

# Adapting to Climate Change through Migration

## Authors:

Justus Enninga<sup>a</sup>

Nathan P. Goodman<sup>b</sup>

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<sup>a</sup> Justus Enninga is a PhD candidate in the Department of Political Economy at King's College London.

<sup>b</sup> Nathan Goodman is a Senior Fellow at the F.A. Hayek Program for Advanced Study in Philosophy, Politics, and Economics at the Mercatus Center at George Mason University.

## **Abstract**

Climate change is ongoing, which means that adaptation to climate change is increasingly important. Many individuals in the Global South will respond to climate change by attempting to migrate to the Global North. Government policies in response to this migration will have significant consequences for migrants, residents of sending countries, and residents of border regions. Currently, policy responses to climate change-induced migration frame it as a security problem to be solved using militarized force. This orients policymakers towards solutions administered by hierarchical, monocentric bureaucracies, which feature significant knowledge problems and incentive problems. We contrast this with a polycentric approach, in which local governments, private firms, and voluntary associations adapt to the changes caused by climate migration. We argue that such an approach would reduce the human costs of climate change.

Keywords: climate change, climate migration, climate adaptation, border militarization, institutional analysis, polycentricity, polycentric governance, military-industrial complex, environmental governance

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## Introduction

Climate change will impact humans in many diverse ways. The greatest impact, however, will be felt by people living in the Global South. Today, only 1 percent of the world's surface is considered a hot zone where human life is barely possible, with most such hot zones located in the Sahara region. But the share of hot zones on the planet's inhabitable surface is likely to grow to 19 percent by 2070 (Xu et al. 2020, 11352). Most of the future hot zones on the planet are situated in the Global South—mostly in western, central and eastern Africa, South America, and Southeast Asia. This development will make life in these populous parts of the world far less hospitable. While technological change and growing wealth might help to adapt to a heating climate locally (Kahn, 2016), rising temperatures, along with conditions such as droughts and natural disasters, will put pressure on citizens in countries most heavily affected to consider migration, both migration within the Global South and migration to the Global North. In addition, the expected economic impacts of climate change are geographically heterogeneous (Krusell and Smith 2022). This will create economic incentives to move away from locations where changing climate will adversely impact economic opportunities.

Migration can be understood as one available means of adapting to climate change (Adams and Adger 2013; Adger and Adams 2013). How this adaptation proceeds will vary depending on the institutions that regulate migration and enforce migration restrictions. Currently, public officials who discuss climate migration largely conceptualize it as a security threat. This “securitization” of climate migration orients officials towards responding using the power of militaries and border security forces. These tend to be hierarchical bureaucracies characterized by centralized power. In other words, they are relatively *monocentric* organizations. What are the likely consequences of entrusting such monocentric hierarchies to regulate migration? We argue that monocentric management of migration displays predictable problems of both *knowledge* and *incentives*. We then engage in comparative institutional analysis by contrasting monocentric migration management with several types of polycentric systems, namely markets, civil society, and local government. Our analysis suggests that monocentric management of migration is likely to stifle value-added adaptation, whereas polycentric systems enable the discovery of value-added adaptation.

Our arguments seem applicable to migration in general, not just climate change–induced migration. However, we focus on climate change–induced migration for three reasons. First, the legal status of climate migrants is in flux, as there is not yet a determinate body of law specifically addressing climate change–induced migration. As Keyserlingk (2018, 2) explains, “With a view to all these people who are induced to migrate because of climate change—be they voluntary or forced migrants—there exists a normative gap in international law. While there may be complementary protection under existing human rights law, there are no tools designed specifically for dealing with the existence of climate migrants, let alone with their numbers.” This legal uncertainty makes the institutions that regulate climate migration an especially important topic for scholarly attention.

Second, as already noted, climate change–induced migration is being conceptualized as a security threat. This securitization of migration focuses analysts' attention on monocentric and militarized responses to climate change–induced migration, which makes comparative institutional analysis of monocentric and polycentric approaches to this issue especially important.

