

Ministry of Education and Science of Ukraine  
West Ukrainian National University  
Faculty of Law  
Department of International Law and Migration Policy

INTERDISCIPLINARY COURSE WORK

on the topic:

The impact of climate change on migration processes (assessment from the  
perspective of international law)

Done by:  
Student of group  
MPa-31  
International law  
Ogazi Jacinta Chidimma

Checked by:  
Assoc. Prof. N. Martsenko

Ternopil – 2023

## **CONTENT:**

- I. INTRODUCTION
- II. CLIMATE MIGRATION.
- III. CLIMATE MIGRATION ON LEAST DEVELOPED COUNTRIES,  
LANDLOCKED COUNTRIES AND SMALL DEVELOPING  
STATES.
- IV. THE GLOBAL POLICY AWARENESS ON CLIMATE  
MIGRATION.
- V. CASE STUDY ON ENVIRONMENTAL MIGRATION.
- VI. INTERNATIONAL LAW AND CLIMATE MIGRATION.
- VII. DRAFT CONVENTION ON THE INTENTIONAL STATUS OF  
ENVIRONMENTALLY-DISPLACED PERSONS.
- VIII. INTERNATIONAL LAW ON STATELESS PERSONS.
- IX. IMPACT OF CLIMATE CHANGE ON INTERNATIONAL  
HUMAN RIGHTS.
- X. THE SYSTEM OF TEMPORARY PROTECTED STATUS.
- XI. REVIEW ON THE PROTECTION GAP OF ENVIRONMENTAL  
MIGRANTS.
- XII. CONCLUSION.

## **I. INTRODUCTION**

Climate change and its associated consequences are a key challenge of our century where we, all of us, have no time left to take action. The least developed countries, landlocked developing countries and small island developing States total some 91 countries of our global community with a human population of about 1.1 billion. They are the most vulnerable among us. They face intricate and multiple challenges related to structural issues and geographical disadvantage. These challenges are compounded by limited institutional capacity, scarce financial resources to cope with emerging challenges and a high degree of vulnerability to systemic shocks. All countries experience heightened vulnerability to climate change, and this contributes to undermine efforts to achieve sustainable development.

Climate-related migration is on the increase both internally and across borders. It is not an issue we can wish away but that we must tackle now. In recent years, it is notably that Small Island developing States (SIDS) have become a focus of the global debate on climate change-induced migration. Islanders living in low-lying areas are threatened in their lives and livelihoods. Climate change-related disasters have increased in intensity and frequency.

## II. CLIMATE MIGRATION

Climate change and its impacts are experienced worldwide, reshaping irrevocably migration patterns on all continents. Examples of migration occurring in a changing climate are numerous: (a) communities in Pacific islands forced to plan for relocation further inland due to coastal erosion; (b) storms in populous Asian countries displacing tens of thousands of people; (c) migration of fisherfolks from coastal villages in West Africa to cities because of the depletion of fish resources linked to ocean acidification; (d) rural to urban migration in Central Asia fueled by climate impacts on rural livelihoods; (e) nomadic populations in East Africa altering their traditional migration patterns to cope with the impacts of desertification; and (f) droughts in Latin America leading to internal and international migration. Some people migrate to seek better opportunities, reacting to climate change impacts on their livelihoods, their health or their food security. Other people, sometimes entire communities, are displaced involuntarily, as they flee the destruction of sudden-onset disasters and extreme weather events, often amplified by climate change.

In 2017, 18.8 million people were newly displaced in the context of sudden-onset disasters within their own countries, and between 2008 and 2017, an average of 24.6 million people were displaced per year (Internal Displacement Monitoring Centre (IDMC), 2018). Others have to relocate away from their ancestral land, and

planned relocation of communities because of coastal erosion and sea level rise, for instance, is a new reality (Georgetown University, United Nations High Commissioner for Refugees (UNHCR) and International Organization for Migration (IOM), 2017), notably for many Pacific small island developing States (SIDS). Finally, some people are simply unable to move due to lack of means and become trapped in places where the adverse impacts of climate change represent a threat to their well-being. People unable to migrate also need to be included in policy development. These migratory movements can occur at several levels: internally within a country or across borders, regionally and internationally, and on different time scales, from temporary to permanent migration. In many of these cases, climate change is one factor among others driving migration, alongside population growth, underdevelopment, growing inequality, weak governance, natural hazards, conflicts and violence. In other cases, the impacts of climate change directly led to migratory movements when it becomes impossible for people to physically remain in affected areas, such as in the case of coastal erosion.

