China and Mongolia, respectively; and finally the Kalahari Desert in South Africa and much of Australia.¹⁸⁹

Similar to those listed above, other areas need to be carefully monitored; in Africa, 66 % of all land is arid or semi-arid; in North America, however, this percentage is 34%. The U.S. Bureau of Land Management considers about 40% of the continental U.S. land area vulnerable to desertification. At least 40% of Texas grazing land is already too arid to be used.¹⁹⁰

As a unique location, the Sonoran Desert separates the northernmost habitat for tropical species from the southernmost habitat for temperate species. As a result, the region contains a distinctive collection of plants and wildlife that have adjusted to prior climate shifts (Figure 17). Several species have emerged and prospered during the past 14,000 years, while others have gone extinct.

¹⁸⁸ Ezcurra E., and Rodrigues V., Rainfall patterns in the Gran Desierto, Sonora, México, *Journal of Arid Environments*, 1986.

¹⁸⁹ Gagliardo P., Se la terra perde fertilità, *Ambiente Società Territorio. Geografia nelle scuole*, 2006, n. 2, pp. 3-10.

¹⁹⁰ Martellozzo F., La desertificazione: un problema ambientale e sociale, *Ambiente società e territorio*, 2018, pp. 3-7.

New York Times, *How US policy turned the Sonoran Desert into a graveyard for migrants*, 2021.



Figure 17. The geographical features of the Sonora Desert

One of 32 National Park Service inventory and monitoring networks, the Sonoran Desert Network¹⁹¹ uses vital signs monitoring to evaluate the health of park ecosystems and build a stronger scientific foundation for stewardship and management of natural resources throughout the National Park System. The type, quantity, and seasonality of precipitation are all projected to vary due to global climate change, with unclear repercussions for upland systems. Predicted temperature growth could increase physiological stress in trees, making them more vulnerable to insect and pathogen

¹⁹¹ The Sonoran Desert Network is one of 32 inventory and monitoring networks maintained by the National Park Service that pays attention to the ecological health of parks. A Board of Directors and Technical Committee made up of park superintendents and staff members who participate on a rotating basis oversee their operations. The Inventory and Monitoring Section of the National Park Service oversees and guides the program. The network participates in a variety of collaborations to utilize personnel and resources.

infestations. They could also change the elevation range of species, causing forest communities to move farther upslope.

Sonoran Desert is already one of the hottest and driest deserts in the world, but climate change is making it even hotter. The temperature has increased by about 1-2°F over the last century, and projections show it could increase by another 3-7°F by the end of this century.¹⁹² This rise in temperature can cause more frequent and intense heat waves, which can lead to dehydration, heat exhaustion, and heatstroke for people and animals.

Climate has led to more frequent and severe droughts, which can have devastating effects on plants, animals, and people who rely on the desert for survival. Droughts can also mean more frequent and severe wildfires, which can further damage the ecosystem and release more carbon dioxide into the atmosphere. Moreover, global warming is altering the weather patterns in the Sonoran Desert, leading to more extreme weather events like floods and storms. These events can cause erosion, damage infrastructure, and disrupt ecosystems.

Lastly, the Sonoran Desert is home to a unique and diverse array of plants and animals, many of which are adapted to the harsh desert environment. This phenomenon is affecting the timing of plant growth, migration patterns of animals, and the availability of water and food sources, which can disrupt the delicate balance of the ecosystem.

Overall, climate change is a significant threat to the Sonoran Desert and the people and wildlife that depend on it. To mitigate these effects, it is important to reduce greenhouse gas emissions, conserve water resources, and protect the unique biodiversity of the desert.

3.1.2 The Sonora Desert's vegetation

Among all the deserts in the world, the Sonoran Desert boasts the most variety of vegetative flora. 560 plant species thrive under the severely abrasive circumstances of heat and drought and engage in a range of ecological interactions that increase the community's complexity. In the Sonoran Desert, more than 160 plant species, including six vulnerable succulents, rely on legumes like mesquite and ironwood for their regeneration.¹⁹³

As was previously mentioned, the Sonoran Desert experiences spring and autumn droughts in addition to winter and summer rains. Its warm winters and bi-seasonal rainfall support a flora that far

¹⁹² National Park Service, *The Sonoran Climate*, National Park, <https://www.nps.gov/im/sodn/climate.htm> (last accessed 12/02/2023).

¹⁹³ Nabhan, G. P. and Plotkin M. J., *Ironwood: An Ecological and Cultural Keystone of the Sonoran Desert*, Conservation International, Washington, D.C., 1994.

outpaces those of the other deserts in terms of lushness and diversity. The ground rises from west to east, and precipitation rises with it.

At 43 meters above sea level in southwest Arizona, Yuma receives roughly 8 centimeters of precipitation annually. Tucson, in southeast Arizona, has an elevation of 730 meters and receives 28 centimeters of precipitation annually. Few small-leaved species, like creosote bush, predominate in the western portion of the country where plains are broad and mountain ranges are low and distant. Further mountain ranges appear to the east, shedding vegetation on which various plant species, including paloverde, mesquite, and cacti, take the lead in the vegetative cover. The Arizona Upland, an eastern, wetter, and more diverse region of the Sonoran Desert, is home to both portions of the desert. Southwest of Tucson, on the border between the Sonoran Desert's lowland along the Colorado River and upland in Arizona, is where you'll find Organ Pipe Cactus National Monument is located. Nonetheless, there are differences even between the two halves of the Organ Pipe Cactus National Monument. There is the evident distinction between the Tucson Mountains and the Rincons in terms of their bulk and elevation. Moreover, it may not be immediately apparent that the Tucson Mountain Section also includes areas at lower altitudes. The environment of the western part, which is a little warmer, reflects these characteristics.¹⁹⁴

This helps to explain why several Sonoran Desert flora and animals, such as ironwood, desert iguanas, desert horned lizards, western shovel-nosed snakes, sidewinders, desert kangaroo rats, and Le Conte thrashers, reach their northernmost ranges here. Due to its greater elevation, the Rincon Mountain Part features different vegetation and fauna than the western section.

In fact, one can see how the desert is home to a variety of plants endowed with remarkable resistance to heat and drought, as well as to temperature fluctuations.

The saguaro (*Carnegiea gigantea*) is undoubtedly the most typical species of the Sonoran Desert, but it is only one of the many cacti that live in this ecoregion.¹⁹⁵ Another noteworthy plant is the ocotillo (*Fouquieria splendens*), a shrub that looks shriveled in the drier months, but at the first rains becomes covered with small oval leaves, producing scarlet-red inflorescences that attract hummingbirds and other nectarivorous species.

The lower Colorado River Valley section's vegetation is made up of creosote and white bursage. More species variety and richness can be found in the mesic highland region of Arizona to the north and east. Creosote and white bursage communities predominate in lower elevation locations, although

¹⁹⁴ National Park Service, *The Sonoran Desert and the monument*, Saguaro National Park, November 2006, https://www.nps.gov/parkhistory/online_books/natural/4b/nh4bc.htm (last accessed 11/02/2023).

¹⁹⁵ McNab, W. H. and Avers P. E., *Ecological subregions of the United States: Section descriptions*, Ecosystem Management, Washington, D.C., 1994.

saguaros, other tall cacti, and subtrees like *palo verde* and ironwood¹⁹⁶ are common on slopes and higher sections of bajadas. The shrub that dominates the northwest region of the Sonoran Desert is made up of la *gobernadora* and *hierba de burro*. It thrives in the flatlands on rich, sandy soils. Species of mesquite, *Cercidium*, *palo fierro*, *Candalia*, *Lycium*, *choya*, *Fouquieria*, *jécota*, and *Acacia* are preferred when the dunes provide a small inclination of the slope.¹⁹⁷

Sonora's coastal lowlands are made up almost entirely of Larrea brush. *Encelia farinosa*, *Larrea tridentata*, and cactus species including *Olneya*, *Cercidium*, *Prosopis*, and *Fouquieria* once again rule the desert away from the influence of the Gulf in the region surrounding the Pinacate.¹⁹⁸ Although extremely rare, epiphytes are still present, along with moss and lichens.

Likewise, Sonoran Desert wildlife uses its own survival system, and insects such as spiders and scorpions have learned to live comfortably in this contrasting world. Some shrimp eggs lie dormant in dry ponds, and when they fill up, the animals come to life. Incredible as it may seem, there are about 20 species of fish in the deserts of the United States and Sonora, and each of them has also found ways to survive in a climate contrary to their nature. On the other hand, there are also a large number of reptiles such as lizards, iguanas, snakes, turtles, and snakes living in the desert.

Birds are also present, and on an afternoon in Aguayes sparrows, woodpeckers, pigeons, quail and wayfarers can be seen coming to water, and the latter two can be seen running through the bushes. Numerous animal species use ironwood, cactus species, and other plants as both a shelter from the severe temperature and a source of water, including Sonoran pronghorn antelopes, desert bighorn sheep, and the endemic Bailey's pocket mouse.

There are also raptors, such as the sparrowhawk, that feed on small birds and rodents, such as the kangaroo rat or kancito. Due to the richness of its avifauna, the Sonora Desert is indeed classified as an Important Bird Area. More than 200 species of birds have been surveyed in the area in the various seasons, the best known of which is probably the road runner (*Geococcyx californianus*), known for its habit of moving on the ground very quickly.¹⁹⁹

Within the United States, the area is renowned as a superb birding habitat. During some time of the year, 41% of the terrestrial bird species known in the United States may be sighted here. The Sonoran Desert is the most abundant place in the United States for birds, especially hummingbirds, together with its eastern neighbor, the Chihuahuan desert. The Gila woodpecker (*Melanerpes uropygialis*),

¹⁹⁶ Búrquez, A., and Quintana M. A., *Islands of diversity: Ironwood ecology and the richness of perennials in a Sonoran Desert biological reserve*, Conservation International, Washington, D.C., 1994.

¹⁹⁷ Turner R. M., Bowers J. E. and Burgess T. L., *Sonoran Desert plants: An ecological atlas*. University of Arizona Press, Tucson, 1995.

¹⁹⁸ Rzedowski, J., *La Vegetación de México*. México: Editorial Limusa, 1988.

¹⁹⁹ Cooperrider A. Y., and Wilcove D. S., *Defending the Desert. Conserving Biodiversity on BLM Lands in the Southwest*. Environmental Defense Fund, New York.