Third, exploring the role of polycentricity in climate change–induced migration broadens our understanding of the role of polycentric governance in addressing climate change. A substantial scholarly literature explores polycentric approaches to mitigating climate change (Rayner and Jordan 2013; Ostrom 2014; Cole 2015; Jordan et al. 2015; Jordan et al. 2018). A smaller literature examines polycentric approaches to climate change adaptation (e.g., Hamilton and Lubell 2019). Some scholars examine the role of polycentric governance in adaptation to climate migration (Fitzpatrick and Monson 2020). We contribute to this literature by offering a theoretical framework to contrast polycentric governance with monocentric governance of climate migration, with particular focus on the effects on adaptability and welfare.

We develop our argument in four steps:

1. We delve deeper into the theoretical framework of polycentric governance and introduce the differences between monocentric and polycentric institutional arrangements.
2. We demonstrate how increasing securitization prioritizes monocentric approaches to coping with climate change–induced migration.
3. We demonstrate how centrally imposed immigration restrictions in general, and restriction of climate change–induced migration in particular, are a case of harmful monocentric governance. Three reasons make monocentric and militarized governance of borders detrimental to climate change–induced migration: monocentric militarization suffers from the same knowledge problems as centrally planned economies, it is an easy target for rent-seeking by private defense contractors, and it reorients the attention of relevant government agencies from the local stakeholders to the centrally organized providers of funding and military equipment.
4. We show how a polycentric approach allows for better adaptation to climate change–induced migration. The three polycentric mechanisms of markets, civil society and community governance are most likely to help adapt to the challenge of climate change–induced migration if legal institutions allow them substantial space to work freely.

## **Polycentric and Monocentric Institutions**

To study what institutional arrangements are conducive to climate adaptation via migration, we leverage the concept of *polycentricity*. A system is polycentric to the extent that it features “many centers of decision-making that are formally independent of each other” (V. Ostrom, Tiebout, and Warren 1961, 831). This can be contrasted with a monocentric system. Crucial to this contrast “is the issue of the monopoly over the legitimate exercise of coercive capabilities” (Aligica and Tarko 2012, 245). Enforcement powers in a monocentric system are “vested in a single decision structure that has an ultimate monopoly over the legitimate exercise of coercive capabilities,” while in a polycentric system “many officials and decision structures are assigned limited and relatively autonomous prerogatives to determine, enforce and alter legal relationships” (Ostrom 1972 in McGinnis 1999, 55–56).

Thus, polycentricity contains three basic features. As mentioned, a governance system becomes polycentric when it allows *multiple legally autonomous decision centers* the “active exercise of different opinions” (Aligica and Tarko 2012, 254) and thereby allows solutions that are independent

from each other. Second, in contrast to mere decentralization of decision-making and anarchy, polycentric systems are bound by a *single overarching set of rules*. This feature also demands that the different decision centers are involved in drafting and deciding on the rules collectively. The third feature refers to the *spontaneously generated order* emerging from free exit and free entry into the polycentric framework. Free exit and free entry will lead to “patterns of organization within a polycentric system [that] will be self-generating or self-organizing” (V. Ostrom 1972 in McGinnis 1999, 60).

There are several significant benefits associated with polycentric governance arrangements. Among them are four that are crucial to our argument. One is that polycentric governance enables the use of local knowledge. Within a polycentric system, individuals with relevant local, context-specific knowledge of the facts on the ground are likely to have significant autonomy to make decisions based on that knowledge. By contrast, in a monocentric system officials have discretionary power to impose governance arrangements on individuals and regions whose local contexts they do not understand.

