

CLIMATE CHANGE, COASTAL EROSION, AND DISPLACEMENT: REVISITING TRANSBOUNDARY ENVIRONMENTAL JUSTICE THROUGH THE CASE OF EGYPT'S NILE DELTA

İklim Değişikliği, Kıyı Erozyonu ve Yer Değiştirme: Mısır'ın Nil Deltası Örneği Üzerinden Sınırşan Çevresel Adaletin Yeniden Gözden Geçirilmesi

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Abstract

This paper examines how environmental migration, justice, and governance intersect in the context of climate change. The study focuses on Egypt's Nile Delta as case. The Nile Delta, which is one of the most vulnerable regions in the World in terms of climate, has the risk from sea level rise and consequently land loss. The main argument of this research is that due to these factors, people are forced to migrate from Nile Delta region both just because of social and political inequalities but also due to environmental pressures. There is the lack of resources, unequal resource access, exclusion of society from decision-making process and fragmented governance. From a justice-oriented perspective, this study assesses the top-down adaptation strategies of the government which focuses on the infrastructure over the needs of populations. Under this claim, this study first discussed the theoretical framework which is environmental justice and environmental migration. Then, the sea level rise and migration risk in the Nile Delta are examined as a case. After that, the governance, participation and climate justice in the Nile Delta are considered. Before the conclusion, the discussion on environmental migration, transnational justice and regional governance are conducted from the case of the Nile Delta.

Keywords: Environmental Migration, Climate Change, Environmental Justice, Governance.

Öz

Bu makale, iklim değişikliği bağlamında çevresel göç, adalet ve yönetişimin nasıl kesiştiğini incelemektedir. Çalışma, Mısır'ın Nil Deltası örneğine odaklanmaktadır. İklim açısından dünyanın en hassas bölgelerinden biri olan Nil Deltası, deniz seviyesinin yükselmesi ve buna bağlı olarak toprak kaybı riski taşımaktadır. Bu araştırmanın temel argümanı, bu faktörler nedeniyle insanların hem sosyal ve siyasi eşitsizlikler hem de çevresel baskılar nedeniyle Nil Deltası bölgesinden göç etmek zorunda kaldıklarıdır. Kaynak eksikliği, eşit olmayan kaynak erişimi, toplumun karar alma sürecinden dışlanması ve parçalanmış yönetim söz konusudur. Bu çalışma, adalet odaklı bir bakış açısıyla, hükümetlerin nüfusun ihtiyaçlarından ziyade altyapıya odaklanan yukarıdan aşağıya uyum stratejilerini değerlendirmektedir. Bu iddia altında, bu çalışma ilk olarak çevresel adalet ve çevresel göç olan teorik çerçeveyi tartışmıştır. Ardından, Nil Deltası'ndaki deniz seviyesinin yükselmesi ve göç riski bir vaka olarak incelenmiştir. Daha sonra Nil Deltası'nda yönetim, katılımcılık ve iklim adaleti ele alınmıştır. Sonuç bölümünden önce, Nil Deltası örneğinden hareketle çevresel göç, ulusötesi adalet ve bölgesel yönetim üzerine bir tartışma yürütülmektedir.

Anahtar Kelimeler: Çevresel Göç, İklim Değişikliği, Çevresel Adalet, Yönetişim.

Introduction

When the climate change concept first emerged, it was perceived not only as an ecological and scientific challenge but also as a political and ethical one. One of the adverse impacts of this change is the environmental migration, which includes both forced and voluntary displacement of people or communities as a reaction to changing environmental issues. Some of these environmental issues are rising sea levels,

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extreme weather conditions, desertification, and lack of resources. These extreme conditions have an impact on human settlement and their mobility around the world. Although all these changes are seemed as a result of environmental challenges, this is not the case. Inequality, exclusion and power of states shape who moves, how they move and what kind of help they get. Therefore, environmental migration cannot be perceived separate from the principles and politics of environmental justice.

Environmental justice, as a conceptual and practical tool, helps us to understand how environmental burdens and benefits are distributed across different social groups. It's not just about pollution or toxic waste; it's also about whose interests are serviced, whose voices are repressed, and who gets to participate in environmental decision-making. What started out as a U.S.-based campaign against the disposal of toxic waste in underprivileged areas has since grown into a global dialogue on intergenerational equity, climate vulnerability, and the right to maintain one's community roots. When viewed in this light, environmental migration compels us to consider the following important issues: Who is most vulnerable to displacement? Who has the money to move or adapt? Importantly, who can influence the laws that dictate such results?