Costa's hummingbird, black-tailed gnatcatcher (*Polioptila melanura*), phainopepla (*Phainopepla nitens*), and sanguaro-dwelling cactus wren (*Calypte costae*) are among the bird species that may be found here (*Calypte costae*). The roadrunner (*Geococcyx californianus*), which hunts scorpions, tarantulas, rattlesnakes, lizards, and other small creatures by running rather than flying, is arguably the most well-known Sonoran bird.²⁰⁰

The highest degree of bird endemism in the whole United States is found in the Sonoran Desert, which is home to two unique bird species. Only in the middle section of the Arizona-Mexico border can you view the rufous-winged sparrow (*Aimophila carpalis*), which is often found on desert grass mixed with brush. The five-striped sparrow (*Amphispiza quinquestriata*), which is uncommon in extreme southern Arizona along the border with Mexico, prefers to reside in canyons on hillsides and slopes surrounded by thick, dense plants.

The other fauna of the Sonoran Desert are mammals, many of which, such as coyotes, foxes, rodents, hares and rabbits, live in underground dens that are perfectly isolated from the outside world, both heat and sun, cold and drought. Other desert animals such as bighorn sheep and mule deer that live on inaccessible rocks and mountains.

It can therefore be said that the Sonora Desert, though sometimes seen as monotonous, really exhibits significant habitat and fauna variation from east to west, south to north, and bottom to top. The variance is influenced by variations in height, temperature, and precipitation. The desert might differ from one valley or mountain range to the next.

3.1.3 The historical changes of the vegetation in the desert

Historically, also the vegetation changed across time. Like other current deserts on earth, the Sonoran Desert is a very recent geologic phenomenon. Tropical forests were present here around 50 million years ago, as they were over most of southern North America. The overall type of vegetation shifted from forest to savannas to dry subtropical scrub, and eventually to the plant groups of today's Sonoran Desert as the Southwest increasingly grew drier. Only in the last few million years has the last step taken place. The Madro-Tertiary Flora, so named to designate its core and period of early growth, is the collection of species from which the majority of our modern desert and lower mountain plants were descended. Because of these origins, the bulk of the species in the monument that are now growing below 6,000 feet in elevation are mostly Mexican, Central, or South American in range.

²⁰⁰ Noss R. F. and Peters R. L., *Endangered ecosystems of the United States: A status report and plan for action*, Defenders of Wildlife, Washington D.C, 1995.

Yet, there are species with an altogether distinct lineage on the higher elevations of the Sonoran Desert. Like the flora of the Great Basin Desert, the majority of the plants in the pine and fir forests of these high elevations are descended from the Arcto-Tertiary Flora, which dominated the northern region of our continent during Tertiary periods. One of these magnificent plant assemblages will benefit as a result of climate change at the expense of the other.

Ponderosa pines, presently located above 6,000 feet, may once more grow almost as low down as today's cactus woods if colder, wetter times like those that occurred during the Pleistocene epoch return. The northern plants, however, will soon be forced off their mountaintops if the current long-term drying trend continues.

In some ways, animals represent the same origin-destination duality that we have observed in plants. Hence, a northern component of species predominates on mountaintops sustaining pine and fir forests, but the fauna has a Mexican character on the lower slopes and in the desert. Southeast Arizona's canyons and oak-pine woods at intermediate altitudes are especially fascinating since there are many Mexican kinds of animals that are unique to these biological islands that are isolated by the desert that surrounds them.

A variety of habitats are necessary for the great diversity of plant and animal life in Saguaro National Monument. They, in turn, owe their existence to a trio of environmental factors, climate, soil, and topography, that vary greatly. We must first have some understanding of the environmental factors that surround the biological interaction in order to comprehend it.

3.2 The management of the edge, from past to present

The Sonoran Desert has a significant history that spans thousands of years. The first human inhabitants of the desert were the indigenous peoples of the Americas, who lived in the region for thousands of years before the arrival of European explorers. For thousands of years, various Native American tribes have lived in the Sonoran Desert regardless of its extreme conditions.

In the 16th century, Spanish explorers began to venture into the Sonoran Desert, seeking gold and other resources. Over the next several centuries, Spanish colonists established missions and settlements throughout the region, often at the expense of the indigenous populations.

In the early 19th century, the United States acquired much of the Sonoran Desert as part of the Louisiana Purchase and the Treaty of Guadalupe Hidalgo and American settlers began to move into the region.

The 20th century saw the development of many cities and towns in the Sonoran Desert, including Phoenix, Tucson, and Yuma.²⁰¹

Today, the Sonoran Desert is a vital and dynamic region that is home to millions of people and countless plant and animal species. Moreover, its scenic landscapes, national parks, and wildlife reserves make the Sonoran Desert a popular tourist destination in recent years.

The region's history is a complex and fascinating one that reflects the diversity and resilience of the people and cultures that have lived there over the centuries. In the following paragraphs we will briefly analyze the mentioned periods.

3.2.1 The Hohokam period

The Hohokam people were one of the largest and most advanced cultures to inhabit the Sonoran Desert. They lived in the region from approximately 200 BC to 1450 AD and built a vast system of canals and irrigation channels to irrigate their crops.

They were ancient Native Americans who lived in the semiarid area of modern-day central and southern Arizona, mostly near the Gila and Salt rivers, from 200 to 1400 CE. Four developmental phases are typically used to categorize cultures: Pioneer (200–775 CE), Colonial (775–975 CE), Sedentary (975–1150 CE), and Classic (from approximately 1150 to sometime between 1350 and 1450).²⁰²

The Hohokam lived in settlements made up of dispersed, separately constructed buildings made of wood, brush, and clay, each constructed over a small pit. They relied on the production of grain with some hunting, harvesting of wild fruits and beans, and other supplemental activities. Although floodwater irrigation may have been used earlier, the first irrigation canal, a 3-mile (5-km) route in the Gila River valley that diverted river water to the fields, was built at this time, even if floodwater irrigation may have been used earlier. In pre-Columbian North America, the Hohokam's creation of intricate canal networks throughout the ensuing millennium was unparalleled; this feat of agricultural engineering is considered one of their greatest accomplishments. They also produced a variety of ceramics throughout the Pioneer Period.²⁰³

The Hohokam civilization spread over what is now the southern part of Arizona during the later Colonial Period. Apart for the inclusion of Mayan-inspired ball courts, village architecture hardly changed. The Hohokam started to make irrigation canals smaller and deeper in order to reduce water

²⁰¹ J.C. Drake., L. Griffis-Kyle K., McIntyre N., Graph theory as an invasive species management tool: case study in the Sonoran Desert, 2016.

²⁰² Bayman J.M., The Hohokam of Southwest North America, *Journal of World Prehistory*, 2001, pp. 260-266.

²⁰³ Ibidem, pp. 270-278.

loss via ground absorption and evaporation, and cotton was added to corn as a main crop. Ceramics improved, becoming stronger and thinner, and neighboring peoples' styles were incorporated.

During the Sedentary Period, the Hohokam region of habitation reached its greatest geographic size. Communities of pit dwellings that had been marginally better reinforced continued to make up villages. A few communities had walls surrounding them at this time, and platform mounds initially appeared. Ever-expanding irrigation systems were used to raise corn and cotton. The wax mold casting of copper bells was a significant technological feat.

A branch of the Ancestral Pueblo (Anasazi) civilization, the Salado tribe, peacefully invaded Hohokam society during its Classic Period. They arrived from the Salt River's higher reaches, spent some time living in Hohokam land, then retreated and vanished. The introduction of Pueblo architecture in Hohokam land highlights its main impact. Together with the previous, more readily built pit dwellings, large multi-story communal buildings with thick adobe walls started to be built; some houses were also built on top of platform mounds.

Between 1350 and 1450, the Hohokam people mostly abandoned their towns. It is believed that the Great Drought (1276–99), together with a following interval of infrequent and erratic rainfall that lasted until around 1450, played a role in this process. The Pima and Tohono O'odham (Papago), who later settled the region, are considered to be direct ancestors of the Hohokam people.²⁰⁴

3.2.2 Spanish adventures in the Sonora Desert

In the 16th century, Spanish explorers arrived in the Sonoran Desert and established the first European settlements in the region. They introduced new crops and livestock to the area, including wheat, grapes, and cattle.

While Sonora had been traveled by Spanish explorers as early as the 1530s, it was the Jesuit order who pushed this region to the threshold of the empire. Missionaries originally founded their missions among the Mayo Indians of southern Sonora in 1614 after crossing north along the Pacific coast from what is now Sinaloa. They later traveled north to the Yaqui, Pima, and Opata communities along the Yaqui and Sonora Rivers and their highland tributaries.

Jesuits built a network of mission visits by the 1650s that extended to the northernmost reaches of Opata territory, just south of the modern Arizona border. These settlers prepared the way for subsequent waves of businesspeople, traders, and ranchers who doubled as combatants when Native Americans resisted their incursions.²⁰⁵

²⁰⁴ Britannica, The Editors of Encyclopaedia. *Hohokam culture*, Encyclopedia Britannica, 27 May. 2019, <https://www.britannica.com/topic/Hohokam-culture> (last accessed 14th February 2023).

²⁰⁵ West R.C., *Sonora: Its Geographical Personality*, Austin: University of Texas Press, 1993, pp. 27-78.

Presidios, or self-supporting border garrisons, were added by the colonial authority to these local militias as imperial opposition increased throughout the seventeenth and eighteenth centuries. Eventually, these presidios created a cordon around the frontier. Similar to Jesuits, presidio troops and militiamen faced a demographic deficit and had to balance restricted use of force, persuasion, and conversion in order to keep control over the Spanish interior.²⁰⁶

Missionaries, miners, ranchers, and soldiers were just a few of the colonial players that tried to take over native lands and turn them into their own. The Jesuits believed that both nature and human space were inextricably linked. Jesuits attempted to create a fruitful environment of pastures and crops in Sonora's highland river valleys in order to draw converts and support the mission economy.

Their ability to succeed was largely reliant on the plants and animals they brought with them. Native populations were decimated by illnesses from the Old World, leaving them open to military, religious, and economic invasion, while new crops and domesticated animals offered survivors a variety of economic prospects. But, in addition to enforcing colonial labor discipline on converts who toiled to sustain the mission community and create surpluses for sale, missionaries also had to restructure social connections in order to change nature.