This epistemic element of polycentricity is key to Michael Polanyi’s (1951) analysis of polycentricity. Polanyi focused his attention on the scientific community as a polycentric system, in which contestation among scientists promotes processes of social learning and error correction. Building on the analysis of the scientific community, he also brought the notion of polycentricity to the already ongoing socialist calculation debate (Lange 1938; Mises 1922). Polanyi saw the market “as a polycentric system involving a web of many agents that constantly adjust their behavior to the decisions made by others. Socialism implies the transformation of the system into a monocentric one” (Aligica and Tarko 2012, 238). By imposing order upon the system, socialists “attempt to reach at (Pareto) economic optimum states faster and better than the market by means of a command-and-control strategy that is supposed to reduce the misallocation of resources, something supposedly inherent and unavoidable in a polycentric market system” (Aligica and Tarko 2012, 238). Yet these attempts at monocentric planning face severe epistemic problems:

First of all, preferences are subjective and thus the information about the demand of any good or service cannot be guessed from an outside vantage point. It is only revealed by the actual behavior of agents. Second, the amount of information required to manage all the production processes is enormous and cannot possibly be gathered and analyzed in a centralized fashion. Consequently, in a monocentric-socialist system, the economic ideal can neither be derived nor imposed by central authorities. The system has to be allowed to move toward the “optimum” (ideal) in a trial-and-error fashion. (Aligica and Tarko 2012, 239)

While socialists attempt to impose a monocentric plan in the name of efficiency and optimality, they hamper the processes of discovery, experimentation, cooperation, and coordination that enable real polycentric markets to move in the direction of an optimum.

A second epistemic and productive advantage of polycentricity relates to the notion of *coproduction*. Polycentric governance arrangements are also generally more likely to facilitate coproduction than monocentric arrangements are (see Aligica and Tarko 2013; Ostrom 1996; Goodman 2017). Some goods, such as pencils, can be produced without direct involvement by the consumers of these goods. Other goods, however, require inputs and participation from the consumer to effectively produce the good. For example, the quality of education depends on student participation. No

matter how skilled teachers and administrators are, education will be lower quality if students do not participate. Similar dynamics are present with security and policing, as public safety depends on a range of factors supplied by community members, rather than simply on the actions of professionals such as police (Boettke, Palagashvili, Lemke 2016). Polycentric arrangements tend to be better at facilitating coproduction, because local governance arrangements can adapt to the preferences, norms, and values of citizens on the ground. This adaptation creates space for governance to be customized in a way that makes community members want to collaborate in the coproduction process.

A third advantage of a polycentric system is that there is no single point of failure. Polycentricity creates room for a high degree of autonomy among different centers of decision-making. Some centers of decision-making may use their autonomy in undesirable ways, creating failures within their sphere of influence. However, their failures are less likely to cause systemwide failure. By contrast, in a monocentric system, the leaders of the central hierarchy can impose policies or other decisions across the entire system. If these decisions turn out to be harmful, this can cause harm across the entire system. For this reason, we should expect polycentric systems to be more robust and resilient than monocentric systems.

An additional fourth benefit of polycentric systems is that they can be better at warding off the harmful consequences of rent-seeking, rent extraction, opportunism, and cronyism than monocentric systems are. Within a monocentric system, individuals at the top of a hierarchy have the power to dispense favors, extract rents, and act opportunistically. This creates strong incentives for others to lobby these officials and seek to ingratiate themselves to them, which can result in substantial resources wasted through rent-seeking (Tullock 1967; Krueger 1974). Within a polycentric system, by contrast, officials are subject to competition along multiple margins. This competition limits their range of discretion and gives those harmed by opportunism, cronyism, or rent-seeking the opportunity to exit leaders' jurisdictions. As Elinor Ostrom explains, a "modified form of competition—of vying for citizens to resolve problems and procure services in an urban neighbourhood—is one method for reducing opportunistic behaviour even though no institutional arrangement can totally eliminate opportunism with respect to the provision and production of collective goods" (2005, 3).

A broad theoretical and empirical literature explores these features of polycentric governance. In the following sections, we explore the relevance of these features for climate migration. We examine the incentives for national governments, relatively monocentric institutions, to engage in border militarization. Then we discuss how polycentric governance arrangements could enable more adaptive and functional governance related to climate migration.

# The Securitization of Climate Change Promotes Monocentricity

Many key decision-makers within western governments conceptualize climate change-induced migration as a security threat. Various scholars have criticized this “securitization” of climate change (Dabelko 2009; White 2011; Miller 2017; Keyserlingk 2018). However, one underappreciated aspect of this securitization is the extent to which it prioritizes monocentric approaches to coping with climate change-induced migration.