According to the World Bank, 143 million people in three regions of the world (sub-Saharan Africa, South Asia and Latin America) could be forced to migrate within their own countries due to the worsening effects of climate change by 2050, such as decreasing crop productivity, shortage of water and sea-level rise

However, it is also important to acknowledge that migration can be part of a positive, life-saving strategy when planned and well-managed. For instance, it

allows people to cope with the impacts of environmental degradation, open new avenues for livelihood diversification and can encourage the contributions of migrants and diasporas to climate change action in their places of origin.

### **III. CLIMATE MIGRATION ON LEAST DEVELOPED COUNTRIES, LANDLOCKED COUNTRIES AND SMALL DEVELOPING STATES**

The least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing States (SIDS), are disproportionately affected by the negative impacts of climate change due to their structural constraints and geographical disadvantage. At the same time, they contribute least to climate change. The LDCs represent the poorest and most vulnerable segment of the international community. They face multiple development obstacles, such as limited productive capacity, lack of economic diversification, inadequate infrastructure and public services, stagnant trade and investment, and limited institutional capacity, which makes them more vulnerable to systemic shocks, including economic crises, commodity price volatility, health epidemics, natural hazards and environmental shocks.

Displacement related to slow- and sudden-onset hazards, whose intensity and frequency are often amplified by climate change, has become one of the biggest humanitarian challenges faced by these vulnerable countries. Every year, millions of people are displaced by episodes of drought, devastating floods and tropical storms. Others have to move because of slow-onset processes of environmental degradation that irremediably alter their habitat, such as sea-level rise, desertification and land degradation.

The LLDCs by definition lack access to the sea, and are also typically affected by infrastructure deficiencies and poor trade facilitation, which results in high transit and trade costs leading to weak economic growth and limited overall socioeconomic development. More than half of all LLDCs are LDCs.

## **IV. THE GLOBAL POLICY AWARENESS ON CLIMATE MIGRATION**

While the relationship between migration and the environment is not new, in recent years, there has been increasing political recognition of the need to address the impacts of climate change on human mobility and support States to respond to these challenges. These growing levels of global policy awareness are occurring in a context where some countries have taken decisive steps to respond to climate migration challenges at the national and regional levels. The global policy instruments briefly presented in this section represent a unique opportunity for LDCs, LLDCs and SIDS to make their voices heard and generate ideas and concrete action.

The migration-related work ongoing under the UNFCCC since 2010 and the implementation of the 2015 Paris Agreement on climate change have been instrumental in encouraging awareness on climate migration and promoting greater policy coherence,<sup>8</sup> with global policy processes developed after 2015 consistently referring to the mobility related principles outlined in the Paris Agreement.

The 2030 Agenda for Sustainable Development recognized the LDCs as the most vulnerable countries in the world, and put these at the centre of the development agenda. The 47 LDCs<sup>11</sup> are characterized by low per capita income and severe structural impediments to sustainable development. They are facing

high vulnerability to economic and environmental shocks, and are the lowest on the Human Assets Index.

## V. CASE STUDY ON ENVIRONMENTAL MIGRATION

The village of Kivalina, Alaska, with its 400 residents, is located on the tip of a low-lying barrier island on the Chukchi Sea, approximately eighty miles north of the Arctic Circle. The residents are primarily Inupiat Eskimo and the village has a maximum elevation of ten feet above sea level. “According to the United States Army Corps of Engineers (USACE), environmental changes associated with global warming have exacerbated flooding and erosion threats to Kivalina.” In 2006 the USACE concluded that the situation in Kivalina was “dire” and the entire town must be relocated and estimated that it would cost between \$123–249 million. In 2008, Kivalina filed a lawsuit in the United States District Court for the Northern District of California against twenty oil, coal, and electric utility corporations, arguing that these corporations bear responsibility for the adverse effects experienced by Kivalina’s residents as a result of the large quantities of carbon dioxide these corporations emit.

Kivalina alleged a public nuisance claim under federal common law as well as private and public nuisance claims under California law. They also alleged the defendants committed a civil conspiracy by knowingly misleading the public about the science of global warming. Specifically, they alleged that the defendants’ individual and collective greenhouse gas emissions contribute to global warming, and were substantially interfering with the plaintiffs’ public rights to use and enjoy

public and private property. Because the injuries are indivisible, the plaintiffs requested that the court find the defendants jointly and severally liable for the damages resulting from public nuisance, conspiracy, and concerted action.