The missionaries collected cotton and linen to clothe and pay the Indian converts, as well as vestments, candle wax, and utensils to support the mission church and its rituals, from the value taken from nature and labor.²⁰⁷

The ability of the missionaries to alter natural and social space was constrained by the distance between these religious landscapes and the political, military, and economic hubs of the empire as well as the natives' propensity to pick and choose from the "new world" of Spanish America.

From the standpoint of the indigenous people, too much effort devoted to farming may leave insufficient time for hunting and gathering, which were equally crucial for surviving from one season to the next. Native customs also influenced the use of animals from the Old World. While some indigenous, like the Tohono O'odham and Apache, considered horses and cattle as dangers to their crops and were slow to welcome them, others, like the Tohono O'odham and Apache, added them to the list of creatures that could be killed using traditional methods.²⁰⁸

Entrepreneurs in the mining industry in Spain appeared to have more success achieving their goals of social and environmental management. Migrations north along the Sierra Madre into what are now Sinaloa, Durango, and Chihuahua were sparked by the hunt for mineral wealth in the sixteenth and

²⁰⁶ Radding C., *Wandering Peoples: Colonialism, Ethnic Spaces, and Ecological Frontiers in Northwestern Mexico*, Duke University Press, 1997, pp. 30-46.

²⁰⁷ Pfeifferkorn I., *Sonora: A Description of the Province*, Tucson: University of Arizona Press, 1989, pp.263-275.

²⁰⁸ Nentvig J. and Ensayo R., *A Description of Sonora and Arizona in 1764*, Tucson: University of Arizona Press, 1980.

seventeenth century. By the end of the century, silver camps had popped up all across the Pima and Opata homelands, providing a highland counterpoint to the river-based Jesuit environment. By the 1630s, miners were pouring into Sonora from the east and south.

The need for food, clothes, and shelter increased as Spaniards, Indians, and mestizos rushed to the camps to sell their labor, giving the neighboring river valleys and grasslands a new commercial worth. To feed the expanding mining population, land that had previously been related to Opata and Pima seasonal rounds was converted into Spanish pastures and farms, frequently with the help of local peones²⁰⁹ and vaqueros²¹⁰. Moreover, colonial markets were drawn to undomesticated areas by mining and satellite rural villages. Wild flora and animals boosted agropastoral output across Sonora, while oak, pine, and mesquite woods provided fuel and construction materials to the developing network of ranching, farming, and mining towns.²¹¹

These networks of consumption, which connected mining properties to the neighboring countryside, were frequently small-scale and local. Tallow for candles lit underground was created by livestock farmers who also provided the daily necessities of meat and butter.

Merchants transported numerous iron equipment, such as picks, hammers, and crowbars needed in the mines, as well as sheepskin bellows for the smelting furnaces, quicksilver to extract silver in the arrastras, and other materials along colonial highways. Everything had to be expensively brought into Sonora. Sonora's mines were connected to the outside world via paths that also carried luxury commodities like wine, olive oil, tobacco, ceramics, silks, and fitted apparel, which were typically made hundreds of kilometers away from the boundary.

This overland traffic was under the supervision of frontier traders. In addition to buying and selling products, they were in charge of shipping silver to Mexico City. These merchants also functioned as bankers, lending money to prospectors and other mining entrepreneurs since Sonora, like other frontiers, was cash-strapped. They had unique access to external markets and finance for investment, which gave them dominance over the frontier that few of their neighbors could match.²¹²

Ranchers in the past had many of the same rewards and dangers as miners. The earliest people to rear livestock were Jesuits, but once mining began to take off in the late seventeenth century, lay ranchers and their herds quickly started to stake claims to territory between the missions. In fact, many of these ranches were founded by miners and mining-town businessmen, who used the profits from one natural resource to fund another.

²⁰⁹ Those who in South and Central America worked the land owned by the master for little money.

²¹⁰ Those who in South and Central America looked after the cattle owned by the master.

²¹¹ West R.C., *The Mining Community of Northern New Spain: The Parral Mining District*, University of California Press, 1949, pp. 2-13 and 39-76.

²¹² Bakewell P.J., *Silver Mining and Society in Colonial Mexico*, Cambridge University Press, 1971, pp. 181-220.

During the 1750s, the balance of military power in northern Sonora started to change as Apache incursions increased and fresh uprisings among the Pimas, Yaquis, Mayos, and Seris took place. To guard against competing North American empires as well as Indians, colonial authorities invested more in strengthening their bureaucratic control over the area as additional presidios were built. Under Carlos III (1759–88), a new generation of Bourbon leaders, the north received official subsidies.

They created a new presidio cordon along the northern boundary, negotiated fresh agreements with local tribes, increased the aggressivity of their incursions into hostile territory, and, probably most significantly, sent food and gifts to Apaches who were looking for peace. The state also formed companies of Opatas and Pimas to increase its armed frontier "citizenry" though these indigenous groups fought as much for their own homelands as for the interests of empire and created *compaias polantes*, or cavalries, to police the frontier line between "civilized" and "barbarous" Sonora. This was done in addition to renovating old presidios and building new ones.²¹³

3.2.3 The conflictual period of the 19th century

During the 19th century, the Sonoran Desert was a site of conflict between Mexico and the United States. The Mexican American War, which took place from 1846 to 1848, saw the United States annex much of the Sonoran Desert, including parts of modern-day Arizona and New Mexico.

Taking a step back, from the 1790s and the early 1830s, the efforts to establish and adequately outline the northern boundary led to a period of relative peace and colonial prosperity. Spanish and mestizo ranchers started to relocate their herds into old mission territory on both sides of the present boundary in 1767, partly because of a break in Apache attacks and partially as a result of the expulsion of the Jesuit order.

This atmosphere, however, was dashed by the battles for Mexican independence, which drained the colonial coffers, cut commercial ties with the border, and stopped official funding for Apache rations. Once peaceful Apaches were forced to revert to raiding and fighting in order to live due to malnutrition, sickness, and rekindled racial hostility.

If anything, a period of peace had made Apaches greater adversaries since they were more numerous, had more knowledge of Mexican tactics, and had learned to employ European weaponry. Also, they became more economically powerful thanks to new trade connections with Americans and other Mexicans in New Mexico and Chihuahua. They had more access to weapons and ammunition as well

²¹³ Radding C., *The Function of the Market in Changing Economic Structures in the Mission Communities, 1768-1821, The Americas*, 1977.

as new places to loot. Apaches started to retake control of a broad area of land in the 1830s and continued to do so into the 1840s, reaching from modern-day Arizona all the way into frontier Sonora. When political groups fought over who would have and who wouldn't become Mexican citizens as former colonial subjects, Sonoran space only grew more split as Apaches established a more cohesive sense of their territorial dominance.²¹⁴

Many local Sonoran people packed up their belongings and headed for California as a result of the political and economic unrest as well as the internal and external military dangers they faced. This movement northward gained momentum once gold was discovered at Sutter's Fort in 1848. But then Mexico Sonora was made weaker by the U.S.-Mexican War in comparison to its Apache neighbors. The Mexican-American War was a conflict that occurred between 1846 and 1848, fought between the United States of America and Mexico. The war began after a dispute over the border between Texas, which had recently become a state of the United States, and Mexico. The United States claimed that the border was the Rio Grande, while Mexico claimed it was the Nueces River further north. The war began when a detachment of American troops clashed with Mexican forces in the disputed territory. The conflict quickly escalated, with both sides launching attacks against each other. The United States ultimately prevailed, and the war ended with the Treaty of Guadalupe Hidalgo²¹⁵, which was signed on February 2nd, 1848.

The war had significant consequences for both countries. The United States gained control of a vast amount of territory, including California, Nevada, Utah, Arizona, New Mexico, and parts of Colorado, Wyoming, Kansas, and Oklahoma. The war also marked the beginning of the United States' expansionist policies, which would continue throughout the 19th century.

For Mexico, the war was a significant defeat, resulting in the loss of much of its territory and a decline in national pride. The war also exacerbated existing social and economic problems within Mexico, including poverty and political instability.

Sonoran officials were worried about the Yankee menace when the United States seized northern Mexico in the Treaty of Guadalupe Hidalgo, but they were more worried about the Apaches and their reclaiming of border territory. Changes in power also had a similar effect on the area's more underground geographies, uprooting once-productive landscapes and leaving them in ruins. Sonora's newcomers regularly ran against what they perceived to be the ghosts of a bygone era of mining glory. Indeed, following the war, Mexico was forced to cede a large portion of its territory to the United States and this had a significant impact on the Sonoran Desert, as it became a borderland

²¹⁴ Weber D.J., *Northern Mexico on the Eve of the United States Invasion*, New York: Arno Press, 1976.

²¹⁵ The Treaty of Guadalupe Hidalgo was a peace treaty signed on February 2, 1848, between the United States of America and Mexico, officially ending the Mexican-American War (1846-1848). The treaty was signed at the Villa de Guadalupe Hidalgo, which is located north of Mexico City.

region between the two countries. The establishment of the international border had an impact on the indigenous peoples of the region, who had their traditional lands divided by the new border. The construction of the border also had an impact on the region's flora and fauna, as it disrupted migration patterns and led to habitat fragmentation.

In the late 1800s and early 1900s, the region experienced a boom in mining and agriculture, which led to increased water usage and land development. This further altered the desert's ecosystem and led to the extinction of several species, including the Sonoran pronghorn and the Mexican grizzly bear.