This study poses a central research question: In what ways can governance in the Nile Delta be restructured to embed environmental justice more effectively within climate adaptation and migration strategies, with particular attention to the needs and voices of vulnerable populations? By referring this question, this study goes beyond documenting the impacts of climate change or critiquing centralized governance. Through an in-depth case study of the Nile Delta, this research offers a valuable contribution to the literature that connects environmental migration with justice-oriented governance frameworks.

This study combines conceptual understanding with empirical research to examine the relationship between environmental justice and environmental migration. An important example is the Nile Delta in Egypt, where millions of people are at risk due to the gradual threat of sea level rise and land subsidence, which disproportionately affects those who are already marginalized politically and economically. In addition to documenting a vulnerable geography, the goal of examining this case from the perspectives of justice and migration is to reveal the governance shortcomings and moral conundrums that are present. Major policy frameworks around the world have started to acknowledge the connection between migration and climate change. Environmental factors of migration are included in documents such as the Sendai Framework for Disaster Risk Reduction and the Global Compact for Migration (2018). However, acknowledgment is not the same as action. Many of these initiatives lack enforcement power, funding mechanisms, or legal clarity by leaving displaced communities in a policy limbo. This disconnect between global acknowledgment and local reality reinforces the need for grounded, critical research.

Biophysical vulnerabilities, sea-level rise scenarios, and infrastructure responses have been the main topics of previous studies on environmental migration and climate adaptation in the Nile Delta (Frihy, 2003; El Raey, 2010). These studies frequently take a technocratic approach, providing engineering solutions and projections while mainly ignoring concerns about community agency, governance, and justice. Few studies have systematically connected environmental migration with environmental justice principles in the Nile Delta context, although more recent publications (Laczko & Aghazarm, 2009; Bettini, 2014) starting to recognize the socio-political aspects of environmental displacement. By investigating how governance institutions might be changed to more effectively incorporate justice-based methods into migration planning and climate adaptation, this study aims to close this gap. By connecting environmental migration studies with the environmental justice literature through a targeted, region-specific lens, it makes a significant and unique contribution in the process.

Crucially, environmental migration is not just about abstract policy gaps, but it is already part of lived experience of people. Across coastal zones, small islands, and increasingly dry farming regions, communities are being forced to adapt in real time, often with limited resources and even less support. While climate models can predict when and where the water will rise, they cannot capture what it feels like to lose one's home, one's history, or one's ability to stay. These are human stories, not just statistics. For this reason, the analysis ahead embraces not just scientific data but also social, emotional, and cultural dimensions of displacement.

The structure of the paper reflects this holistic approach. First, it introduces a theoretical framework that brings together environmental justice and environmental migration. Then, it turns to the specific case of the Nile Delta, exploring the region's social and ecological vulnerabilities. Following that, the discussion shifts toward regional governance and transnational justice, asking how broader political structures shape both the risks people face and the support they receive. The paper concludes by reflecting on what it will take legally, ethically, and politically to respond to environmental migration in ways that are not just effective, but fair.

1. Theoretical Framework: Environmental Justice & Environmental Migration

In recent years, as the impacts of climate change have intensified, the concept of environmental justice has gained significant attention worldwide. This is especially true when vulnerable communities face disproportionate exposure to environmental hazards yet lack the necessary resources to adapt or relocate. As a result, climate change is increasingly understood not just as an environmental challenge, but also as a pressing justice issue. Before going into the details, it is important to clarify what environmental justice actually means. The term was first introduced by the United States Environmental Protection Agency (EPA), which defines its goal as “ensuring that all people, regardless of race, national origin, or income, are protected from disproportionate impacts of environmental hazards” (U.S. Environmental Protection Agency, Office of Environmental Justice, 2000; Holifield, 2001). This highlights the principle that no one should bear an unfair share of environmental risks based on their background. Similarly, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) expand this concept into transportation, emphasizing that “minority and low-income populations should proportionally benefit from transportation projects” (U.S. Department of Transportation, 2000). Beyond official agencies, grassroots activists offer an even broader perspective, demanding “the cessation of the production of all toxins, hazardous wastes, and radioactive materials” (Principles of Environmental Justice, 1991; Holifield, 2001). Holifield also highlights that government agencies tend to interpret environmental justice differently, noting that “all federal environmental justice programs include provisions for both distributive justice—which focuses on the fair distribution of environmental quality among communities—and procedural justice, which ensures citizens’ access to decision-making processes affecting their environments” (Holifield, 2001). In sum, environmental justice encompasses both equal environmental conditions and equitable participation in environmental governance.

