

## Beyond Displacement: The Trapped Population and Hydro-Spatial Abandonment in Paolo Bacigalupi's *The Water Knife*

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### Abstract

Climate change has intensified environmental displacement while simultaneously producing populations who remain unable to migrate despite escalating ecological risks. Drawing on the concept of trapped populations, this paper examines Paolo Bacigalupi's *The Water Knife* to investigate how environmental degradation, water scarcity, and structural inequalities shape climate immobility. This research aims to shed light on the extent to which environmental devastation and resource deficiency influence vulnerable groups by crippling their finances and social networks, making moving impossible. The qualitative textual analysis method is used in the paper to dissect the connection between environmental disturbances and structural inequality, employing close readings of the text. The outcome of the analysis demonstrates that *The Water Knife* questions the idea that an increase in climate disturbances will lead to more migration flows. The theory of trapped populations illustrates that intensifying environmental crises makes it impossible for people to relocate, as they wipe out the economic and social capital necessary for people to be able to migrate. This paradox points to the complex relationship between environmental disasters and socio-economic barriers, proving the need for implementing policies with an emphasis on the financial aspects of mobility in climate-stricken areas. This research argues that climate immobility does not only result from environmental degradation, but also social and ethnic inequalities that affect access to this mobility. By foregrounding those who cannot leave, *The Water Knife* reframes climate migration as a problem of immobilized, expendable populations and underscores the ethical urgency of addressing the political and economic structures that trap people in zones of sacrifice. It concludes that the novel highlights the need for climate justice approaches that address these inequalities and ensure more equitable responses to climate-induced displacement.

**Key Words:** Trapped Population, Climate Migration, Vulnerability, immobility

### 1. Introduction

Climate change poses one of the defining challenges of the twenty-first century, causing drastic changes to natural environments and societies. Rising global temperatures, long periods of droughts, rising sea levels, and an increase in frequency of extreme weather conditions have resulted in disruption to economies, resource scarcity, and vulnerability of various groups of people (Banerjee & Bhat, 2025). Environmental changes have caused changes in migration patterns, making climate displacement an important issue for environmental and migration studies. The Anthropocene epoch is marked by severe disruptions caused by humans to the environment, including both rapid-onset events

like flash flooding and heat waves, and slower events, like desertification, rising sea levels, and water scarcity (Intergovernmental Panel on Climate Change [IPCC], 2023). However, beyond its environmental implications, climate change works as a threat multiplier that changes human geography and socio-political stability (Adger et al., 2014; Gemenne, 2011). One of its important social impacts is the disruption to human settlement patterns, requiring reconsideration of climate mobility issues.

The discourse of both academic and public spheres has historically positioned environmental stress as a trigger for migration (Myers, 2002). With environmental deterioration occurring and safety networks based on agriculture, hydrology, or

economy being broken, migration becomes one of the possible ways of adaptation (McLeman & Smit, 2006). Spatial mobility is used by households to diversify their sources of income, to get away from non-livable micro-climates, and to cope with risks (Tacoli, 2009). In classical conceptualizations of climate migration, there exists a linear relationship between environmental stress and migration flows: the higher the stress level, the more people start to migrate (Biermann & Boas, 2010).

Climate-induced migration is not only an adaptation strategy but a phenomenon that is part of a broader nexus of social, economic, and political factors (Nawyn et al., 2024). These factors affect the ability of individuals and societies to react to stressors and determine whether migration is possible, forced, or even impossible.

In the context of the link between climate and human mobility, one can state a double-sided process whereby, on the one hand, certain populations have to move because of unfavorable climatic circumstances, whereas on the other hand, certain populations remain immobile and are unable to move despite growing threat. These people can be economically, socially, politically, or culturally immobile, and hence, there is a need to recognize the disparities that exist in this case. Therefore, climate change does not lead to similar consequences but rather increases social inequality.

Climate fiction is an important literary device used to address social, political, and ethical issues related to climate change through the imagination of what would happen under those climatic conditions and beyond the facts and policies related to climate change. One of such novels is *The Water Knife* written by Paolo Bacigalupi that describes the future American Southwest that experiences drought and water shortage. The story unfolds against the background of a dystopian environment that is marked by the depletion of natural resources, military control of borders, and socio-political divisions, providing a critical reflection on how environmental problems interact with political economies to disenfranchise and immobilize marginalized communities.