Various elected officials discuss climate change-induced migration as a security threat. For instance, in 2015, President Barack Obama gave a commencement address to the US Coast Guard Academy in which he discussed the important role that climate change will play in Coast Guard cadets’ careers. He discussed climate change, including climate change-induced migration, as security threats that the cadets would need to respond to (Miller 2017, 49–58). The Coast Guard has been involved in a variety of militarized responses to migration (Dunn 1996; Miller 2017, 58). These include participation in war games designed to simulate interdiction, detention, and deportation of migrants in a “mass-migration” scenario (Miller 2017, 58). President Obama’s rhetoric suggests that such operations are likely to be among the major policy responses to climate change-induced migration. Similar rhetoric has come from the legislative branch. For example, in one 2010 documentary, “Then U.S. Speaker of the House Nancy Pelosi and Senator John Kerry are interviewed, with both arguing that ‘climate refugees’ are a national security concern” (White 2011, 73).

The White House recently published a *Report on the Impact of Climate Change Migration*, which further illustrates the monocentric tendencies in American climate change responses (The White House, 2021). The report warns that “climate change related migration could cause greater instability among U.S. allies/partners and thereby cause a relative strengthening in adversary states. In addition, adversaries could incite or aid irregular migration to destabilize U.S. allies/partners” (8). Even though the report accepts some role for bottom-up responses, the main answer to the alleged danger of immigration consists of monocentric approaches. The report emphasizes financial support from the top to the lower levels of decision-making and surveillance (27–28, 31–31). The authors, for example, consider certain early-warning systems that monitor climate change impacts and would benefit when integrated with “migratory movement systems such as U.S. Immigration and Customs Enforcement’s Biometric Identification Transnational Migration Alert Program (BITMAP) as well as foreign counterpart migratory movement systems” (11). This treats climate change as a justification for expanding a monocentric bureaucracy’s surveillance capabilities.

Similar perspectives have been promulgated by leading figures in the military and other national security state bureaucracies, such as the Department of Homeland Security. For instance, journalist Todd Miller describes a conversation he had with Brigadier General Stephen Cheney about these issues:

When I asked Stephen Cheney at the 2015 conference about how climate change would directly affect the U.S. southern border he told me that in fact the night before, in Las Vegas, he had had dinner with the commander of Southern Command, General John Kelly. Of course, he had no idea at the time of Kelly’s future as Homeland Security Secretary. What Cheney said was, ‘We did talk border security and what’s driving immigration and there’s no doubt that climate change is

having an impact there as well. As it gets hotter, as the catastrophic events become more frequent, it's having an impact on how they grow their agriculture in the Latin American countries, and employment is becoming a problem, and it's driving people up north. So he's seeing that problem.' (Miller 2017, 63)

Both elected officials and unelected bureaucrats see climate change–induced migration as a security threat that demands a response from centralized government.

By framing the problem in terms of national security, these officials reinforce a view that suggests responding to climate change–induced migration is something that must be done at the national level by hierarchical organizations within the national security state. These organizations are quite monocentric. To illustrate this, it is worthwhile to examine the positions of the officials we have quoted. John Kelly and Stephen Cheney both served in the United States military, where they were part of a hierarchical chain of command wherein everyone ultimately answers to a single center of authority: the President of the United States, also known as the Commander in Chief. This is a monocentric organizational structure. John Kelly later went on to serve as Secretary of Homeland Security, which meant that he was part of the president's cabinet and the head of a similarly monocentric hierarchy within the Department of Homeland Security, a bureaucratic agency that houses such security organizations as the US Coast Guard, Customs and Border Protection, and Immigration and Customs Enforcement. These organizational structures are not characterized by bottom-up or contestable polycentricity, but by monocentric hierarchies.

Since these types of organizations are in the forefront of planning and policymaking related to climate change–induced migration, it is useful to examine the consequences of monocentric organization in the governance of migration. The next section does just that.