Although the U.S.-based EPA concept of environmental justice, which emphasizes the fair distribution of environmental benefits and responsibilities, has been used extensively, viewpoints from the Global South provide important additions to this framework. Indigenous and postcolonial studies emphasize the close connections between colonialism’s legacy, resource exploitation, and epistemic dominance and environmental injustices (Martinez-Alier, 2002; Whyte, 2018). Indigenous philosophers from Africa and Oceania emphasize the need for relational and land-based understandings of justice, while western development models are challenged in Latin America, which emphasize harmony with nature and community rights. The significance of cultural identity, historical marginalization, and spiritual ties to land are highlighted in these comments. A more pluralistic and decolonial approach to climate adaption and displacement in areas like the Nile Delta, where structural inequalities are influenced by both local and global power dynamics, is made possible by including various viewpoints.

Moving beyond definitions, it’s crucial to recognize how the scope of environmental justice has expanded well beyond traditional pollution concerns. While government efforts often center on classic pollution issues, activists emphasize a wider range of concerns, including military activities, housing rights, and local autonomy (Holifield, 2001). Cutter (1995) further broadens the focus to include social mobilization, shifts in public and private policies, and empowerment at the local level. Despite its broad appeal, environmental justice faces practical and conceptual challenges, especially when assessing its effectiveness in real-world policy and empirical research. Cutter (1995) points out that while environmental justice is a compelling moral framework, it suffers from methodological inconsistencies, ambiguous empirical evidence, legal constraints, unresolved causal questions, and challenges related to scale. For example, evidence of environmental injustice often varies depending on the type of hazard studied, the geographic scale, demographic group examined, and timeframe considered. Without clear methodological standard, such as consistent thresholds or spatial units, claims of injustice can be hard to substantiate. Legal hurdles also exist; under civil rights law, claimants must prove intentional discrimination, which is a high bar and weakens the power of law to enforce environmental justice (Cutter, 1995). In addition to this, local activism both block dangerous land uses and forces polluting industries to poorer regions. Local activism also illustrates the complexity of justice (Cutter, 1995). In a nutshell, environmental justice on the one hand offers a perspective to understand environmental harms, on the other hand, its application is complex due to ambiguity in definition, difficulties in methodology and also legal constraints. Discussing the real-world issues including sea level rise and migration threats in regions like Nile Delta makes the case even more curial.

When we move to environmental migration issue, it refers to a large are of research that focuses on the forced displacement of people because of harsh environmental changes like sea level rise, desertification, and extreme weather conditions. (IOM, 2009). Migration due to these extreme conditions can be perceived as a response for adaptation and an indicator for structural injustice because of forced displacement due to lack of management and unstable conditions. (Black et al., 2011). Thence, when

environmental justice and environmental displacement concepts were taken into consideration together, both the social and political forces including providing resources, delivery of aids and displacement can be understood better. One of the most important component of the concept is to make sense the vulnerability. Environmental injustice occurs due to social, economic or political rejection over time. Therefore, it could be stated that environmental displacement occurs not because of a specific issue, but the cumulative impact of the exclusion, extended neglect and environmental degradation. This multiple-dimension reflects that migration due to environmental reasons is not a prompt response to the crisis, but a response due to a long-term systemic failure. This point of view highlights those past losses have an impact on the present risks and future mobilities and actions of communities.

In recent years, the literature on environmental migration has evolved significantly, emphasizing the multidimensional nature of mobility under climate stress. Scholars such as Boas et al. (2019) and Heslin (2021) have highlighted the role of structural inequalities, historical marginalization, and governance deficits in shaping migration patterns. Unlike earlier deterministic approaches that viewed environmental migration as a linear response to climatic events, contemporary studies stress the importance of agency, place attachment, and political context. The concept of trapped populations (Black et al., 2011; Zickgraf, 2018) has also gained traction, recognizing that immobility can be just as critical as mobility in the face of climate risks. Furthermore, there is growing attention to the intersectionality of displacement experiences, particularly how gender, age, class, and legal status affect adaptation capacity and migration choices (Kálin & Schrepfer, 2012; McNamara et al., 2021). By integrating these insights, this paper aims to bridge environmental migration and justice frameworks to provide a more nuanced understanding of displacement dynamics in the Nile Delta.

Moreover, environmental justice challenges the traditional models of development rooted in top-down and one size fits all policies. Rather, environmental justice advances solutions that are community driven and identifies the different responsibilities that are rooted from inequalities in terms of structure and history. Considering this perspective, it could be argued that both researchers and policymakers can comprehend both the reason of migration and how people migrate, also analyze the way governance, aid mechanisms and strategies of adaptation can support or prevent transitions.