*The Water Knife* does not present the phenomenon of climate migration as an inevitable adaptive behavior. Instead, through a critical analysis on the dynamics of power relations, the novel sheds light on the emergence of “trapped populations”, that is, communities that cannot move due to the effects of deprivation, abandonment, and coercion amidst environmental destruction.

Hence, the ethical and political issues surrounding environmental displacement are clearly articulated, in the sense that immobility is not just a matter of passivity, but an imposition that is rooted in systematic discrimination and oppression. Even though *The Water Knife* has received considerable academic recognition due to its relevance to climate change, water politics, environmental collapse, and resource conflict, it has not received much attention from the point of view of “trapped populations”. Existing research has primarily focused on its ecological, political, and dystopian dimensions, leaving the relationship between climate immobility, structural inequality, and unequal capacities for mobility underexamined. Addressing this gap, the present study analyses how the novel depicts trapped populations as an outcome of unequal access to resources, political power, and social privilege. It argues that the novel exemplifies the trapped populations paradox by showing that intensifying climate stress does not necessarily lead to increased migration but can instead reduce the capacity to move. In doing so, this paper demonstrates how it reframes climate migration as a problem of structural inequality rather than environmental change alone.

## **2. Methodology**

### **2.1 Climate Mobility and the Limits of Linear Migration**

Despite deterministic scenarios forecasting an impending deluge of “climate refugees”, recent research in literature has become increasingly critical of this linear approach to migration and climate change on the grounds that it does not consider the limitations imposed by resource constraints in migration processes (Black et al., 2011; Nawrotzki & DeWaard, 2018). Migration involves significant resource costs, which include

financial resources for transport and settlement, social resources in the form of social networks, and personal ability (Black et al., 2011). If climate-related risks result in the loss of household resources, they also reduce the ability to migrate (Nawrotzki & DeWaard, 2018).

Climate-related migration is not simply an adaptive response. Instead, it happens amid a number of intersecting determinants of social, economic, and political nature (Nawyn et al., 2024). They define the ability of migrants to adapt to adverse environmental conditions and migrate in the case of necessity.

The interaction between climatic factors and human mobility reveals a dual phenomenon: while some populations are compelled to move due to deteriorating environmental conditions, others experience forced immobility and are unable to relocate despite increasing risks. This immobility may arise from economic constraints, lack of social networks, political barriers, or cultural ties to place, highlighting significant inequalities in adaptive capacities and resilience among the affected groups. Consequently, climate change does not produce uniform outcomes but exacerbates existing social disparities and vulnerabilities, underscoring the need for nuanced policy responses that address both mobility and immobility.

In *The Water Knife*, this distinction between mobility and immobility becomes central to the representation of populations living within the drought-stricken American Southwest. While the novel depicts people attempting to move toward regions where water and security remain available, it also represents individuals and communities whose economic and social conditions prevent them from converting environmental pressure into mobility. The novel therefore provides a literary context through which the unequal relationship between environmental vulnerability and mobility can be examined.

## **2.2 The Trapped Population Paradox**

A trapped population refers to a group of individuals who experience high exposure to environmental hazards and express a necessity to relocate, yet lack the requisite financial, social,

political, or physical resources to execute adaptive migration (Ayeb-Karlsson et al., 2018; Black et al., 2011).

One commonly cited example is smallholder farmers who have to deal with periodic drought in areas where the dominant form of agriculture is large agribusiness. In such circumstances, smallholder farmers, with their small plots of land and little ability to irrigate, will suffer from crop failure, livestock death, and debt accumulation. However, because they do not have any savings, credit, land ownership, or city networks to fall back on, they do not have the ability to relocate, find housing and jobs elsewhere, or gain assistance from government programs for “climate-affected people.” On the other hand, the nearby agribusinesses can drill into their deep wells, irrigate using their irrigation equipment, and buy crop insurance or use political connections to get the water and government subsidies to weather the same drought without much difficulty. In this way, smallholders are trapped by rising environmental risks that they cannot turn into mobility.

Trapped populations can thus be conceptualised as individuals and communities whose mobility is curtailed by structural constraints rather than shaped primarily by autonomous choice (Cattacin & Naegeli, 2014). Factors such as poverty, loss of livelihood, resource scarcity, weak or absent governance, and entrenched social exclusion substantially diminish the capacity to migrate, leaving already vulnerable groups disproportionately exposed to escalating environmental hazards.