3.2.4 The Sonora region today

The Sonoran Desert in the 20th century underwent significant changes due to human activities and natural events. First of all, the abovementioned century saw rapid urbanization in the region, with cities like Phoenix and Tucson growing in population and size.²¹⁶ This growth led to increased water usage and land development, which further altered the desert's ecosystem.²¹⁷

Another element that affected the region during this century was the construction of Hoover Dam in the 1930s. This decision altered the natural flow of the Colorado River, which provides water to the Sonoran Desert and had a significant impact on the region's ecosystems and led to the loss of wetland habitats. The Dam is a concrete arch-gravity dam located on the Colorado River, on the border between the states of Arizona and Nevada in the United States. The dam was built during the Great Depression of the 1930s, as part of a larger federal infrastructure project aimed at creating jobs and providing hydroelectric power to the growing Southwest region of the United States. Precisely, construction of the dam began in 1931 and was completed in 1936. At the time of its completion, Hoover Dam was the world's largest concrete structure and one of the greatest engineering feats of its time. The dam stands 726 feet tall and is 1,244 feet long. It creates Lake Mead, which is the largest reservoir in the United States by volume. The dam's main functions are to provide hydroelectric power, control flooding on the Colorado River, and provide water for irrigation and municipal use in the Southwest. The construction site was located in a remote desert area, and workers faced extreme weather conditions and dangerous working conditions. The dam also flooded large areas of land, including Native American tribal lands, and disrupted the natural flow of the Colorado River, which had significant impacts on the region's ecosystems.²¹⁸

²¹⁶ United States Census Bureau, <https://www2.census.gov/programs-surveys/popest/tables/>, (last accessed 18/02/2023).

²¹⁷ Logan M., *Desert Cities: The Environmental History of Phoenix and Tucson*, University of Pittsburg Press, 2006.

²¹⁸ Rogers A. and Schutten J.K., The gender of water and the pleasure of alienation: A critical analysis of visiting Hoover Dam, *The Communication Review*, 2004, pp. 259-283.

Despite these impacts, Hoover Dam has been an important source of hydroelectric power and water for the Southwest region, and it remains an iconic symbol of American engineering and infrastructure. Nowadays, it is also an attraction for tourists (Figure 18).

Bureau of Reclamation, Visiting Hoover Dam, <https://www.usbr.gov/lc/hooverdam/> (last accessed 16/02/2023).

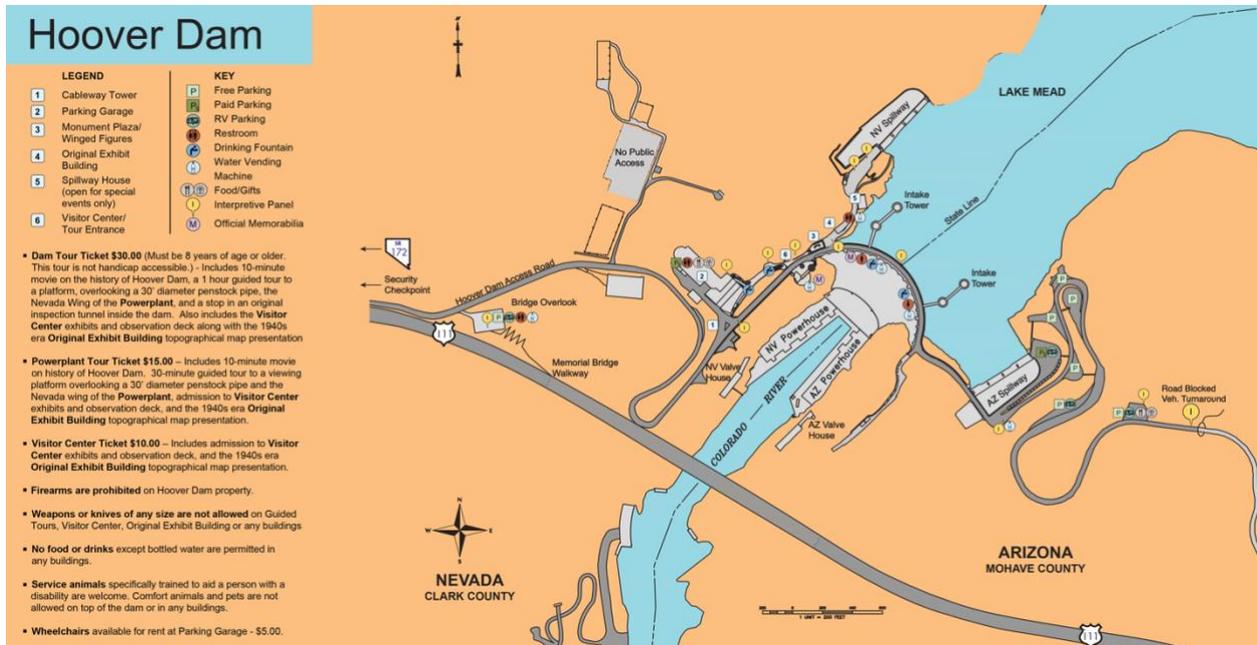


Figure 18. Hoover Dam

Moreover, in the latter half of the 20th century, conservation efforts were implemented to preserve the Sonoran Desert's unique ecosystem. Protected areas were established, such as the Organ Pipe Cactus National Monument and the Sonoran Desert National Monument.²¹⁹ These efforts have helped to slow the loss of biodiversity and preserve critical habitat. Organ Pipe Cactus National Monument is a protected area located in southern Arizona, near the border with Mexico. The monument covers approximately 330,000 acres and is home to a diverse array of plant and animal species, including the rare organ pipe cactus, from which the monument takes its name.

The monument was established in 1937, with the primary goal of preserving the unique ecosystem of the Sonoran Desert. In addition to the organ pipe cactus, the monument is home to a variety of other cacti species, as well as desert wildlife such as coyotes, javelinas, and desert bighorn sheep.

The monument also has a rich cultural history, as the area has been inhabited by indigenous peoples for thousands of years. The Tohono O'odham people have traditionally lived in the region, and evidence of their settlements and agricultural practices can still be seen in the landscape.

²¹⁹ Kenneth, P. Organ Pipe Cactus National Monument, *Encyclopedia Britannica*, 6 Aug. 2018, <https://www.britannica.com/place/Organ-Pipe-Cactus-National-Monument>, (last accessed 18/02/2023).

Visitors to the monument can explore its rugged landscape on hiking trails and scenic drives and participate in a variety of educational programs and ranger-led activities. The monument also offers opportunities for camping and stargazing, as it is located in a remote area with minimal light pollution. Like many protected areas, Organ Pipe Cactus National Monument faces challenges related to climate change, habitat loss, and other environmental pressures. However, the monument's status as a protected area provides important safeguards for its unique ecosystem and cultural heritage and ensures that future generations can continue to enjoy this special place.

Sonoran Desert National Monument is a protected area located in southern Arizona, near the cities of Phoenix and Tucson. The monument covers approximately 487,000 acres.

The monument was established in 2001, with the primary goal of preserving the unique natural and cultural resources of the region. It is home to a variety of desert plant species, including saguaro cactus, barrel cactus, and ocotillo, as well as desert wildlife such as coyotes, bobcats, and desert bighorn sheep.

The monument also has a rich cultural history, as it has been inhabited by various indigenous groups for thousands of years. Evidence of ancient settlements, rock art, and other cultural artifacts can still be seen in the landscape.

Visitors to the monument can explore its rugged landscape on hiking trails and scenic drives and participate in a variety of educational programs and ranger-led activities. The monument also offers opportunities for camping and stargazing, as it is located in a remote area with minimal light pollution. Like many protected areas, Sonoran Desert National Monument faces challenges related to climate change, habitat loss, and other environmental pressures. However, the monument's status as a protected area provides important safeguards for its unique ecosystem and cultural heritage and ensures that future generations can continue to enjoy this special place.

Today, the Sonoran Desert is home to a variety of unique plant and animal species, as seen before. The desert is also a popular tourist destination, attracting visitors from around the world who come to explore its rugged beauty and rich history. It continues to face environmental challenges, including climate change and habitat loss. Efforts are underway to preserve and restore the region's unique ecosystem, including the establishment of protected areas and the promotion of sustainable land use practices.

3.3 Weaponization of the Sonora arid region

The Sonora region has been the site of various military activities and weaponization efforts throughout history. During the 19th and 20th centuries, the region was used as a training ground for

military exercises and weapons testing by the United States military. In the early 1900s, the U.S. Army established the Yuma Proving Ground (YPG) in southwestern Arizona, which is still in operation today. The facility has been used for testing a wide range of military equipment, from tanks and artillery to missiles and other advanced weaponry.

The Yuma Proving Ground is a large military installation that covers over 1,300 square miles (3,360 square kilometers), making it one of the largest military installations in the world (Figure 19).²²⁰

The primary mission of YPG is to test and evaluate military equipment and technology in an environment that simulates real-world conditions. This includes testing of ground vehicles, aircraft, weapons systems, and other military equipment. YPG also conducts research and development projects to improve the effectiveness and safety of military equipment.²²¹

The Yuma Proving Ground was established in 1943, during World War II, as a training and testing facility for artillery and aircraft. Since then, it has expanded and diversified its mission to encompass a wide range of military testing and research. It is located near the border between the United States and Mexico, and the facility has played an important role in border security operations. It has also been used to test and evaluate surveillance systems, border barriers, and other equipment used by the U.S. Border Patrol.

²²⁰ U.S. Army Yuma Proving Ground, <https://www.yuma.army.mil>, (last accessed 16/02/2023).

²²¹ Lashlee D.J, *Modeling quaternary geomorphic surfaces in the lower Colorado Sonoran Desert: The Chameleon Concept*, Oregon State University, 2005, pp. 8-21.

YGP Yuma Proving Ground, US Army Yuma Proving Ground.



Figure 19. Yuma Proving Ground map

In addition to its military mission, YPG also supports the local community through its economic impact. The facility employs thousands of people and provides a significant boost to the local economy. Overall, Yuma Proving Ground plays a critical role in the development and testing of military equipment and technology, and its importance to national security cannot be overstated.

In the 1940s and 1950s, the U.S. military also conducted nuclear weapons testing in the Nevada desert, which is located to the north of the Sonoran region. The effects of these tests were felt throughout the region, as radioactive fallout from the tests contaminated the environment and posed health risks to local communities.

The first nuclear test in the Sonoran Desert was conducted in 1953 at a site called Frenchman Flat, located near Yucca Flat in Nevada. This test was part of a series of tests called Operation Upshot-Knothole.²²² The Frenchman Flat test was a relatively small one, with a yield of 15 kilotons, but it still caused significant environmental damage and contaminated the surrounding area with radiation.

²²² Operation UPHOT-KNOTHOLE Fact Sheet Archived, Defense Threat Reduction Agency, February 2013.

In 1955, the U.S. government conducted a series of nuclear tests at a site called Tatum Salt Dome²²³, located in southeastern New Mexico near the Texas border. The Tatum tests were part of a series called Operation Teapot and included tests with both small and large nuclear devices.