The plaintiff's argued that: While the global warming to which defendants contribute injures the public at large, Kivalina suffers special injuries, different in degree and kind from injuries to the general public. Rising temperatures caused by global warming have affected the thickness, extent and duration of sea ice that forms along Kivalina's coast. Loss of sea ice, particularly land-fast sea ice, leaves Kivalina's coast more vulnerable to waves, storm surges and erosion. Storms now routinely batter Kivalina and are destroying its property to the point that those living on Kivalina must relocate or face extermination.

Ultimately the district court dismissed the case on several grounds, which included the political question doctrine and lack of standing. On appeal, the United States Court of Appeals for the Ninth Circuit held that federal common law of nuisance has been displaced by the Clean Air Act and that if a cause of action is displaced, it also displaces all remedies. It noted that "the Supreme Court has already determined that Congress has directly addressed the issue of domestic greenhouse gas emissions from stationary sources and has, therefore, displaced federal common law."

It further noted that the fact that the damage occurred before the EPA acted to establish greenhouse gas standards does not alter the analysis and concluded that

federal common law addressing domestic greenhouse gas emissions has been displaced by Congressional action. The court was, however, mindful of Kivalina's perilous situation: Our conclusion obviously does not aid Kivalina, which itself is being displaced by the rising sea. But the solution to Kivalina's dire circumstances must rest in the hands of the legislative and executive branches of our government, not the federal common law. Judge Pro, concurred, noting that once federal common law is displaced, state nuisance law becomes available unless it is preempted by federal law. Thus, Kivalina could pursue any remedies under state law to the extent they are not preempted. Judge Pro further noted that Kivalina had not met the burden of proof in this case, i.e., tracing their injuries to the Appellees.

The judge pointed out that Kivalina itself has acknowledged that there are many thousand emitters worldwide and the greenhouse gases have been emitted for over hundreds of years. Yet, seeking to hold these particular defendants solely responsible may not be equitable: It is one thing to hold that a State has standing to pursue a statutory procedural right granted to it by Congress in the CAA to challenge the EPA's failure to regulate greenhouse gas emissions which incrementally may contribute to future global warming. It is quite another to hold that a private party has standing to pick and choose amongst all the greenhouse gas emitters throughout history to hold liable to millions of dollars in damage. The inhabitants of Kivalina are currently waiting to be relocated. Their condition is dire,

but because there are plans to relocate them eventually, no effort has been made to allocate money to improve their current living conditions.

## VI. INTERNATIONAL LAW AND CLIMATE MIGRATION

For centuries people have migrated for environment-related reasons. Much of such migration has been voluntary. Forced migration and displacement is usually associated conflict. However, there is a new category of people: those who will be forced to migrate, whether internally or internationally, due to climate change. Unfortunately, current international law does not protect them.

International law recognizes several categories of people and the legal protection accorded to them varies according to each category. Climate migrants do not fit within any of these categories.

- **Nationals:** For purposes of international law, nationals are those who enjoy the citizenship of that particular state. It is nationality that links the state with the individual. This link also triggers certain rights vis-à-vis the state, including diplomatic protection, protection of human rights and protection from external aggression.

- **Refugees and asylum seekers:** Sometimes the national state itself becomes the aggressor or persecutor and the international community must step in to take the role that is traditionally played by the state. In the case of persecution on the grounds of race, nationality, ethnic origin or place of birth, the individual has to seek refuge in a foreign state and if that individual succeeds in establishing this,

he/she becomes entitled to refugee status in the receiving state. This protection is afforded by the Geneva Convention Relating to the Status of Refugees.

- **Internally displaced people:** Sometimes people are displaced internally due to conflict, natural disasters, etc., but do not cross an international border. Such displacement is usually temporary but in conflict situations people have been displaced for years and sometimes multiple times. In this situation, they are still subject to the protection of their national state but since they are displaced from their home, they should be afforded some protection. The U.N. Guiding Principles of Internal Displacement, a soft law instrument, provide guidance as to how such people should be treated.

- **Migrants:** Those who cross an international border but are not fleeing persecution, civil strife, or a natural disaster are migrants. They are generally considered as economic migrants in search of better conditions of life. However, it is not always easy to establish a clear demarcation between economic migrants and others. Migration refers to the movement of people and is a catch-all phrase to encompass everybody who moves from his/her place of origin. Sometimes, of course, migration is not voluntary. Even if migration seems voluntary, when all the circumstances are taken together, migration can be deemed forced.