This structural dynamic underpins what climate mobility scholars term the trapped population paradox (Black et al., 2011; Foresight, 2011). First systematically articulated in the UK government's Foresight report, the paradox reveals that populations exhibiting the highest levels of ecological vulnerability often possess the lowest capacity to migrate. This paradox highlights that severe and protracted environmental stress can actually reduce, rather than amplify, the capacity to migrate by progressively undermining the financial, social, and institutional resources that

movement requires (Ayeb-Karlsson et al., 2018). As livelihoods deteriorate, savings are exhausted, assets are liquidated or lost, and support networks fray, vulnerable households may find themselves unable to secure the capital, information, documentation, or legal protections needed to relocate, even as the risks they face intensify (Warner & Afifi, 2014). The trapped populations paradox thus underscores that migration is neither an inevitable nor a universally accessible response to climate change (Black et al., 2011). The ability to migrate is dependent upon existing and developing structural inequities which determine whose economic standing allows them to travel, whose situation is secure enough to provide legal pathways, and who is compelled to stay despite their dangerous circumstances (Ayeb-Karlsson, 2022). Being immobile is no longer just the choice to stay; rather, it becomes an imposed one due to the convergence of environmental destruction and economic hardship.

Trapped Population Paradox is especially valuable as a theoretical tool for examining *The Water Knife* because, even in conditions of environmental decay, movements are not homogeneous. In this novel, we observe people who are subjected to drought and lack of water, but at the same time, the economic distress that they undergo limits their ability to move elsewhere.

### **2.3 Vulnerability and Unequal Mobility**

Vulnerability has become a central concept in climate change research, shifting the focus from environmental hazards in isolation to the unequal capacities of individuals and communities to anticipate, respond to, and recover from climatic disruptions (Campins Eritja & Bentirou Mathlouthi, 2022). Rather than being treated as an inherent or static condition, vulnerability is understood as a dynamic outcome of the interaction between environmental risks and social, economic, and political inequalities. This perspective underscores that the same climatic event can have vastly different consequences depending on the resources, protections, and opportunities available to those affected.

This understanding reflects the argument that vulnerability is socially produced through

differential access to resources, rights, and adaptive capacity rather than determined solely by exposure to environmental hazards (Adger, 2006). The Pressure and Release model demonstrates how structural inequalities shape people's capacity to anticipate, withstand, and recover from environmental hazards (Blaikie et al., 2004). Governance structures and institutional arrangements also play a central role in producing unequal vulnerability by mediating access to resources, shaping decision-making processes, and enabling or constraining adaptive capacities (Ribot, 2014).

These dynamics are evident in a range of concrete cases. For instance, low-income urban communities living in informal settlements near floodplains and vulnerable hillside areas are highly exposed to the adverse impacts of heavy rains: lack of decent housing, drainage infrastructure, and insurance implies that minor floods may be disastrous for such groups through loss, displacement, and debt, while rich areas are secured against these threats thanks to infrastructure and rapid state interventions. In case of sea level rise and ocean warming, coastal fishing communities often lack secure tenure, representation, and credits: this means that they are more vulnerable than industrial fishing companies and tourism developers who have state support and policy consideration (Harper et al., 2023). The same is seen in heatwaves, when elderly people, outdoor workers, and those who do not have air conditioners and greenspaces are highly vulnerable compared to affluent areas with well-developed healthcare systems and climate control. In rural regions, smallholder farmers with limited land rights, credit, or extension services are more likely to experience crop failure, food insecurity, and forced asset sales under drought conditions, while large agribusinesses draw on irrigation systems, financial reserves, and state support to buffer losses.

Factors including poverty, tenure insecurity, lack of access to resources and essential services, poor institutional support, and unequal power relations impact the extent of climate effects and the ability of different groups to respond to them. These overlapping disadvantages indicate that climate

change does not affect communities equally but heightens existing inequalities, pushing marginalized groups like low-income communities, ethnic minorities, indigenous peoples, and immigrants into a more precarious situation. Consequently, vulnerability is understood as a manifestation of the social and political inequities, which makes issues of power, rights, and redistribution critical in tackling climate effects and adaptation.