In 1957, the U.S. government conducted another series of nuclear tests in the Sonoran Desert, this time at a site called NTS Area 12, located in the Nevada Test Site. The tests, which were part of a series called Operation Plumbbob²²⁴, included 29 separate nuclear detonations, with yields ranging from less than a kiloton to more than 60 kilotons.

The nuclear tests in the Sonoran Desert had significant environmental and health impacts on the surrounding areas. The radiation released during the tests contaminated the soil, air, and water in the region, and caused health problems for people and animals that were exposed to it. The U.S. government has since taken steps to clean up the contaminated areas, but the legacy of the nuclear testing in the Sonoran Desert continues to be felt to this day.

In addition to military testing and training, the Sonoran region has also been the site of illegal migration, drug trafficking and other criminal activities, which have contributed to violence and instability in the region. The U.S. government has implemented various strategies to combat these threats, including border security measures and joint operations with Mexican authorities.

The field of our interest is the one concerning the migration flows, which have increased in recent years as well as migrants' risks taken in crossing the region.

The Sonoran Desert plays a crucial role in the US Department of Homeland Security's (DHS) Prevention Through Deterrence border policy (PTD). Migrants are directed into more remote places where environmental circumstances function as a natural barrier to mobility and provide law enforcement a "tactical advantage" by strengthening security in and near metropolitan ports-of-entry.²²⁵

Prevention Through Deterrence is indeed a strategy employed by the United States government to deter undocumented immigration across the US-Mexico border. The policy was introduced and first developed in 1993, as a result of an increase in the number of individuals illegally passing the border from the south through populated border towns. It involves the deployment of additional agents and technology in high-traffic areas along the border, with the aim of making unauthorized entry into the US more difficult and dangerous.²²⁶

²²³ Morgan C.L., Tatum Salt Dome, Lamar County, Mississippi: Geological Notes. *AAPG Bulletin*, 1941.

²²⁴ United States Nuclear Tests: July 1945 through September 1992, Department of Energy Nevada Operations Office, 2000.

²²⁵ De León J., *Land of Open Graves: Living and Dying on the Migrant Trail*, Berkeley: University of California Press, 2015.

²²⁶ Stewart H.E., Ostericher I., Gokee C. and De León J., *Surveilling Surveillance: Counter-mapping Undocumented Migration in the USA-Mexico Borderlands*, Archaeologies of Forced and Undocumented Migration, 2016, pp. 159-162

PTD's response was a massive expansion of security infrastructure, with military-grade walls and road checkpoints placed in cities and other border regions that are simple to cross while leaving open portions of the border, like the area of desert that interests us, where difficult terrain and harsh environmental conditions make crossings deadly. Border security constantly transforms the desert, making it more difficult and dangerous for migrants to cross. For instance, by dragging tires across wide swaths of road and clearing foliage and underbrush, border agents create a landscape in which migrant footprints are easier to track and migrants are easier to find. This is in addition to funneling migrants through an already dangerous landscape.

The policy is based on the assumption that migrants will be deterred from attempting to cross the border if the risks and consequences of being caught or dying during the crossing are increased. In other words, the policy seeks to create a hostile environment along the border that will discourage migrants from attempting to cross (Figure 20).

PTD's spatial philosophy naturalizes borders and distinguishes between human and non-human security. The Sonoran Desert is a component of border security that is appropriated, used, and influenced by Border Patrol policy, although it is specifically separated from man-made infrastructure. PTD views the international border as a natural boundary as opposed to something that was fabricated during the security procedure by recognizing the desert as a natural barrier. As a result, the desert seems to be a barrier that serves as both a means of national protection and something whose "nature" has to be protected.²²⁷

²²⁷ Doty R. L., Bare Life: Border-crossing Deaths and Spaces of Moral Alibi, *Environment and Planning D: Society and Space*, 2011, pp. 599–612.



Figure 20. Border Patrol controlling the Sonoran Desert

In this way, the desert serves as the Border Patrol's moral justification for brutality against migrants during desert crossings by diverting blame from its security measures. The desert, however, is a border security area that has to be protected against invading strangers and their waste.²²⁸

Critics argue that the policy is inhumane and has led to the deaths of thousands of migrants who have been forced to take more dangerous routes and rely on smugglers to cross the border.²²⁹ Additionally, some argue that the policy has not been effective in reducing unauthorized immigration and has only succeeded in pushing migrants into more remote and dangerous areas.²³⁰

Despite these criticisms, the US government has continued to use Prevention Through Deterrence as a key component of its border security strategy.

Regardless the challenges posed by weaponization and other security threats, efforts are also underway to promote conservation and sustainable development in the Sonoran region. Protected

²²⁸ Sundberg J., "'Trash-talk' and the Production of Quotidian Geopolitical Boundaries in the USA–Mexico Borderlands." *Social and Cultural Geography*, 2008, pp. 871–890.

²²⁹ O'Donoghue A., Sovereign Exception: Notes on the Thought of Giorgio Agamben, *Critical Legal Thinking*, July 2015.

²³⁰ Lynch K., Separation Beyond Walls: A Discussion of the Practical and Theoretical Implications of Prevention Through Deterrence, Bellarmine University, 2021.

areas mentioned before, such as the Organ Pipe Cactus National Monument and the Sonoran Desert National Monument provide important safeguards for the region's unique ecosystem and cultural heritage, while also offering opportunities for recreation and tourism.

3.4 The migrants' crossing: their chances of survival

There are no denials in the fact that the gaps within the fortified border have long served as a deterrent, a key component in decades of successive U.S. presidential border strategies. As well as private lands, government holdings, and national parks, the U.S.-Mexico border is also home to Native American reservations. Sonoran Desert parks and reservations in Arizona have been turned into natural barriers against immigration by political intervention. As of now, most of Arizona's border fence is anti-vehicle, consisting mostly of bollards or twisted ironwork designed for stopping vehicles, not people. In California and Texas, the Sonoran Desert is largely bordered by anti-pedestrian fencing, while in Arizona and New Mexico, most of the border consists of anti-vehicle fences.

As a result of this layout and immigrants' conscious avoidance of Arizona's larger cities and towns, border-crossers are funneled into the Sonoran Desert.

The migration route from Mexico to the United States through the Sonora Desert is a perilous journey that thousands of migrants undertake every year (Figure 21 and 22). The route starts in cities such as Nogales, Sonora, and Ciudad Juarez, Chihuahua, and spans hundreds of miles of rugged terrain, extreme heat, and dangerous wildlife. Many migrants attempt to cross the border illegally, either by crossing through gaps in the fence or by trekking through the desert wilderness. Along the way, they face a range of risks, including dehydration, heat exhaustion, starvation, and injury from falls or encounters with wildlife.

To reach the United States, migrants must traverse the Sonoran Desert, which is one of the most dangerous and inhospitable regions in North America. Temperatures in the desert can soar to over 38 degrees Celsius during the day and plummet to near freezing at night, and water sources are scarce. Many migrants are ill-equipped for the journey and lack food, water, and appropriate clothing.

The journey takes place at the end of the night because it is only when temperatures drop that it is possible for migrants to cross the desert that stretches more than 1,600 miles between Arizona, California and Mexico.²³¹

²³¹ Chambers S.N., Boyce G., Martínez D.E., Climate impact or policy choice? The spatiotemporality of thermoregulation and border crosser mortality in southern Arizona, *The Geographical Journal*, 2022.

USA Today, *Border crossers and the desert that claims them.*



Figure 21. Migrants crossing the Sonoran Desert



Figure 22. Migrants crossing the Sonoran Desert with water reserves

The journey through the Sonoran Desert is also fraught with danger from human traffickers and drug cartels. These criminal organizations prey on vulnerable migrants, subjecting them to extortion, robbery, sexual assault, and kidnapping.

It takes at least 21 days to cross the desert, mainly by a means of transportation that is called the *Beast*, where people travel on the roof or between carriages, forced to stay awake and ready to jump off if the train is stopped by paramilitary gangs, drug traffickers, or Mexican police, to whom migrants are often sold by train drivers.

Indeed, one of the greatest dangers during the journey is the onslaught of paramilitary gangs, such as Los Zetas, drug gangs, corrupt policemen or the American minutemen, fanatical nationalists ready to shoot on sight at those who cross the border. Yet among so much violence, there is no lack of touching moments of soldierliness on the part of the poorest toward those perhaps even more unfortunate than themselves: there are those who approach the train with water and tortillas and those who share their poor belongings with the migrants, recalls Flaviano Bianchini, environmentalist and human rights activist and founder of the NGO Source International, in the role of Aymar Blanco in 2015, when he decided to face the crossing route to tell the story and raise awareness of the case.²³²

Another interesting and touching story noteworthy is the one of Ilka Oliva Corado.

Ilka Oliva Corado's story of crossing the border that separates Mexico from the United States is a struggle for survival, to win the right to live in a state, the U.S. In her *Storia di una indocumentada. Crossing the Sonora-Arizona Desert*, the young Guatemalan woman, who embarked on this journey in 2003, when she was only 24 years old, witnesses not only a journey fraught with danger, but also her being a woman in a context of extreme violence. The abhorrence Ilka Oliva Corado has been forced to experience firsthand and, at the same time, so many lives this girl has lived. In her book, Ilka not only narrates her experience as a migrant who has to watch out for real hunts by the Border Patrol, but she denounces the system that governs the illegal migration of the southern border of the United States and the trafficking of people. At the same time, the author of the book confesses that for years, post-frontier depression settled in her, which made her a melancholic person at the mere thought of the thousands of desert desaparecidos, those who did not make it and died of hunger, thirst, exhaustion, or were finished off by the Border Patrol or criminal gangs. Her journey to the United States began from her native country, Guatemala, a beautiful land torn apart by one of the longest armed conflicts in the history of Latin America, where the Mayans, today as yesterday, are considered as animals. And that is exactly how Ilka feels when, after getting off at the Mexico City airport and meeting the first of a long series of *coyotes* who, following another plane transfer, takes her to the

²³² Migrantess, Flaviano Bianchini nei panni di un clandestino dal Guatemala all'Arizona, Rai News, November 11th, 2015.

gates of the desert. She has to face the Border Patrol and the entrenched racism of its agents, who accuse migrants of stealing jobs from US citizens. In the desert of Sonora-Arizona the value of life loses its value.²³³

Another interesting data is the adventure conducted in the *Undocumented Migration Project* by the anthropologist Jason De León, who set out to study the technological and economic aspects of the life of migrants during the journey for the illegal crossing of the physical and political barrier between two countries.²³⁴ The initial aim was to address this study through archeology within a multi-sited ethnographic research, but De León quickly realized that the archaeological method would only be one of the tools he would use to complete the project. For five years starting in 2009, De León conducted his research in the field and in particular on the so-called line between Arizona and Mexico, collecting material and interviewing and living in close contact with Central American migrants.