Migration en masse in the face of a disaster would be temporary even where an international border is crossed. It has been argued that it is not necessary to

devise a legal regime governing “climate migrants” as existing labor migration schemes will be sufficient to cover them.

## **VII. DRAFT CONVENTION ON THE INTENTIONAL STATUS OF ENVIRONMENTALLY-DISPLACED PERSONS**

The Draft Convention on the International Status of Environmentally-displaced Persons (“Draft Convention”) proposed by the Interdisciplinary Centre of Research on Environmental, Planning and Urban Law is the most elaborate effort toward such a framework. Its objective is to establish a legal framework that guarantees the rights of environmentally-displaced persons and to organize their reception as well as their eventual return, in application of the principle of solidarity. Each party is to protect environmentally displaced persons in conformity with human rights law. The Draft Convention defines “environmentally-displaced persons” as “individuals, families and populations confronted with a sudden or gradual environmental disaster that inexorably impacts their living conditions, resulting in their forced displacement, at the outset or throughout from their habitual residence.”

A “sudden environmental disaster” is defined as “a rapidly occurring degradation of natural and/or human origin,” while a “gradual environmental disaster” is defined as “a slow, progressive or planned degradation of natural and/or human origin.” It further defines “forced displacement” as “any temporary or permanent displacement made inevitable by environmental disaster, either within a

State or from the State of residence to one or more receiving States, of individuals, families or populations.”

According to the Draft Convention’s Article 9, all persons confronted by a sudden or gradual environmental degradation have the right to move within or outside of their home state. The Article places an obligation on states not to hinder such displacement. It is interesting to compare this right with the right to choose one’s residence and the right not to be displaced. The draft convention further guarantees the right to water, housing, food, healthcare, work, culture, religion and education. It thus guarantees both civil and political rights and economic, social, and cultural rights recognized under international law. It provides that such displaced persons have the right to return when their place of origin is habitable and that they have the right to retain the nationality of the state of origin affected by an environmental disaster. It places obligations on the host state to facilitate their naturalization, if requested, and to not prosecute them if they enter the host country illegally.

This raises important issues related to migrants work status in host countries. Usually, people who are forced to migrate and certainly those who enter a country illegally (whatever the reason is) are not allowed to work in the host state. While basic humanitarian assistance is usually accorded to such people, the right to work and education are not available. This provision represents a derogation from this common practice as it envisages that migrants are entitled to request naturalization

in the host state and the host state has an obligation to facilitate it; naturalization carries with it the right to work.

The draft convention embodies both positive and negative components. The definition of environmentally displaced persons refers to environmental disasters, whether they are sudden or gradual. It is unlikely that sea level rise associated with climate change amounts to an “environmental disaster.” Moreover, the definition of a gradual degradation refers to “a slow, progressive or planned degradation of natural and/or human origin.” It is not clear what action or event would amount to planned degradation of the environment.

The Draft Convention lays down an elaborate institutional framework to implement its provisions including the establishment of a national commission on environmental displacement in each signatory state, a High Authority to hear appeals from the national commission, a World Agency for Environmentally Displaced Persons (WAEP), and a conference of parties. Parties would be required to submit national reports to the Secretariat to be established under the proposed framework. In addition, it envisions the establishment of a World Fund for the Environmentally-Displaced (WFED) that would be supported by voluntary contributions as well as a mandatory tax based on the causes of sudden or gradual environmental disasters that give rise to environmental displacement.

## VIII. INTERNATIONAL LAW ON STATELESS PERSONS

Statelessness could be invoked by the population of low-lying small island states that are heavily affected by sea level rises to the extent that they will end up completely submerged. This is the future for example in the cases of the islands of Kiribati and Tuvalu, the Marshall Islands, the Maldives, and several Caribbean islands. However, application of the law on stateless persons would require that a state's territory, population or government disappear. It does not extend to the situation of de facto statelessness, namely where a person formally has a nationality, but which is ineffective in practice. Yet, the territories of these low-lying islands will become uninhabitable long before the total submersion of the islands. Thus, people will be forced to migrate where there still exist a government in practice. Therefore, the first gap when it comes to the application of the law on stateless persons to environmental migration is that there is a need for protection before there being a complete statelessness and such cases of pre-emptive migration would thus not be covered by the law on stateless persons.