In *The Water Knife*, the dichotomy is manifested through several types of experiences undergone by people in connection with drought and displacement. The author creates a distinction between those who have access to water and legal protection from others, which matters significantly in analyzing the reasons why some characters have options while others do not.

## **2.4 Zones of Abandonment**

This study also incorporates João Biehl's (2005) concept of zones of abandonment, which describes geographic enclaves produced when state institutions, civil protections, and public utility networks systematically withdraw support from specific areas of the country. The concept provides a spatial dimension to the trapped population framework by drawing attention to the environments in which vulnerable populations are left without adequate institutional protection.

In *The Water Knife*, this concept is useful for examining spaces where environmental degradation coincides with political abandonment and declining public infrastructure. Phoenix and the areas inhabited by vulnerable populations can therefore be read not simply as environmentally damaged spaces but as spaces in which access to water, security, infrastructure, and political protection is distributed unevenly. The concept of zones of abandonment consequently complements the trapped population paradox by connecting individual immobility to the spatial and institutional structures that produce it.

The theory framework thus combines the idea of trapped population paradox and that of zones of abandonment in order to consider environmental immobility as a state of inequality in mobility as well as an outcome of spatial organisation in

politics and economics. Although the framework of trapped population allows one to understand why people lack the capacity to move, the idea of zones of abandonment allows one to understand how certain areas become increasingly unsafe and unprotected. In such a way, the combination of theories allows one to understand how the issue of climate immobility is represented in *The Water Knife*.

To undertake an analysis of how the theme of environmental immobility has been addressed in the novel, *The Water Knife* by Paolo Bacigalupi, there emerges the need for adopting a multidisciplinary approach whereby practical studies of climate mobility will be merged with ecocritical textual analysis. To do this, the theme of environmental immobility will be analyzed from the following standpoints: spatial and hydrological governance, social inequity, journey of the character, and enclosure.

## **3.1 Phoenix as a Zone of Abandonment**

In *The Water Knife*, geography is determined solely by the water dates. The zone of abandonment framework of Biehl is brought alive by Bacigalupi, who creates a sacrificial city of Phoenix, Arizona that has had its municipal water rights stripped off by the regional forces around it through litigation and corporate violence. Phoenix does not succumb to water scarcity from nature; on the contrary, it is politically and legally destroyed. This happens when the Southern Nevada Water Authority and the water cartels of California employ their legal and physical means of cutting off Phoenix from the Colorado River water. The narrative captures this complete institutional withdrawal and militarized abandonment during the collapse:

*"When the water stopped, everything stopped. The pumps failed, the taps went dry, and the city died in place... The federal government didn't send help; it sent border guards to keep Arizona's dust from blowing into California."* (Bacigalupi, 2015, p. 42)

The withdrawal of state infrastructure transforms Phoenix into an open-air zone of abandonment where municipal services, emergency medical response, and law enforcement completely dissolve. Public governance is replaced by predatory private water companies like

ClearWater, which monetize basic survival and construct a hyper-polarized urban landscape. At one extreme of this spatial polarization stand the Taiyi arcologies, hyper-wealthy, self-contained vertical pyramids utilizing closed-loop recycling systems that capture 99.9% of moisture. These structures represent hyper-mobile capital and ultimate adaptive capacity, accessible exclusively to elite corporate populations. At the opposite extreme lies the uncontained urban sprawl of Palo Verde and the surrounding suburbs, where stranded residents rely on toxic, heavily marked-up water trucks or dangerous illegal taps into residual pipelines. This spatial divide demonstrates how hydrohegemony operates under extreme climate stress, as the arcologies thrive precisely because the surrounding city has been designated a sacrifice zone. Phoenix therefore emerges not simply as a city experiencing environmental collapse, but as a space in which institutional withdrawal and unequal access to water produce sharply differentiated conditions of survival and mobility.

### **3.2 Water, Power, and Differential Mobility**

In *The Water Knife*, mobility is not conceived as an automatic or universal response to environmental crisis but is represented as a form of privilege that is unevenly distributed across a deeply stratified society. Within this framework, water emerges as the central mechanism through which these inequalities are organized and enforced. More than a material prerequisite for survival, water functions as economic capital, political leverage, and a tool of territorial control. Control over water rights and infrastructures determines who can purchase security, cross boundaries, or enter fortified enclaves, and who remains exposed to environmental precarity. The novel frames mobility as an outcome of power relations in a climate-altered society rather than a straightforward or universally available adaptation to environmental stress.