As himself cites:

*«The tension between my roles as an insider and as an outsider (a university professor) allowed me to share in the “thickness” of border-crossing culture without foolishly thinking that my ethnicity alone would somehow give me an emic perspective into the desperation required to enter the desert».*²³⁵

The people with whom De León has established some kind of connection had already had one or more attempts to cross the Sonoran desert and therefore cross the border into America, however they had been sent back to Mexico by the American border police after being arrested as undocumented migrants. As himself highlights, *«we as ethnographers need to be more critical regarding the contexts where participant observation is deployed and more reflective about how we write about the act of witnessing other people’s trauma».*²³⁶

Those who leave for the United States, in fact, must cross oceans of sand and scrub, observed from afar by the patient and composed gaze of the waiting vultures; he is a migrant sent to the USA from the misery of his own country, but who often does not reach the recipient and rarely returns alive or is sent back dead to the sender, his home, his Mexico or Ecuador or another starving land beyond of the line. And rare are the times in which the body is recovered, disfigured by the aridity of the climate, by the blind hunger of necrophilic animals, by the heat of daytime temperatures and by the inexorable cold of the night in the desert. De León's research in the Sonoran Desert focuses also on the material

²³³ Corado I.O., *Storia di una indocumentada. Attraversamento del deserto di Sonora-Arizona*, Edizioni Arcoiris, 2017.

²³⁴ De León J., Wells M., *The Land of Open Graves, Living and dying in the migrant trail*, University of California Press, 2017, p.11.

²³⁵ Ibidem, pp. 93.

²³⁶ Ibidem, pp. 13.

culture of migration, including the objects and artifacts that migrants leave behind during their journeys. He has documented a wide range of objects, such as water bottles, clothing, and personal belongings, that migrants carry with them as they travel through the harsh desert environment.

However, the anthropologist refused to accompany them on their journey, since his presence would have complicated the already arduous journey and would have underlined the social disparity between the illegal immigrants and De León, mainly due to the latter's American citizenship which would have implied an immediate release in case of arrest for illegal migration, while the others, the "real" migrants, would have been given a very different treatment.

Anyhow, the stories he has collected are sufficient to imagine the adversity and frustration that these migrants are subject to.

Moreover, Jason De León in his book *Land of the Open Graves*, has highlighted how the Sonoran Desert is a space of exception. The term derives from the Italian philosopher Giorgio Agamben's who defines the concept as the physical and political locations where an individual's rights and protections under the law can be stripped away upon entry.²³⁷ For instance, the physical and political contexts in which state exceptions take place. In the Sonoran Desert, Prevention Through Deterrence is crucial to keep in mind since illegal migrants frequently occupy this area and are the ones who are targeted by the status of exception imposed by the various laws. The concentration camps that were built throughout Hitler's empire during World War II are one of the real-world examples that were used in *State of Exception* to illustrate how states of exception are implemented. Agamben discussed how these camps were deliberately made locations where they could carry out various operations on the targeted people. Similar to the concentration camps that Agamben's work highlighted, the Sonoran Desert is a place that the majority of the population knows very little about, making it an ideal place to use in order to conceal all of the actions that are taken against migrants. It is a place that both countries share but is so large that most people have no idea what goes on there.²³⁸

The policing of migrants frequently takes place in front of other illegal migrants, if it does so at all. This is significant because, even after entering the United States, undocumented migrants remain in a state of forced marginalization for the duration of their stay, whether it be for a year or for the rest of their lives. As a result, they lack the ability to accurately and thoroughly describe what occurred to police or in a courtroom, should such a questionable situation ever become public. If they were to witness one of those events, they would be unable to speak out since doing so would put them at danger of being apprehended by law enforcement and sent back to their home country for leaving the

²³⁷ Ibidem, pp. 98-110.

²³⁸ Lynch K., Separation Beyond Walls: A Discussion of the Practical and Theoretical Implications of Prevention Through Deterrence, *Bellarmino University*, 2021.

edges and announcing their presence. Also, it enables residents of the United States to overlook the problem by designing particular areas and putting the targeted groups there, which reduces the visibility of this kind of migration to the broader public.

By carefully disseminating information on the migrants to the general public, it also enables the government to defend its authority over the immigrants and for the injustices committed at the border to continue.

A recent research published in the journal *Science* that was financed by UCLA shows how migrants from South America of different ages and physiological kinds endure potentially lethal heat stress.²³⁹ The Tucson Sector of the Border Patrol, which spans around 260 miles of the border, provided the researchers with both historical and forecasted climatic data for the months of May through September. The majority of migrant deaths in this area historically occur during the summer months. They then made predictions about how susceptible to dehydration a child, a non-pregnant woman, a man, and a pregnant woman of Latin American descent would be under various conditions under these climate conditions by combining datasets with existing data on how the human body reacts to water loss and exposure to the elements. They looked at the many routes that migrants may take through the desert, some of which were random and others of which were determined to be "least-cost" ones that would be easier on the body. They also contrasted the effects of walking during the day and at night. The researchers discovered that the paths that migrants frequently take between Nogales, Mexico, and Three Points, Arizona, to escape being discovered by U.S. officials, had the highest overall risk of deadly dehydration. In addition, they found that by 2050, the risk of dehydration along these routes would rise by 34.1% for adult men, 34.1% for non-pregnant adult women, 33.1% for children, and 29.5% for pregnant women when they took into account expected climate change over the following 30 years. The study uses data science, physical science, as well as the classic ethnographic method of recording cultural and personal experiences, which gives a greater understanding of the physical struggles faced by these migrants from South America. The researchers stated that although being relatively simple, the study's results are crucial when taking into account how migration along the U.S.-Mexico border continues to evolve dramatically. Also, the number of people fleeing climate change's effects would probably rise, thereby complicating border security measures.

Despite the risks, many migrants see no other option than to attempt the journey to the United States, driven by poverty, violence, and political instability in their home countries. The migration route

²³⁹ UCLA, *Nation, World and Society*, dying in the desert: how U.S. border policies contribute to migrant mortality Newsroom, 2022.

through the Sonoran Desert is a testament to the desperation and determination of those seeking a better life.

CONCLUSIONS

The phenomenon of migration opens up a considerable amount of reasoning that encompasses historical, social, philosophical-political and cultural issues. This phenomenon indeed succeeds in influencing political decisions and even public opinion, which are increasingly shown to be looking for solutions that can be more or less agreed upon.

Environmental migration is not a new phenomenon; short- or long-term environmental disasters induced by natural or human-made phenomena have always caused the displacement of individuals and will continue to do so until sustainable development policies are seriously implemented in both developed and less developed scenarios. However, the effects of climate change are aggravating this aspect, threatening more and more people, causing them to flee within the borders of their own state or outward. This is another reason why the term migration, if environmentally induced and forced, seems to do little justice to the conditions of suffering, anxiety and fear in which individuals and populations are enveloped. These people have had to flee their homes because their surroundings had become untenable or because it was threatening their lives.

Moreover, in cases where the environment, for natural or more often anthropogenic reasons, becomes oppression and torment, individuals' desire for a better life seems to be increasingly distant.

While geographers have long been interested in movement, the emphasis on mobility is more recent and significant, especially in studies of transport, tourism, and migration. There is no doubt that mobility plays an important role in the world of today, and in the world of geography as well. This has been a fundamental concept of mobility geographies since it was first introduced and has continued to develop.

Nature plays a critical role in this increasing phenomenon, as human populations have historically migrated in response to changes in the environment. There are many the modern-day migrants who move in response to changes in the environment, such as droughts, floods, or natural disasters.

However, changes in the environment, are not the only way in which nature can be related to migration. This research aimed to highlight how nature and natural features of specific regions or borders can have a significant impact on migration patterns, as many migrants face daily with difficulties and risks already naturally existent in their paths.

Natural elements can act as obstacles to migration, particularly for those who must cross vast and challenging terrain in order to reach their destination. The cases in which migrants are hampered in their ways at borders are several. Looking at examples of naturally affected borderscapes around the world, the two case studies analyzed, the Darién Gap and the Sonora Desert regions, appear as particularly significant.

The swampy terrain which characterized the Darién Gap clearly poses obstacles to human migration, particularly for those who must cross it on foot or without proper infrastructure. Being a compact and impassable tropical jungle, located between Panama and Columbia, it is considered as one of the most dangerous areas in the world. Still, this roadless territory is yearly crossed by millions of migrants that hope to once live the American Dream. In order to not give up their dreams, out of desperation, or lack of alternatives, people risk their lives through extremely dangerous and inhumane path through dense vegetation. In addition to these natural elements, which are the main obstacle for migrants to overcome, during the long jungle crossing, groups are exposed to multiple forms of violence, including sexual abuse, trafficking and exploitation, lack of safe water and food, insect bites, wild animal attacks and overflowing rivers.

The jungle scenario is not the only situation in which migrants are challenged through their adventures. The dissertation demonstrates how deserts can be particularly arduous due to the harsh climate and lack of water and resources. The Sonora Desert is a clear example, being one of the largest and hottest deserts in North America, located on the border between Mexico and United States. Migrants seeking alternative ways to cross borders and enter the United States illegally from South American states are faced with a challenging landscape indeed. The journey can start at the end of the night, because only when temperatures drop is it possible for migrants to cross the harsh and unforgiving environment of the desert. Besides the extreme temperatures of the region, among the most significant natural obstacles the hot and dry environment and the consequent lack of water can lead to serious health problems. Moreover, the terrain in the Sonoran Desert can be rough and challenging to navigate, together with areas of rocky terrain, which can be difficult to traverse and dangerous wildlife. All of these natural obstacles make crossing the Sonoran Desert a dangerous and challenging undertaking.