## **Immigration Restrictions as Imposed Monocentric Orders**

When nation-states or federations of nation-states establish and enforce immigration restrictions, this entails a relatively monocentric government imposing a single plan across a large jurisdiction. In the famous words of the political philosopher Joseph H. Caren: “Borders have guards and the guards have guns. This is an obvious fact of political life, but one that is easily hidden from view—at least from the views of those of us who are citizens of affluent western democracies.” (1987, 251). With these guns, the central government imposes a centralized, hierarchical bureaucracy and coercively interferes with a rich polycentric tapestry of private enterprises, families, non-profit organizations, and local governments. To illustrate how this process works, it is worth unpacking precisely what immigration restrictions do.

## **Immigration Restrictions as Central Planning**

Currently, governments restrict the quantity and mix of immigrants that are allowed to migrate into their territory. Within the borders of a nation, migration is a polycentric market process. Workers make choices about which jobs to apply to, employers make choices about which applicants to hire, and workers choose which job offers to accept. Prospective tenants apply to rent apartments while landlords and property management companies choose which applications to



accept. Buyers and real estate agents negotiate the purchases of homes. Individuals ask family members, romantic partners, friends, or other prospective roommates whether they may move in with them. Through a series of free agreements, individuals move between jobs, residences, cities, and states based on what they value. While this polycentric process is imperfect, it generally results in coordination of plans.

When it comes to international migration, national governments, as well as international federations like the European Union, interfere with this polycentric process. Rather than allowing individuals and firms to negotiate with one another regarding who will move across borders, governments restrict both the quantity and mix of immigrants allowed to move across borders. For example, in the United States, as of 2016:

Some people are let in through family reunification, some through high-skilled H1-B visa programs, some through H-2 agricultural and temporary work visas, and some through refugee status. The United States allows a total of 675,000 permanent immigrants into the country annually. Family unification accounts for the majority of these visas at 480,000, followed by 140,000 employment-based visas, and the diversity visa lottery adds another 55,000 individuals. Additionally, the President and Congress determine the number of refugee visas to issue each year. In fiscal year 2013 they issued 70,000 of these visas. Each of these categories has additional quantitative subdivisions based on family relationship, job skills, or region of origin. (Powell 2016, 344)

How do officials know how many visas to allocate to each category, or which migrants to grant visas within each category? Without a polycentric market process, government officials cannot discern which workers would generate the most value for employers or consumers, which family reunifications would generate the most value for families, and so on. The requisite knowledge is dispersed among many individuals and must be revealed through action rather than assumed by migration planners who hold political power.

The Canadian government allocates visas based on a “points system” that “awards ‘points’ to a potential immigrant based on their educational level, English and French language ability, work experience in particular industries, whether they have a job prearranged, age, the education of their spouse, and their ties to Canada” (Powell 2016, 346). George Borjas argues that “the Canadian point system ‘works’ because it generates a more skilled immigrant flow” (1999, 59). However, while the points system can alter the mix of immigrants so that more of them possess certain skills, achieving this goal “has nothing to do with coordinating the plans of entrepreneurs with the plans of would-be workers and those who would consume the products that the immigrants make” (Powell 2016, 346).

Central planning of migration causes a variety of distortions. It prevents migrants from moving to places where they would produce more value for consumers and earn substantially higher wages (see Clemens 2011; Clemens, Montenegro, and Pritchett 2019). In addition, the structure of production has been distorted. “Our own physical capital stock, as well as our human capital stock, has been distorted to cope with an artificial shortage of low-skilled labor caused by migration restrictions” (Powell 2016, 347). Homeowners buy more appliances to do tasks they might otherwise hire immigrant workers to do. Farmers invest in more capital-intensive production processes due to the reduced labor supply. Women invest less in human capital accumulation, partially

because “parents lose time from the work force in their 20s or 30s in order to raise children that could have been cared for inexpensively by nannies if the global poor were allowed to migrate” (347).

In addition to distorting the structure of production, central planning prevents people from adapting their plans to changing conditions. As climate change alters which regions are best suited for agriculture, what homes are safe from natural disasters, and what places are desirable to live, people will wish to revise their plans. To the extent that a polycentric process of plan revision and coordination is replaced by monocentric central planning, climate adaptation will be hampered.