Angel Velasquez exemplifies this unequal geography of mobility in concrete ways. In the novel's opening sequence, Angel travels into drought-ravaged Texas under official orders from the Southern Nevada Water Authority (SNWA),

moving through militarized zones and collapsing border infrastructures with forged identities, state-sanctioned documentation, and a clear mandate. His status as a "water knife" allows him to pass checkpoints, cross jurisdictions, and operate with a degree of impunity that is inconceivable for the refugees and local residents crowded into camps and collapsing towns. His capacity to move in, act decisively, and withdraw safely underscores that his mobility is structurally produced by his embeddedness within state-corporate power. He moves between hotel compounds, government offices, and criminal networks using SNWA credentials, insider information, and secure transport, even as ordinary residents struggle to pass roadblocks, pay for water, or escape the city. These scenes collectively frame Angel's mobility not as a reflection of personal resilience, but as a privilege rooted in his role within a violent regime of water governance.

It is clear that Angel's ability to move creates a contrast which becomes very significant in relation to the depiction of immobility of the climate in the novel. Angel's possession of institutional power, documents, knowledge, and safe transportation allows him to move around in spaces that are out of reach for those people who do not possess the kind of resources Angel does. It is this same system of water which enables Angel to move that creates more restrictions for others.

### **3.3 The Zoners and Secondary Entrapment**

Bacigalupi dramatizes the micro-level mechanics of the trapped population paradox through character trajectories that demonstrate how financial, legal, and social capital erosion converts climate refugees into an immobile subclass. This dynamic is most explicitly embodied in the figure of the "Zoners", refugees fleeing the environmental collapse of Texas who become stranded in Phoenix. Rather than achieving adaptive relocation, these individuals experience secondary entrapment. They exist without legal status, adequate financial reserves, or institutional protection, rendering them perpetually immobile within a hostile zone of abandonment.

In their collective identity, the “Zoners” further defines the concept of communities of people unable to escape. Because of the drought, legal land dispossession, and collapsing infrastructures, the inhabitants find themselves gathered in crowded camps, as well as in informal places at the edges of cities such as Phoenix. Those who wish to cross the border risk being denied right to cross, being exploited by greedy smugglers, and facing arbitrary raids. Many of the Zoners try to find better places, but they are unable to get necessary permits and tickets because of border restrictions. The Zoners remain in one place, either being unable to return to their native homes or go forward towards safety. Bacigalupi shows that climate-induced immobility is not a personal choice.

Along the same lines, Mahin, the refugee woman that Lucy interviews, exemplifies the idea of being stuck in a situation that leads nowhere. This is seen in her tale that includes constant movement from place to place, since each of them fails with no possibility of finding ways to escape from the trap of vulnerability. In the story of Mahin, people have to move from drought-stricken areas only to encounter violence from the border guards that refuse entry to everyone who lacks money and documentation. As seen, movement is not an option for Mahin, but a requirement that follows deterioration with no way out to ensure safety. Mahin’s case reveals the relationship between the deterioration of the environment, state policies, and access to water in the market and movement instead of relocation.

### **3.4 Maria Villarosa and Financial Entrapment**

Maria Villarosa, a young Texan refugee, represents the core thesis of the trapped population paradox: environmental displacement does not guarantee successful migration, but often exhausts household assets to the point of permanent immobility. Maria’s narrative revolves around her relentless desire to escape Phoenix for the water-rich Pacific Northwest. However, her lack of financial and social capital repeatedly thwarts her movement. Survival in Phoenix requires constant cash outlay for low-quality water, absorbing any

surplus income that might otherwise fund transit across state borders:

*“She needed money for a blue card. She needed money for a bus ticket north. She needed money just to buy water so she didn’t turn into a leather corpse on the sidewalk while she tried to save for the rest.”* (Bacigalupi, 2015, p. 88).

Maria’s case is indicative of the way in which the stress caused by climatic changes turns mobility into a commodity that is accessible only to richer people. Since Maria cannot accumulate any form of capital, she has to resort to more risky ways of making ends meet. This proves that for those people who are most vulnerable, climatic catastrophe functions as an economic process that makes them remain in dangerous zones. In order to survive, Maria has to do risky things like work in a strip club, sell water, and negotiate with criminals to accumulate enough money that will enable her to move elsewhere or buy security.