When displacement occurs, disadvantaged groups become sometimes the least equipped to recover or receive support. Indeed, they frequently exist in high-risk places due to systemic differences (Adger et al., 2013). Furthermore, policies that focus on environmental migration are frequently rooted in risk management or national security concerns, not on the principles of justice. (Bettini, 2014).

Establishing a justice-oriented strategy needs a shift toward rights-based and participatory frameworks, such as community-led removal plans, redistributive approaches, legal identification, and security against forced displacement (Farbotko & Lazrus, 2012). By establishing a connection between environmental justice and environmental migration, the socio-political reasons of vulnerability can be understood better and proper climate adaptation approaches can be created. Considering this, Nile Delta, which is an example for complex cases, reflects the intersection of environmental hazards and migration forces. These kinds of cases can be analyzed under this theoretical framework.

2. Case Analysis: Sea-Level Rise and Migration Risk in the Nile Delta

This study employs a qualitative content analysis of policy documents, academic literature, and international frameworks, focusing on how climate adaptation and migration governance in the Nile Delta addresses principles of environmental justice. Climate change causes important environmental changes. One of these changes is the sea level rise. The Nile Delta, one of Egypt's most productive and livable regions, is particularly at risk. Over six million people might be displaced, vital infrastructure and agricultural land could be lost, and over 19% of the Delta's land area could be submerged with a one-meter rise in sea level, according to projections (El Raey, 1997). Factors caused by humans exacerbate this vulnerability even more. For instance, the construction of the Aswan High Dam has disrupted natural sediment flows, while ongoing land subsidence continues to reshape the region's geomorphology (Stanley & Warne, 1993). In fact, in many low-lying parts of the Delta, the land is sinking faster than sea levels are rising, making these areas even more prone to flooding and saltwater intrusion (Frihy, 2003). The following map shows the Nile Delta.



Figure 1. Geographical Overview of the Nile Delta

Source: UNDP, 2023.

Beyond the environmental dimension, the Delta's situation has significant social and economic implications. Millions of residents in this region live in poverty and depend heavily on natural resources, especially land and water, for their livelihoods. As freshwater becomes scarcer and agricultural yields decline, climate-related migration becomes both a coping strategy and a critical policy issue (Omar & Bardsley, 2024). Yet, despite these challenges, internal displacement in Egypt remains poorly understood and insufficiently addressed within national adaptation strategies (Black et al., 2011). As a response to the increasing threat of sea level rise in the Nile Delta, authorities have implemented a range of physical interventions. Some of these are building sea walls and bulwarks, to more recent efforts focused on restoring areas of wetlands (Sharaan et al., 2022). Although these measures can diminish some of the crucial impacts of coastal flooding and erosion, they do not focus deeply on systemic issues that create vulnerability. Structural problems such as uneven access to vital resources, established socioeconomic inequalities, and inequitable governance structures that lack justice remain largely unaddressed by these interventions.

Fragile social groups are more sensitive to consequences of climate change and the adaptation to climate change excessively means that protection of these groups from extreme outcome of climate change such as, drought or extreme weather events. In other words, environmental justice requires taking care of vulnerable groups against climate change results. As Adger (2006) indicated that adaptation strategies must take into account disadvantageous groups as inclusive participation in decision making process. One of the best examples for such climate change vulnerability can be observed in the Nile Delta where environmental challenges meet with fragile social groups. As a consequence of climate change-oriented movement, there is an immediate need for climate change adaptation strategy by focusing on environmental justice.

At the first glance, inclusive decision-making process to overcome climate resilience for goodness of all parts within the society is urgent need. Although Egypt made formal commitment to Paris Agreement as its Intended Nationally Determined Contribution, the implementation at local level of this agreement and obtaining successful results are not possible due to unstructured governmental system (UNFCCC, 2015). This can be observed at high level with illegal living areas due to lack of expertise and financial capacity

(OECD, 2023). Due to poor planning in informal settlements, effect of climate change is harsher, and the consequences of climate change is the increase in social injustice and income inequality.

Because of this, poor rural communities are significantly under the risk. Low-income rural communities, fishing villages and illegal urban settlements through southern bank of the Nile River are under the climate change threat. Housing facilities, clean water, sanitation facilities, legal structure of land ownership are first vulnerable points in terms of climate change. The increase in soil salinity and extreme weather conditions such as storm surges are the causes for vulnerability (Adger, 2006; Black et al., 2011). When people in these communities are displaced, they often lose not only their homes and livelihoods but also their social networks and political agency. Displacement under these circumstances is not just physical but also economic, emotional, and political.