## **Rent-Seeking and Border Militarization**

Immigration restrictions interfere with individuals’ plans, which creates strong incentives for prospective migrants to seek to evade these restrictions. As a result, “dynamics of intervention... are set in motion through quantitative restrictions on immigration. Quantitative restrictions leave gains from trade to be seized by immigrants who migrate illegally. Increased illegal migration creates demands for greater border security” (Powell 2016, 347–348). Often, political leaders find that they can signal their seriousness about border security via *border militarization*. When migrants visibly cross borders illegally, voters and anti-immigrant activists may hope for leaders to visibly demonstrate their commitment to “law and order.” Militarizing border policing can display this commitment quite effectively, regardless of its effectiveness at controlling migration. Andreas (2011, 11) argues that “the popularity of the border as a political stage is based as much on the *expressive role* of law enforcement (reaffirming moral boundaries) as it is on the *instrumental goal* of law enforcement (effective defense of physical boundaries).”

Border security issues are treated as matters for the central government, which means that border enforcement is typically more monocentric than many other law enforcement matters. This reinforces the tendency towards militarization for at least two reasons. First, national governments are also the home of national militaries and therefore possess both physical capital and human capital suited for militarized social control. Second, central governments often have close ties to defense contractors, who have incentives to lobby for additional purchases of military hardware.

Existing physical and human capital play a crucial role in explaining the monocentric and militarized nature of present-day border control. Coyne and Goodman (2022) argue that a highly advanced military-industrial complex makes it relatively cheap to repurpose military capital from foreign intervention to border control. Military interventions in the past have left a considerable stock of human and physical capital aimed at militarized social control. Physical capital like Blackhawk helicopters and human capital like “skills, knowledge, habits, and expertise related to surveilling, intimidating, and controlling other people” cannot be used for every task, but they are multi-specific: They are “useful for foreign wars *and* for patrolling the U.S. Mexico border” (6–7). Since officials in immigration enforcement agencies can choose between different strategies to control borders, it is likely that when military-specific capital is made more available they will choose the relatively cheap route of militarization. After all, the needed capital is already there. The monocentric organization of the military in countries of the Global North, therefore, reinforces the monocentricity of militarized borders.

The close ties of the central government with defense contractors are a second reason for stronger militarization of border controls. Coyne and Goodman (2020) describe in detail how “private

defense contractors, who build and sell surveillance equipment, have strong incentives to lobby for more spending on these surveillance systems” (174). The authors outline different channels through which government is influenced by privately interested parties. Firms lobby legislators directly, they engage in extensive financing of campaigns for certain politicians, and they exert influence on government agencies (see also Golash-Boza 2009; Miller 2019). The influence of private defense contractors on politicians and bureaucrats results in lucrative contracts to maintain and further expand the monocentric militarized border system. This not only leads to costs for the domestic taxpayer, but also to immense costs for prospective climate change–induced migrants. A militarized border involves direct violence against migrants by border guards. It shifts resources away from attempts to process and admit migrants and travelers in an orderly manner, instead directing those resources towards shows of force and investments in surveillance technology. It diverts migrants towards more dangerous routes, causing well-documented increases in migrant deaths (Chambers et al. 2019; Bansak, Hall-Blanco, and Coon 2022). Moreover, it undermines the privacy and civil liberties of citizens living in border regions (Coyne and Goodman 2020).

Unfortunately, it is unlikely that political officials will react to these costs. The incentives are misaligned and “those who reap the benefits [private defense contractors] have the strongest incentive to influence these policies” (176). These perverse incentives are likely to continue to shape responses to climate migration. Staff at defense contractors, such as Lockheed Martin, and officials from the Pentagon attend the same events discussing the national security implications of climate change (Miller 2017), which raises concerns that the same rent-seeking and cronyism that has shaped border policies will shape the response to climate migration.

## **Border Policing and Fiscal Attention**

The problem of misaligned incentives in border policing becomes particularly apparent when we consider how a relatively monocentric government imposing a single plan across a large jurisdiction shifts fiscal attention away from local constituents at the border and towards priorities of policymakers in the monocentric central government.