The way in which Maria moves around in Phoenix, from shelter to market and back again through the dangerous areas of the city, is an example of circulation without exit. She is very mobile at a micro level within the city but is structurally immobile relative to the fortified sites and transborder paths that could provide some relief. It is through her mobility that the core contradiction of the paradox of the trapped population becomes apparent: the crisis in the environment makes her desperate to flee but eats up the means to do so.

### **3.5 Militarized Borders and Manufactured Immobility**

Whereas socio-economic scarcity increasingly weakens the inherent capability of a person to move about, the institutionalized barriers tend to restrict the movement of the person to the surrounding environment. Bacigalupi, through *The Water Knife*, illustrates how the flexible boundaries within the state are institutionalized into militarized and sovereign boundaries that confine the victims within the abandoned area. As the water crisis worsens in the regions, the affluent states such as California and Colorado place guards on their borders and establish visa

systems including the blue card to prevent the displaced people from entering their borders.

California's strategy to deal with the hydrological disaster in the Southwest region is not providing humanitarian assistance but militarizing along the Colorado River and state boundaries. It would be near impossible for the Texas' Zoners and Arizona natives to enter into California without being backed by corporations. The novel highlights this militarized exclusion, noting that California did not view refugees as citizens in need, but as an existential threat to its own dwindling reserves:

*"California didn't want any more dust-bowlers. They had their own drought, their own problems, and plenty of guys with rifles sitting on the Colorado River to make sure nobody crossed without a blue card."* (Bacigalupi, 2015, p. 112)

It is in this way that environmental crisis can lead to both displacement and increased exclusion from territory. The border is a tool by which the state uses one's legal status, means, and political ties to separate who will have access to safety. It is those with the right paperwork and institutional backing who get to move into the safety zone while those without must remain in more dangerous spaces. By making the unauthorized crossing a crime, the state transforms geography into an outdoor prison for those with no other legal options left.

#### **4. Discussion**

##### **4.1. The Trapped Population Paradox in *The Water Knife***

In light of the above discussion, it can be shown that *The Water Knife* challenges one of the central assumptions made at the inception of the environmental migration literature concerning the assumed linear connection between rising environmental stress and greater mobility. Unlike in works that assume that higher environmental pressure and collapse will directly lead to people becoming mobile, *The Water Knife* reveals the phenomenon of the trapped populations through its depiction of the way in which the process of increasing climate change actively destroys the preconditions that allow movement to occur. Thus, although there is a massive drought in Texas and

Arizona and many people have moved to Phoenix as refugees, all of them are quickly trapped in slums, malls turned into refugee camps, and other makeshift areas where employment is rare and exploitation common. This becomes especially apparent through the fate of Maria who comes to Phoenix after having spent all of her savings on the journey and living a precarious life by selling water cards and bartering favors with cartels and their smuggling networks. Due to her precarious position and lack of any legal or political protection, Maria risks being deported and assaulted or extorted both by the state officials and non-state groups. In such circumstances, the process of increasing environmental pressure not only serves as an additional push for people but also deprives them of jobs, credits, and safe ways out of the place.

##### **4.2. The Structural Production of Climate Immobility**

In combination, the analysis demonstrates that the novel shows that mobility and immobility can be produced through structural co-production. On the one hand, the processes of water governance, border management, and water allocation in the water market that allow individuals with influence and wealth to become mobile result in the immobilization of others, while, on the other hand, the process of the production of the Phoenix as a space of abandonment serves as a ground for the creation of vulnerability, while financial immiseration, securitized borders, and the control over water infrastructures by corporations lead to the diminishing of opportunities for movement of the vulnerable people.

As a consequence, *The Water Knife* shows that immobility cannot be identified as the lack of migration. It is the result of multiple economic, political, and material relations. The inability of the individuals to collect sufficient resources for further migration, the imprisonment of the Zoners in their improvised houses, and militarized borders are some of the means of achieving immobility. Moreover, the destruction of water systems by corporations adds another layer to this complex issue, as they destroy the material infrastructure that can support life in this place.