Addressing such multi-layered vulnerabilities requires more than reactive infrastructure. It calls for an integrated and multidimensional approach, one that combines ecological restoration with strong social safety nets and inclusive institutional reform. Nature-based solutions, including dune stabilization and wetland rehabilitation, have shown potential for reducing coastal vulnerability while also enhancing biodiversity (Frihy, 2003). But these efforts must be matched with initiatives that strengthen public participation in planning, ensure fair access to relocation resources, and embed environmental justice principles at the core of national adaptation policies. When adaptation is guided by a rights-based approach, it becomes not just a means of managing environmental change, but a tool for correcting historic patterns of exclusion and promoting long-term, inclusive resilience (Adger, 2006).

Encouragingly, there has been a noticeable increase in civil society engagement within the Delta in recent years. Local NGOs, university researchers, and youth-driven groups are beginning to advocate more forcefully for inclusive, participatory approaches to climate planning. All these new initiatives illustrate the crucial change in the way that governance is thought about. The programs have larger impact on comprehensive adaptation plans both at the national and international levels. They address the local expertise and influence the perspectives of populations. The initiatives of these local communities significantly force climate solutions. The institutional solutions are socially proper and environmentally sustainable.

The Nile Delta continues to be one of the world's most climate-vulnerable low-lying coastal regions, according to recent climate modeling and satellite-based estimates. The Intergovernmental Panel on Climate Change (IPCC AR6, 2022) projects that Egypt will see more frequent extreme weather events, increased intrusion of saltwater, and rising temperatures, all of which pose serious threats to freshwater availability in the Delta and agricultural livelihoods. Large areas of the Delta are also vulnerable to flooding under even modest sea-level rise scenarios, according to recent research employing high-resolution remote sensing (El-Nahry & Doluschitz, 2023; Climate Central, 2019). These results highlight how urgent it is to move away from solutions that are only partially constructed and toward more comprehensive, justice-focused adaptation plans that take sociopolitical vulnerabilities and local demands into account.

In addition to this, the main motives behind human movement in the Nile Delta should be scrutinized through cultural structure and cognitive decision-making process at individual level. The land ownership does not just mean the tool for income revenue but strong tie with ancestors, society as well as person herself. In other words, the land that they live and cultivate defines these people and their strong part of their identities. Therefore, the movement from "fatherland" is not for sure easy decision-making process. Such migration has certain and very deep effect on these people's psychology. Such psychological rupture also has different level of impact on peoples from different generations. Elderly people have more tendency to stay where they live either lack of support for mobility or their emotional fragility. For young people, migration is relatively easy decision for new way of life. Yet, it has serious consequences natural social "insurance" within the community because the elder people have more responsibility to support young generation when they establish their own lives. In other words, the support chain between young and older generation in fragile society has been broken through migration movement. Moreover, the break in such social insurance system makes more fragile the groups who have already very scarce financial and other resources for sustainable livelihood. Therefore, environmental displacement has deep effect on survival abilities as well as identities which persists for centuries.

3. Governance, Participation, and Climate Justice in the Nile Delta

In order to understand the action of communities to climate change in terms of their adaptation, preparation and recovery, there is a need for technical knowledge. Therefore, the design and operation of government is crucial at this stage. Governance in the context of environmental migration is more complex than institutional planning or legal frameworks. It is closely related to the distribution of power, the

inclusiveness of decision-making procedures, and the degree of agency communities have in determining their own reactions. Climate policies run the risk of sustaining the vulnerabilities they are intended to address when these systems do not incorporate justice at their core. This disparity is particularly noticeable in Nile Delta. The Delta attempts to put fair and practical climate adaption plans into action have been severely hampered by centralized authority and the marginalization of local voices.

A significant concentration of authority is a defining feature of Egypt's approach to environmental regulation. Decisions applied to climate change are usually made at the federal level with little participation from local communities or regional stakeholders (Sowers & Weinthal, 2010). Although Egypt has intention to achieve what was promised at Nationally Determined Contributions under the Paris Agreement through highly centralized planning and programming through centrally decision-making process, with often neglecting minority and vulnerable groups. Large-scale infrastructure operations like coastal walls, desalination plants, and extensive drainage networks are the result of this central planning and financing system. These infrastructure operations could be helpful direct consequences of climate change but such large initiatives with extensive financial resources but they may neglect the needs of vulnerable groups. In other words, just focusing on infrastructure fails to address sociological and psychological needs of people (Agyeman et al., 2003).