Further, even if pre-emptive environmental migrants would have been considered as stateless, the 1961 Convention on the Reduction of Statelessness provides only that it is: 'Desirable to reduce statelessness by international agreement'. Thus, the convention does not provide any enforceable right to a nationality and cannot be materialized into some concrete right to protection under

international law. Similarly, the Convention relating to the Status of Stateless Persons cannot be considered to offer adequate protection to environmental migrants. The convention only prohibits expulsion of stateless persons lawfully staying on the territory, except on ground of national security or public order.

## **IX. IMPACT OF CLIMATE CHANGE ON INTERNATIONAL HUMAN RIGHTS**

Climate change has an impact upon people's enjoyment of their human rights. Slow onset environmental events such as desertification, sea level rise, coastal erosion, and drought as well as rapid onset environmental events such as storms, floods, and tropical cyclones affect agriculture, infrastructure and habitability of certain areas of the world. In turn, these events might threaten socio-economic human rights as for instance the right to life, food, water, health, housing or culture. International human rights law provides minimum standards of treatment that states are obliged only to afford persons within its jurisdiction, or within its territory.

A handful of human rights principles are also recognized as giving rise to a duty for the receiving state not to expel persons from its territory. Human rights could accordingly offer some protection as it would prevent expulsion of the environmental migrant through the principle of nonrefoulement. Yet, even though non-refoulement under contemporary treaty law and customary international law includes non-return to persecution, torture, or cruel, inhuman, or degrading treatment or punishment, it is far from evident that the principle would assist a person displaced by environmental factors.

On the contrary, it seems like this principle would not be of assistance at all. Environmentally induced displacement does not meet the international definition of torture, which is defined as the intentional infliction of severe pain or suffering by a public official for an enumerated purpose such as punishment or obtaining a confession. Environmental migration clearly does not meet any of the prerequisites of intentional infliction, public official or enumerated purpose. It is equally difficult to define the environmental events that are causing people to migrate as cruel, inhuman, or degrading treatment or punishment.

This is because inhuman treatment requires actual bodily injury or intense physical or mental suffering, and degrading treatment means the humiliating or debasing of an individual and his or her human dignity. There must accordingly be a risk that the person in question would be subjected to these kinds of acts by the public authorities in the state of origin if expelled, or else by people that the government in question is not capable of protecting the person from. If there is no such risk, as in the case of environmental migration, the principle of nonrefoulement does not apply.

Furthermore, despite the fact that environmental migration indeed jeopardizes a plurality of economic and social human rights, current jurisprudence put forward those violations of such rights would be inadequate to find a protection claim. When socio-economic human rights are violated as a result of climate

change, there are difficulties as to holding anyone responsible for these violations.

For the principle to apply there is the pre-condition of the existence of a persecutor.

## **X. CHALLENGES FOR INTERNATIONAL LAW**

Climate change will pose many challenges for international law, some of which are demonstrated by the common strands e.g., loss of land (including total submergence in some instances) and the disappearance of entire states, and the potential mass relocation of people.

Some of the major challenges that climate change migration possess on international law is as follows:

a) **Fate of the Population:** Under the UNFCCC, developed countries have pledged to assist developing countries that are particularly vulnerable to the adverse effects of climate change with the costs of adaptation and direct adverse effects. Article 3 also acknowledges that those states that are particularly vulnerable to the adverse effects of climate change should be given full consideration. While relocation en masse across international borders may not be the first option for many of the communities affected by climate change, in relation to Small Island States this may be the only option, if the state is to survive as a legal entity. After all, the world is faced with an unprecedented scenario.

b) **Fate of sovereign state:** International law does not envision a situation where states disappear altogether; it has rules on state succession where one entity will replace another or a new entity emerges, through cession, unification or dissolution. The international community needs to address the legal

vacuum that would arise as a result of states disappearing due to consequences associated with climate change.

c) **Nations Ex-Situ:** Identifying these states as “endangered states,” Burkett proposes a legal fiction of “nations ex-situ” to deal with this emerging category of states that could possibly disappear as a result of climate change.

## **XI. THE SYSTEM OF TEMPORARY PROTECTED STATUS**

Numerous countries have encompassed provisions in their disaster management legislation concerning assistance and protection for people that are affected by natural disasters in their country. The EU has similarly developed a system that has the potential of offering temporary protection to some people displaced due to environmental factors. There is also circumstantial evidence that states in the past have allowed for and actually received displaced persons on their territory as a temporary measure on an ad hoc basis, such as in the context of a flooding or storm. In these situations, such measures have been taken on humanitarian grounds, not to adhere to obligations held under a particular domestic law or international treaty. Thus, there are grounds for examining whether there might be a customary international law-based obligation to offer temporary protection to people fleeing environmental disasters.