Natural obstructions to human migration can have significant impacts on the safety and well-being of migrants. The recognition of the importance of that movement in geography, social theory, and spatial theories has resulted in an increased theorization of and focus on mobility over the past two decades. This theorization is based on the idea that mobility is a meaningful, lived, and contextualized phenomenon that produces places, people, and politics. These features of mobility studies distinguish them from older traditions of researching movement within geography, however it is also simple to overestimate this distinction. These characteristics also coincide with the development of mobile methodologies. Moreover, it should be emphasized that interculturality is an essential asset of our generation, to which migrations have contributed and continue to contribute.

It is indeed important to understand and address these obstacles in order to ensure the safety and well-being of all individuals who must undertake migration journeys. Forcibly displaced people need

international assistance to effectively demand additional support from government departments involved. International attention is therefore needed to alleviate the silent suffering of migrants in the Darién Gap, as well as those in Central and South America, but not only.

That global warming is not a concern of a few environmentalists, but a scientific certainty is now largely established, on which portion of the world's population its effects will affect is not equally clear. The lack of updating of national and international legal frameworks regarding domestic and foreign displacement for environmental issues is worrying. The need for international actions aimed at ennobling the migratory phenomenon rather than at its brutalization or ignorance appears evident.

ABSTRACT

Viviamo in un'era di mobilità inarrestabile e senza precedenti che interessa tutte le componenti del sistema globale, comprese le persone. Allo stesso tempo, viviamo in un'era di significativi cambiamenti climatici che, insieme ad altri fattori sociali, economici e politici, hanno un impatto significativo sulla mobilità umana. La comunità internazionale ora riconosce la portata del problema del cambiamento climatico e si prevede che crescerà nei prossimi anni fino a diventare senza dubbio una delle più grandi preoccupazioni del ventunesimo secolo.

La migrazione è difatti un fenomeno globale che interessa l'intera comunità internazionale. Sembra difficile individuare un Paese che abbia mai generato flussi migratori nel corso della storia. L'universalità di questa questione è, infatti, innegabile e, di conseguenza, molti studi e ricerche sono stati condotti con l'obiettivo di tratteggiarne un quadro completo. La consapevolezza che le migrazioni caratterizzano da sempre la vita delle persone fornisce una solida base per mostrare come esse abbiano influito nel corso degli anni sulla formazione dell'identità culturale, sociale e politica e come continuino a svolgere un ruolo cruciale nelle nostre società.

Le migrazioni internazionali sono da sempre una delle materie per eccellenza dello studio della geografia, disciplina attenta agli effetti di questi fenomeni sia nei paesi di origine che di destinazione. Inoltre, i flussi migratori sono un tema di grande attualità: i problemi legati alla loro gestione sono all'ordine del giorno quasi ogni giorno, sia a livello nazionale che europeo.

Il concetto di migrazioni è strettamente legato a quello di globalizzazione, anch'esso caratteristica distintiva del ventunesimo secolo, e negli ultimi due decenni, un ampio interesse dall'ambito geografico si è occupato della comprensione di questo movimento, del significato e dell'importanza della mobilità, nonché di come estendere questa comprensione. Questo lavoro ha avuto un impatto così profondo sulla geografia umana che la mobilità è diventata un pilastro della disciplina. Ora è evidente e chiaro il consenso sul fatto che la mobilità sia fondamentale quanto lo spazio e il luogo, tra gli altri concetti. Di conseguenza, ora è fondamentale per gli esperti di geografia afferrare il concetto di mobilità e confrontarsi con esso più che mai. Gli studi sulla mobilità sono un campo di ricerca multidisciplinare che esamina il movimento di persone, oggetti e informazioni in diversi contesti geografici, sociali e culturali. Questo campo di studio esamina i modi in cui la mobilità modella le relazioni sociali, le pratiche culturali, i sistemi economici e le strutture politiche e come questi a loro volta influenzano il movimento di persone e cose. Non solo, poiché gli studi sulla mobilità comprendono una vasta gamma di argomenti, tra cui per l'appunto migrazione e immigrazione, turismo, sistemi di trasporto, pianificazione urbana e regionale, globalizzazione e

media digitali. Gli studiosi in questo campo utilizzano una varietà di approcci teorici e metodologici, attingendo a discipline come la sociologia, la geografia, l'antropologia, gli studi culturali e la storia. In sostanza, gli studi sulla mobilità cercano di comprendere le complessità del movimento umano e le sue implicazioni per la società e la cultura, e di identificare i modi in cui la mobilità può essere resa più equa, sostenibile e socialmente giusta.

In effetti, gli studi sulla mobilità sono cresciuti considerevolmente in importanza accademica negli ultimi due decenni, attraverso studiosi che abbracciano un'ampia gamma di discipline nelle scienze sociali, arti e scienze umane diventando sempre più interessati al movimento e orientando il loro lavoro per affrontare le questioni poste dall'evoluzione delle comprensioni del soggetto.

La migrazione è definita come una mobilità territoriale degli esseri umani che comporta diversi gradi di intenzionalità e volontarietà. Si può parlare di migrazione da una prospettiva macroregionale o a livello micro, ma in entrambi i casi gli studi sulle migrazioni si concentrano sui seguenti campi di interesse: le condizioni del luogo di partenza dal punto di vista sociale, legale ed economico e l'impatto dell'emigrazione sulle società, sulle famiglie e sugli individui; le dimensioni spaziali e temporali e i modelli di movimento nello spazio e nel tempo, che possono essere circolari, stagionali o permanenti; il processo di accettazione o di esclusione dei migranti dalla società di accoglienza e il loro impatto sui paesi, le regioni o le località ospitanti; il legame tra origine e destinazione; il potere che i paesi hanno esercitato sulle migrazioni e le tecniche utilizzate per gestirle. Può essere volontaria o forzata, temporanea o permanente. Può avvenire in fasi o cicli e può essere unidirezionale o più diversificata. In tempi recenti gli studiosi hanno spostato la loro prospettiva da un quadro incentrato sullo stato all'analisi dell'azione umana, sottolineando le differenze nella migrazione in base a genere, razza, classe, età e altre categorie. Gli studiosi si sono resi conto che la sfera migratoria non comprende solo lo spostamento di una persona da un paese all'altro, ma comporta diversi effetti che richiedono un'attenzione diretta e critica a questo fenomeno in crescita. Questa attenzione è fondamentale per avere un'ulteriore e profonda conoscenza delle culture e delle società.

In termini generali, la migrazione umana si riferisce all'intersezione di un'unità politica o amministrativa per un determinato periodo di tempo. Più specificamente, con migrazione internazionale si intende l'azione di attraversare i confini che separano un Paese da un altro, mentre la migrazione interna è il movimento da una regione amministrativa, provincia, comune, a un'altra all'interno dello stesso paese.

I migranti possono fuggire per diverse ragioni e disparate situazioni, si distinguono infatti generalmente in migranti economici, riconosciuti anche come lavoratori migranti in cerca di un lavoro stabile o opportunità di maggior benessere; altri fuggono da conflitti, persecuzioni religiose,

politiche, violazioni dei diritti umani o terrorismo. Un'altra categoria di movimento che, a differenza delle altre classificate, non sono definite con precisione dal diritto internazionale, sono gli studenti internazionali o i pensionati che si recano volontariamente in un altro paese per motivi personali. Infine, il gruppo di nostro interesse in questo lavoro è quello composto dai migranti indotti dal clima che si spostano in risposta alle conseguenze negative dei cambiamenti climatici, dei disastri naturali o di altri fattori ambientali.

Il movimento e la mobilità hanno animato tutti gli aspetti della geografia umana, e studiare geografia senza confrontarsi con le questioni legate alla mobilità sarebbe molto difficile.

Un tema strettamente legato a quello delle migrazioni è il ruolo della natura. L'elemento geografico può infatti essere fondamentale nel successo o nel fallimento del passaggio migratorio, come deterrente e ostacolo talvolta insormontabile. L'intenzione di questo lavoro è quindi quella di introdurre i lettori ad alcuni dei modi in cui la geografia si occupa di mobilità. L'obiettivo principale di questa tesi è analizzare e identificare il fenomeno della migrazione in relazione alla sfera ambientale, concentrandosi su come la natura e le caratteristiche naturali, come i terreni paludosi o gli scenari estremamente aridi, possano influenzare i percorsi migratori.

L'elaborato dimostra come il ruolo della natura sia rilevante nella mobilità contemporanea e come sia stato militarizzato nel corso degli anni attraverso una panoramica dei paesaggi naturali di confine in tutto il mondo, in particolare il confine greco-turco, il confine francese-italiano, il confine bielorusso-polacco e i confini asiatici.

È inoltre necessario notare che le persone si muovono da paese a paese sia legalmente che illegalmente, ed è stata l'alleanza corrotta tra individui e gruppi illegali a causare la maggior parte dei problemi legati alla migrazione. La migrazione illegale transfrontaliera è la causa principale della crescita e della distribuzione squilibrata della popolazione tra aree urbane e rurali nei paesi in via di sviluppo. Ulteriori conseguenze negative della migrazione illegale sono legate al deterioramento morale, alla crisi del settore, al carico di lavoro sul migrante o al rifiuto da parte della comunità di origine.

Attualmente, gli Stati occidentali hanno sviluppato una definizione di migrazione illegale come attraversamento delle frontiere senza il consenso delle autorità; ovvero attraversare una frontiera in modo apparentemente legale, ma usando documenti falsi o usando documenti legali in modo falso, o facendo uso di matrimoni fittizi o parenti imposti. Vale anche come migrazione illegale rimanere in un paese dopo la scadenza dello status legale.

Tuttavia, poiché l'illegalità è un concetto fluido, il suo significato cambia nel tempo e nello spazio a causa del crescente controllo sulla mobilità da parte dello stato. In effetti, è importante notare che il

termine "migrante illegale" implica una capacità agenziale non tanto confinata quanto sospetta a causa della sua presunta, ma contestabile, illegittimità.