The intentional exclusion of underrepresented groups in decision-making process related to climate change is the urgent issue to be addressed for environmental justice. Small scale farmers, people in poverty at urban areas and people in illegal residents are the social groups which are affected seriously by the climate change. Unfortunately, the central government actions and plans do not pay attention to the needs of these groups. Therefore, the central government actions do not meet the needs of these groups and their effectiveness is under question. For instance, relocation plans without any consultation to people whom are going to be affected has tendency to create antagonism between governmental bodies and local people and they can erode social and cultural structure on those soils (Elasha, 2010). Such governmental mistakes demonstrate the misconnection between people's need and governmental plans.

Lack of democratically structure at national level also leads the diminishing accountability and lack of involvement in decision-making process. The people in vulnerable groups usually have lack of information about climate change measurements, especially these people's displacement. Low level of education in these groups creates also another barrier to take part in decision-making process. Centrally planned actions without these people's consent directly affects them. According to Agyeman et al. (2003), the right to information and participation in decision making process which impacts their future is not subsidiary but essential part of environmental decision along with material resources distribution.

These challenges are made worse by the split of institutional responsibilities among various ministries and sectors. Numerous government agencies in Egypt deal with climate-related issues, ranging from disaster response and water management to housing and land use. Nevertheless, there is often little or no coordination amongst these authorities (UNDP, 2013). This disjointed structure leads to inconsistent, reactive policy responses that are typically driven by short-term political considerations rather than long-term resilience planning. As a result, efforts to adapt to climate change often lack coherence, efficiency, and the capacity to meet the diverse demands of vulnerable communities.

Nonetheless, research from all across the world demonstrates that community-based adaptation, or CBA, can support more inclusive, efficient, and sustainable climate solutions. Reid et al. (2009) claim that approaches that involve local involvement have produced outcomes that are more affordable, socially cohesive, and tailored to local needs. Even though these models are still in the early stages of development in Egypt, promising examples are starting to appear, such as livelihood diversification programs in coastal areas and urban greening projects, which demonstrate the important role that locally led efforts can play in enhancing climate resilience. But, for these efforts to reach scale, major institutional reforms are needed. Decentralizing authority and building the capacity of grassroots organizations, local councils, and NGOs will be critical to expanding bottom-up adaptation.

Equally important is the integration of gender and generational perspectives into participatory governance. In many rural communities across the Delta, women are among the first to experience the burdens of climate change, facing food shortages, water scarcity, and heightened caregiving responsibilities, yet they are frequently excluded from formal planning and decision-making processes (Elasha, 2010). Similarly, despite their ability to spur innovation and promote long-term resilience, young people, who comprise a sizable section of Egypt's population, are often disregarded in policy discussions. Truly inclusive adaptation measures must go beyond mere symbolism of participation to provide youth and other marginalized groups a real voice in deciding climate solutions.

In conclusion, if the Nile Delta is to have effective climate governance, centralized, infrastructure-focused models must make way for systems that place a higher priority on fairness, participation, and accountability at all levels. If the project is implemented without consent of all stakeholders, it fails more likely in spite of the high level of expertise involvement. Therefore, environmental justice passes through just decision-making process. For this purpose, the decision-making process must be transparent and open to suggestions from local level.

The conditions also illustrate close tie between climate policy through professional perspective and social and psychological structure. The Delta fragmentation is as a result of global injustice within international power struggle and wide range of national governmental structure. Therefore, climate change policy within the Delta requires interaction with international financial and legal system. Therefore, the understanding of migration in the Nile Delta requires inquiries international dynamics at regional and local level. Due to this reason, following part focuses on trans-border justice system and possible responsibilities for regional governments in order to equitable responses to environmental migration.

4. Discussion: Environmental Migration, Transnational Justice, and Regional Governance

The Nile Delta is a noticeable case for the interdependent problems of environmental degradation, environmental migration and environmental justice. Because of climate change, sea level rises and instability in ecology increases. At this stage, migration due to environmental hazard become very complex and important for the adaptation strategy of coastal populations. These populations need to give crucial decisions about the place they need to go, the way to protect their identities and to survive. This movement is typically far from voluntary. Rather, environmental migration usually takes place in the context of historical marginalization, institutional failure, and persistent structural inequality, all of which significantly limit the alternatives, agency, and dignity of impacted individuals (Adger et al., 2013; Foresight, 2011).