## **XII. REVIEW ON THE PROTECTION GAP OF ENVIRONMENTAL MIGRANTS**

There is an evident lack of protection for environmental migrants. There are accordingly several protection gaps under all studied legislations as well as under the system of Temporary Protected Status.

a) Environmental migrants are not protected under international refugee law because they do not usually experience the sort of persecution that is necessary to fulfill the requirement of refugee. Further, the de-linking of the persecutor from the territory from which the migration occurs, as would be required to cover environmental migrants by the refugee concept, is unknown to current international refugee law.

b) Environmental migrants are not protected under current international environmental law agreements, as these tend to focus on the relationships and rights of states rather than individuals. This system may thus be capable of preventing environmental migration and perhaps of supporting the protection of environmental migrants economically, but does not address the protection of individuals displaced due to environmental factors.

c) The concept of statelessness does not extend to the situation of de facto statelessness as would be required in order to encompass environmentally induced displacement. The definition of statelessness in the 1954 Convention

Relating to the Status of Stateless Persons is premised on the denial of nationality through the operation of the law of a particular state, rather than through the disappearance of a state altogether.

d) There are no explicit human rights protections for environmentally induced displaced and little recourse for potential violations. Also, it seems farfetched that the principle of non-refoulment would assist a person displaced by environmental factors, especially since current jurisprudence put forward those violations of socio-economic rights would be inadequate to find such a protection claim.

e) The system of Temporary Protected Status is discretionary and varies significantly among different domestic systems, EU legislation and customary international law.

## CONCLUSION

Climate change poses unprecedented challenges to the very core of the international legal order, threatening the foundations of international law. Nation-states, sovereignty and the gamut of rights and privileges that emanate from the notion of sovereignty will be threatened as a result of climate change, particularly in relation to Small Island States which are especially vulnerable to these consequences. Whatever may be the uncertainties related to climate change and climate migration, one thing is clear: the people of these endangered states cannot be left to fend for themselves alone simply because a vacuum exists in relation to their legal status.

The international community should use this as an opportunity to design a new legal regime in relation to the various challenges posed by climate change. The international community may have to depart from the traditional notions of statehood, populations, sovereignty and nationality and devise a legal regime to govern those who will be displaced because their territory became submerged or because they were forced to migrate due to climate change. Whether they are called “nations ex situ,” “endangered states,” “states in exile” or “deterritorialized states,” a legal solution will have to be found to accommodate their new status.

## LIST OF REFERENCES

McLeman, R., & Hunter, L. M. (2010). Migration in the context of vulnerability and adaptation to climate change: insights from analogues. *WIREs Climate Change*, 1(4), 450-461.

Piguet, E., Pécoud, A., & de Guchteneire, P. (2011). Migration and climate change: An overview. *Refugee and Forced Migration Studies Working Paper Series*, 76.

Bettini, G. (2013). Climate barbarians at the gate? A critique of apocalyptic narratives on 'climate-induced migration'. *Geoforum*, 45, 63-72.

McLeman, R., & Smit, B. (2006). Migration as an adaptation to climate change. *Climatic Change*, 76(1-2), 31-53.

Black, R., Adger, W. N., Arnell, N. W., Dercon, S., Geddes, A., & Thomas, D. (2011). The effect of environmental change on human migration. *Global Environmental Change*, 21, S3-S11.

Hunter, L. M., & Luna, J. K. (2015). Climate change and migration: considering gender dimensions. In *Climate change and gender in rich countries* (pp. 59-71). Routledge.

McLeman, R., & Smit, B. (2004). Vulnerability to climate change hazards and risks: Crop and flood insurance. *Canadian Geographer/Le Géographe canadien*, 48(3), 275-287.

Piguet, E., de Guchteneire, P., & Pécoud, A. (2011). Moving beyond the "environmental refugee" debate. In *Migration and climate change* (pp. 125-146). Cambridge University Press.

Martin, S. F. (2014). Climate change, migration and governance: Key issues and gaps. *Global Environmental Change*, 25, 12-21.

Scheffran, J., Marmer, E., & Sow, P. (2012). Migration as a contribution to resilience and innovation in climate adaptation: Social networks and co-development in Northwest Africa. *Applied Geography*, 33, 119-127.