### **4.3. Mobility as a Stratified Capacity**

The novel consequently presents mobility as a scarce and selective capacity rather than a universally available response to environmental crisis. Angel's ability to cross jurisdictions, access secure spaces, and operate through institutional networks contrasts with the restricted mobility of Maria and the Zoner population. His mobility is inseparable from his position within the state-corporate system governing water, while the mobility of vulnerable populations is constrained by their lack of financial resources, legal documentation, institutional protection, and access to secure routes. The contrast demonstrates that the capacity to migrate is distributed unevenly across the social structure.

Stratification is thus crucial to the trapped population paradox, as it may be the case that the individuals most affected by environmental hazards do not have the means to move away from such environments. The ability to migrate depends on the availability of certain resources, but these are not evenly distributed either, and may even dwindle because of environmental degradation. In this way, the novel dismisses migration as a solution that applies to all cases of climate change adaptation.

### **4.4. Climate Justice as an Implication**

These findings also carry implications for climate justice. The analysis demonstrates that climate-induced immobility is not simply an environmental outcome but a consequence of unequal access to resources, political power, and adaptive capacity. *The Water Knife* reinforces this inequity by depicting a society in which access to water, security, and mobility is determined by wealth and political influence, leaving economically marginalized communities exposed to escalating environmental risks. The experiences of characters such as Maria, together with the displaced refugee communities, illustrate how structural inequalities transform environmental vulnerability into climate immobility. In this sense, the novel demonstrates that the inability to migrate is not merely a failure of adaptation but a manifestation of climate injustice.

It is for this reason that the issue of climate-related displacement goes beyond merely assisting in migration because it entails developing policies to address inequalities and to help enhance the adaptive capacity of the most vulnerable communities. In doing this, *The Water Knife* expands the modern conception of climate migration by highlighting that justice is not only for those who migrate but also for those who are unable to do so.

### **4.5. Climate Justice as a Structural Solution**

In response to the vulnerabilities outlined in *The Water Knife*, it is important to incorporate climate justice as an integral part of a policy framework and humanitarian approach. In order to tackle the issues of climate mobility through the prism of climate justice, there needs to be a change from border enclosures and securitization to adaptation governance which centers human rights. Climate justice would mean, first of all, the recognition of immobility caused by climate conditions, making sure that the policy frameworks like the UN Sustainable Development Goals and Global Compacts on Migration allocate resources to help the individuals who find themselves in hazard zones, but lack the capital needed to leave. Secondly, climate justice would mean dismantling the hydro-monopoly which exploits individuals, using water not as a basic human need, but as a market commodity, and creating spatial sacrifice zones.

## **5. Conclusion**

This study has examined how Paolo Bacigalupi's *The Water Knife* critiques conventional, linear narratives of climate displacement by dramatizing the structural mechanics of forced immobility. By synthesizing climate mobility theory—specifically the trapped population paradox—with critical human geography's concept of zones of abandonment, the paper demonstrates that climate collapse does not universally result in adaptive relocation. Instead, Bacigalupi illustrates how hydro-hegemony, corporate resource monopolies, and militarized border enforcement actively manufacture trapped populations.

First, it becomes clear that Phoenix itself represents a macro-level zone of abandonment

wherein state apparatus deliberately withdraws civil infrastructure and water rights to make an entire urban zone become a spatial sacrifice zone to ensure elite enclaves such as the Taiyi arcologies remain functional. Second, the novel uses the characters to illustrate the idea of the trapped population paradox – for example, with the case of Maria Villarosa; as a result of a constant financial drain of simply surviving within a drought-ravaged land, one lacks necessary capital to move beyond the borders. Finally, it becomes clear that immobility is imposed not only by corporate players (“water knives” destroying alternate water infrastructure) but also by state apparatuses of border control, such as California militarized checkpoints.

### Scope and Limitations of the Study

The scope of this research is centered on qualitative ecocritical analysis, focusing on the literary representation of hydro-politics, spatial governance, and climate mobility within a contemporary American speculative fiction context. While this study draws upon empirical climate migration frameworks to evaluate speculative narrative structures, it remains an interpretive textual critique rather than an empirical sociological study of real-world climate refugees. Future research could expand this scope by conducting comparative analyses across international climate fiction—specifically from the Global South—or by integrating empirical field data on contemporary hydro-conflict with literary representations of resource wars.

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