Technocratic solutions are insufficient to achieve environmental justice in this situation. It calls for a critical interrogation of who is displaced, by what forces, and under what circumstances. Migration, therefore, should not be reduced to a demographic trend or security issue but it must be understood as the product of broader socio-environmental injustices (Schlosberg, 2007). In the Nile Delta, already marginalized groups, like smallholder farmers and residents of informal settlements, face disproportionate exposure to coastal hazards while simultaneously lacking the political influence, economic resources, or institutional support necessary to adapt or relocate effectively. These distributional injustices are compounded by procedural exclusion, as those most affected are routinely sidelined from decision-making at all levels of governance (Walker, 2012).

Central to these challenges is a persistent governance gap. Egypt's climate adaptation strategies remain overwhelmingly centralized and technocratic, emphasizing infrastructural defenses, such as sea walls and drainage networks, rather than social vulnerability and community engagement. While such measures may reduce physical risks, they do little to address the deeper, more complex realities of displacement, particularly for those already living in precarious conditions or unable to migrate autonomously (Frihy, 2003). Furthermore, the absence of legal recognition or policy frameworks for internally displaced persons (IDPs) affected by environmental factors leaves these populations without adequate rights, support, or visibility. This legal vacuum is not unique to Egypt but reflects a broader international trend: most countries have yet to formally recognize or protect people displaced by climate-related factors (McAdam, 2012).

At the regional and global levels, governance mechanisms for addressing climate-induced displacement remain fragmented and underdeveloped. In the Mediterranean context, there is currently no binding multilateral agreement to manage climate-related migration or to ensure the rights of displaced people across borders. International frameworks such as the Global Compact for Migration (2018) and the Warsaw International Mechanism for Loss and Damage under the UNFCCC have acknowledged environmental migration, but they lack enforceable provisions or robust funding mechanisms to support long-term adaptation and relocation (IOM, 2022). This governance gap could result in reactive, exclusive, or securitized actions as climate hazards increase, especially in politically delicate areas like North Africa (Bettini, 2014).

However, there are some avenues for more equitable and well-coordinated solutions through regional administration. Institutions such as the Union for the Mediterranean and the Arab League have made general commitments to climate action, but their frameworks remain underdeveloped with regard to cross-border migration. A Mediterranean Climate Migration Framework, which modeled on instruments like the Kampala Convention in Africa, could help establish shared legal standards, promote policy

coherence, and facilitate the pooling of resources. For such a framework to be effective, however, it must be rooted in principles of climate justice and acknowledge the stark power asymmetries between northern and southern Mediterranean states. Only through a fair and cooperative regional approach can the policy vacuum between national inaction and global indecision be addressed.

This discussion also highlights the ethical and political responsibilities of the Global North. Countries and corporations most responsible for historical emissions carry a disproportionate burden for the displacement crises now affecting regions like the Nile Delta (Gardiner, 2011). Yet, despite repeated commitments, climate finance flows remain inadequate. Moreover, adaptation aid is often shaped by donor priorities or cost-effectiveness metrics rather than by the justice imperative (Roberts & Parks, 2007). A meaningful commitment to transnational climate justice would involve expanding access to relocation support, investing in community-led adaptation, and enabling safe cross-border movement while ensuring that displaced individuals retain voice, rights, and dignity.

Equally important is the recognition that not all climate-affected populations will migrate. Some will remain due to poverty, immobility, or restrictive state policies; others may choose to stay due to cultural, emotional, or ancestral ties to their land (Black et al., 2011; Foresight, 2011). Therefore, justice-based responses must be multi-dimensional by serving both those who move and those who remain. This requires integrating planned relocation with in-situ resilience strategies and fostering inclusive governance at local, national, and transnational levels.

The way that mobility is framed is another crucial aspect of the discussion of international justice. While some academics support formal international legal recognition of climate refugees, others caution that doing so would perpetuate restrictive and securitized narratives. Rather, mobility ought to be acknowledged as a resource as well as a right, an adaptive tactic that can help people pursue opportunities, safety, and independence. At this state, the Mediterranean region is crucial. Migration is involved in racially and politically charged narratives. The case is shown as a catastrophe that needs to be dominated, not as a reality that needs to be comprehended. By adapting justice-focused point of view on the movement of people can change the discussion about migration. Migration can be perceived as an opportunity for shared responsibility, regional solidarity and cooperative solutions. Hence, it is not a matter of danger but a chance.