In diverse regioni, la migrazione è stata associata alla criminalità, soprattutto perché i contrabbandieri sono diventati una figura sempre più diffusa e rilevante in seguito alle limitazioni migratorie legali. In questo senso, i migranti illegali sono considerati colpevoli della crescente difficoltà di regolare la mobilità umana. È molto rilevante sottolineare tuttavia come molti migranti incontrano problemi durante il periodo iniziale di adattamento e adeguamento, nonché durante il viaggio attraverso le foreste pluviali e le zone costiere. Soprattutto nella prima fase del trasporto verso la destinazione desiderata, la maggior parte dei migranti deve affrontare innumerevoli sfide e difficoltà. I rischi e i danni sono catastrofici, come nel caso del Darien Gap.

Situato tra la Colombia e Panama, il Darién Gap è una delle rotte per rifugiati e migranti più pericolose al mondo, che conta 5.000 chilometri quadrati di giungla, montagne scoscese e fiumi.

Si tratta di una giungla tropicale compatta e impervia, che si trova in una regione che copre parte della provincia panamense di Darién, a sud di questo Paese e a nord della Colombia. È una striscia di terra senza legge e senza strade, che per secoli ha avuto la reputazione di essere del tutto inaccessibile, sia per gli abitanti del luogo che per i visitatori più attenti, da qui il nome Tapón del Darién in spagnolo. La giungla che lo ricopre rappresenta l'unica interruzione dell'autostrada panamericana che si estende per circa 30.000 chilometri, dall'Argentina all'Alaska. Questo "gap" è dettato dalle connotazioni naturali della regione, caratterizzata principalmente da foreste pluviali.

È considerato uno dei luoghi più ricchi di biodiversità del pianeta. Tuttavia, la sua fitta vegetazione è diventata lo sfondo propizio per il passaggio irregolare dei migranti e il traffico di stupefacenti.

Possono essere necessari dieci giorni o più per attraversare il divario alla ricerca di un futuro vantaggioso. Per molti migranti, il Darién Gap rappresenta una sfida nella ricerca di sicurezza e opportunità che dura da anni. Animali pericolosi, lunghi ed estenuanti viaggi a piedi, condizioni igieniche precarie che possono causare l'insorgere di malattie, abusi e violenze da parte di gruppi criminali pronti a sfruttare le debolezze dei migranti. Questi sono alcuni degli elementi che caratterizzano il viaggio dei migranti attraverso il Darién Gap. I migranti che attraversano la foresta non hanno altra scelta che camminare e attraversare i fiumi, trascinandosi sé stessi e spesso i propri figli su terreni ripidi e montuosi. L'ultimo tratto del Darién Gap è paludoso e i migranti che riescono a raggiungerlo devono attraversarlo in canoa. Le persone che migrano lungo questo percorso affrontano pericolosi attraversamenti di fiumi, caldo soffocante e fauna selvatica velenosa, oltre a non avere accesso a cibo o acqua adeguata. Alcuni insediamenti indigeni situati alla periferia della fitta foresta offrono alle popolazioni migranti in cammino una breve area di riposo. Coloro che hanno intrapreso il viaggio descrivono spesso il traffico di esseri umani, il contrabbando e la violenza.

Questa regione da sempre considerata inaccessibile, è tramutata dall'essere terra di nessuno a un percorso migratorio popolare per coloro che tentano il viaggio verso il Nord in vista di un futuro migliore negli Stati Uniti.

La difficoltà di attraversare il Darién Gap è rilevante a causa delle caratteristiche geografiche della regione, e i rischi intrinseci del Darién Gap, come il terreno difficile, la fauna, insieme alla paura persistente di rapimenti, o atti violenti, si sono combinati per creare un ambiente insicuro per i migranti che cercano di attraversare il confine.

Il percorso che i migranti decidono di affrontare per attraversare la natura selvaggia continua a variare, ma ciò che rimane costante è l'obiettivo: arrivare prima stazione di accoglienza dell'immigrazione panamense disponibile ai margini della foresta, le cosiddette "Stazioni di accoglienza per migranti", istituite dal Servizio nazionale per i migranti della Polizia di frontiera nazionale, una forza di polizia che svolge funzioni di controllo in loco e di assistenza umanitaria. Questi posti di controllo sono una componente del flusso di migranti gestito a livello mondiale nell'ambito di un'iniziativa congiunta tra Stati Uniti e Panama, in cui vengono registrate le misure biometriche di tutti i visitatori della nazione per verificare la presenza di terroristi e mantenere una registrazione della loro identità. Tuttavia, è importante che queste autorità coinvolte nella gestione degli attraversamenti di aree particolarmente pericolose come la giungla del Darién si impegnino sempre di più a garantire adeguati standard di protezione e soluzioni alternative che consentano un attraversamento sicuro e controllato della frontiera.

Lo scenario del Darién Gap non è l'unica situazione in cui i migranti sono messi alla dura prova durante i loro percorsi migratori. La tesi dimostra come i deserti possano essere particolarmente ardui a causa del clima rigido e della mancanza di acqua e risorse. Il deserto di Sonora ne è un chiaro esempio, essendo uno dei deserti più grandi e più caldi del Nord America, situato al confine tra Messico e Stati Uniti.

I migranti che cercano modi alternativi per attraversare le frontiere ed entrare illegalmente negli Stati Uniti dagli Stati del Sud America si trovano di fronte a un paesaggio davvero impegnativo. Il viaggio può iniziare al termine della notte, perché solo quando le temperature si abbassano è possibile per i migranti attraversare l'ambiente duro e spietato del deserto. Oltre alle temperature estreme della regione, tra gli ostacoli naturali più significativi l'ambiente caldo e secco e la conseguente mancanza d'acqua possono portare a gravi problemi di salute. Inoltre, il terreno del Deserto di Sonora, caratterizzato da zone di terreno roccioso e una fauna selvatica pericolosa, risulta per molti difficile da percorrere, rendendo l'attraversamento del Deserto di Sonora un'impresa pericolosa e impegnativa.

Non si può negare che i vuoti all'interno del confine fortificato siano serviti a lungo come deterrente, una componente chiave in decenni di strategie presidenziali statunitensi in materia di confini. Oltre alle terre private, alle proprietà governative e ai parchi nazionali, il confine tra Stati Uniti e Messico ospita anche le riserve dei nativi americani.

I parchi e le riserve del deserto di Sonora in Arizona sono stati trasformati in barriere naturali contro l'immigrazione dall'intervento politico. Ad oggi, la maggior parte delle recinzioni di confine dell'Arizona sono anti-veicoli, costituite per lo più da dissuasori o da strutture in ferro contorto progettate per fermare i veicoli, non le persone. In California e in Texas, il deserto di Sonora è in gran parte delimitato da recinzioni anti-pedone, mentre in Arizona e in Nuovo Messico la maggior parte del confine è costituita da recinzioni anti-veicolo.

A causa di questa disposizione e del fatto che gli immigrati evitano consapevolmente le città e i centri abitati più grandi dell'Arizona, i frontalieri sono incanalati nel deserto di Sonora.

L'intenzione è stata quindi quella di introdurre i lettori ad alcuni dei modi in cui la geografia si occupa di mobilità. L'obiettivo principale di questa tesi è analizzare e identificare il fenomeno della migrazione in relazione alla sfera ambientale, concentrandosi su come la natura e le caratteristiche naturali, come i terreni paludosi o gli scenari estremamente aridi, possano influenzare i percorsi migratori.

È indubbio che la mobilità giochi un ruolo fondamentale nel mondo globalizzato di oggi e, di conseguenza, nella sfera geografica.

La recente ricerca sulla mobilità si distingue dai precedenti lavori geografici sul movimento. In primo luogo, il movimento è visto come un agente geografico, qualcosa che dà forma a luoghi, relazioni e fenomeni. In passato, la mobilità era vista come qualcosa di intermedio, che si limitava a creare geografie altrove, senza influenzarle in alcun modo.

Con l'aumento dell'importanza della mobilità all'interno della geografia, sono cambiate le percezioni ed è emersa una prospettiva più concettuale. Oltre all'espansione e all'intensificazione dell'impegno nei confronti della mobilità, l'attuale lavoro geografico sulla mobilità si distingue come una delle sue caratteristiche principali. Diversi approcci concettuali più recenti alla mobilità hanno influenzato questo approccio, così come il cambiamento del sistema di mobilità odierno. La crescente attenzione alla mobilità ha generato un'analogia proliferazione di metodi che si muovono con i soggetti studiati, il che rappresenta un attributo chiave che rende distintivo l'attuale lavoro geografico sulla mobilità.

Gli ostacoli naturali alla migrazione umana possono avere un impatto significativo sulla sicurezza e sul benessere dei migranti. Il riconoscimento dell'importanza di questo movimento nella geografia, nella teoria sociale e nelle teorie spaziali ha portato negli ultimi due decenni a una maggiore

teorizzazione e attenzione alla mobilità. Questa teorizzazione si basa sull'idea che la mobilità sia un fenomeno significativo, vissuto e contestualizzato che produce luoghi, persone e politiche.

Queste caratteristiche degli studi sulla mobilità li distinguono dalle vecchie tradizioni di ricerca sul movimento all'interno della geografia, ma è anche semplice sopravvalutare questa distinzione. Esse coincidono anche con lo sviluppo di metodologie mobili. Inoltre, va sottolineato che l'interculturalità è un patrimonio essenziale della nostra generazione, a cui le migrazioni hanno contribuito e continuano a contribuire.

È infatti importante comprendere e affrontare questi ostacoli per garantire la sicurezza e il benessere di tutti gli individui che devono intraprendere viaggi di migrazione. Le persone sfollate con la forza hanno bisogno di assistenza internazionale per chiedere efficacemente un sostegno supplementare ai dipartimenti governativi coinvolti. L'attenzione internazionale è quindi necessaria per alleviare la sofferenza silenziosa dei migranti del Darién Gap, così come di quelli dell'America centrale e meridionale, ma non solo. Che il riscaldamento globale non sia una preoccupazione di pochi ambientalisti, ma una certezza scientifica ormai ampiamente consolidata, non è altrettanto chiaro su quale porzione della popolazione mondiale colpirà i suoi effetti. La mancanza di aggiornamento dei quadri giuridici nazionali e internazionali in materia di spostamento interno ed estero per le questioni ambientali è preoccupante. Appare evidente la necessità di azioni internazionali volte a nobilitare il fenomeno migratorio piuttosto che alla sua brutalizzazione o ignoranza.

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