The Nile Delta is a crucial example to show what happens when government authorities fail to include justice. Hence, the Delta demonstrates the failed governmental solutions to displacement. Some of these solutions are infrastructure projects, border control and technocratic adaptation. Although these solutions are crucial, they are not enough. The governmental strategies need to be multi-layered. The strategies need to empower local communities to lead their own adaptation initiatives. At the same time, the strategy needs to connect national protection mechanisms and international financial and legal assistance. An environmental justice is crucial at this stage because it extends legal protections of individuals who are displaced, reassess the allocation of funds and gives responsibilities to organizations for right-based results. In a nutshell, the Nile Delta case is not an exception for environmental justice to take some actions. The case show that there is a potential if environmental justice is prioritized. Also, it reflects the losses if there is lack of action for adaptation to environmental changes. In order to highlight environmental migration, a proper and future focused resilience is necessary. The consequences of these findings will be discussed in the following part.

The UNDP-led project "Enhancing Climate Change Adaptation in the North Coast of Egypt" (2018–2025), which is co-financed by the Green Climate Fund, is one of the most important ongoing initiatives to improve resilience in the Nile Delta. Through a combination of low-cost dike systems and nature-based solutions, the initiative seeks to safeguard 17 susceptible locations along the Mediterranean coast from flooding and seawater intrusion. In addition to implementing early warning systems and community outreach initiatives to boost local adaptation ability, the project has finished preventive measures in a number of high-risk regions, including Damietta and Kafr El Sheikh, as of 2024 (UNDP Egypt, 2024). Nevertheless, despite these successes, criticisms of the project's low community involvement and its comparatively limited emphasis on physical infrastructure persist, reiterating larger worries about Egypt's top-down approach to climate adaptation.

Conclusion

This paper indicates clearly that environmental justice is especially significant topic for the Nile Delta due to vulnerable social groups from environmental migration perspective. Saltwater intrusion, sea level rise, and unexpected climate events are drivers for environmental migration. Yet, political structure in decision-making process, economic inequality and marginalization and underrepresentation of fragile

groups in political structure folds consequences of physical factors. Therefore, the adaptation to climate change also requires focusing on human made structure to establish environmental justice.

The fragmented social structure in the Nile Delta at al level, i.e. local, national and global, is not well prepared for climate change oriented migration. The adaptation strategy in Egypt focuses on physical infrastructure by omitting fragmented social structure and economic disperse. At international level, the measurements against climate change resulted social vulnerability is inadequate. Fragile groups, such as low-income rural communities, coastal fishing villages, and informal urban neighborhoods are out of protection; neither they can raise their voices on political agenda.

As a result, there is an immediate need for reconsideration of environmental justice and policy making process, which usually omits underrepresented groups in the society. By saying environmental justice, it requires climate adaptation plan by taking into account environmental migration and long-term resilience structure for fragile groups. Therefore, there is a need for giving voice to vulnerable groups in resource allocation and functioning of governmental bodies from democratic perspective, especially at local level. Such strategy could help paving a way to environmental justice because the public resources should not focus on the people who have already access to decision-making process though strong lobbying activities. Therefore, legal protection to people who resides at informal neighborhoods. In addition, a larger collaboration in the Mediterranean and MENA region is requirement for effective dealing with severe consequences of climate change on disadvantaged groups. In addition, historically high emission rate states should be more responsible for such vulnerable groups though financial means to decrease climate change effects. Crucially, a justice-oriented approach must also prioritize the empowerment of affected communities: enabling their participation in planning processes, ensuring equitable access to resources, and respecting their cultural and emotional ties to place.

This study also highlights the need to integrate climate adaptation into broader frameworks of social justice and inclusion. Adaptation cannot be conceptualized purely in technical or infrastructural terms. Its success hinges on how effectively it addresses historical inequalities and supports communities in shaping resilient, self-determined futures. In the Egyptian context this means embedding adaptation strategies into national development planning, labor policies, education systems, and urban planning initiatives. Only through such holistic integration can we address the underlying causes of displacement, rather than merely its symptoms.

Looking ahead, future research should center the lived experiences of environmentally displaced individuals and communities. Ethnographic and participatory approaches can provide valuable insights into how people navigate displacement, construct resilience, and maintain their sense of identity and belonging amid environmental upheaval. In the context of the Nile Delta, longitudinal studies could help policymakers understand the evolving nature of vulnerability, adaptation, and displacement over time. These insights are essential for designing responsive, ethical, and effective policy interventions.

Ultimately, this paper argues that bridging the conceptual gap between environmental justice and environmental migration is not only an analytical imperative but also a moral one. Climate-induced displacement should not be treated as a series of disconnected emergencies. Rather, it offers a critical lens through which to examine deeper global injustices and, more importantly, a potential entry point for reimagining migration, governance, and climate action in more inclusive and transformative ways. If justice remains sidelined, adaptation risks entrenching exclusion. But if justice becomes central, it opens the door to a more equitable and humane response to one of the defining challenges of our time.

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