Boettke, Palagashvili and Piano (2017) address problems in American policing and argue that the last decades have seen a move from local policing to federal policing, which has led to a decrease in trust in police agencies and less efficient law enforcement. They argue that a change in the funding structure of American policing affected the choice set and associated payoffs of local police departments. Since the 1970s federal involvement and transfers in policing have expanded, which in turn has softened “the budget constraints of local police, and thereby altered the payoffs of local police departments to direct their resources and attention to their new funding sources—mainly, the U.S. federal government” (909). The redirection of interest from a localized and polycentric base to the relatively monocentric federal government incentivized police forces to pursue initiatives such as the “war on drugs” and “war on terror,” both of which did not align with the interests of the local population whom the police forces are supposed to serve. If the funding sources of social control are centralized at the top, so is the attention of the enforcement on the ground.

The problem of an increasing fiscal attention to the federal government directly applies to the problem of increasing monocentric organization at the border. Coyne and Goodman (2022, 7–8) note the role that federal border security policies played in shifting local police departments’ fiscal attention and militarizing police. The federal government shared military hardware with

local police, but limited its use to the enforcement of immigration and drug laws. In 1984 federal military capital—physical and human—was brought into the US Border Patrol through the Border Patrol Tactical Unit (BORTAC) “to serve a civil disturbance function in response to rioting at legacy Immigration and Naturalization Service detention facilities” (Customs and Border Protection 2014). BORTAC agents “received special training in riot control, counterterrorism, and other paramilitary activities similar to the training provided to U.S. marshals and the FBI Special Weapons and Training (SWAT) teams” (Dunn 1996, 52). The militarization of the border driven by federal funding was driven through the Reagan, Bush, and Clinton administrations. The last, notably, expanded the program by authorizing the Law Enforcement Support Office (LESO) to implement the 1033 Program, which transferred military hardware from the Department of Defense to police departments. During this period, the Border Patrol acquired “infrared night scoped, thermal imaging devices, motion detectors, inground sensors, and software that allowed biometric scanning of all apprehended migrants” (Coyne and Goodman 2022, 12; Grandin, 2019).

How did militarization and centrally-provided resources affect policing? The empirical studies on the 1033 Program are mixed. But as the work on fiscal attention by Boettke, Palagashvili, and Piano (2017) might indicate, there is evidence that the program led to an increased number of deaths of suspects at the hand of the police (Delehanty et al. 2017; Lawson 2019), police reputation was harmed, and SWAT teams were employed more often in communities of color (Mummolo 2018). Even though there is some evidence that military hardware transfer led to some reductions in crime rates (Bove and Gavrilova 2017; Harris et al. 2017; Masera 2021), there is also evidence that part of the reduction results from crime being displaced into neighboring jurisdictions (Masera 2021). Coyne and Goodman close their analysis of federally funded militarization of border control by saying that “despite the lack of consensus on the effects, both physical and human capital continue to flow” from the federal government to border security agencies.

Immigration control has become increasingly restrictive and therefore monocentric over the last decades. This has led to several problems. Immigration restriction as an imposed monocentric order is likely to be inefficient because it is likely to fall victim to the same knowledge and incentive problems as a planned economy. A monocentric immigration regime will attract rent-seeking behavior by private defense contractors, which is hard to rein in because policymakers who could change the system are the ones with the greatest incentive to keep the system afloat. Lastly, a monocentric system is less likely to cater to local stakeholders because funding and material provision is increasingly provided by the federal government, which leads law enforcement to redirect its attention to federal officials and not to local stakeholders. Trust in local police is therefore eroded.

The problems of increased immigration restrictions and monocentric border control are already a challenging issue in the present-day immigration policy debate. Considering the issue of climate change-induced migration, the problems of monocentric immigration restrictions are likely to intensify. In a 2003 report for federal decision-makers, Schwartz and Randall (2003) discuss a hypothetical climate change scenario and possible responses, including a situation where the “Department of Defense manages borders and refugees from Caribbean and Europe” (17). For years, American officials have considered the possibility of using the national security state to harden borders in response to climate change. Not only American officials, but Europeans, too consider the impacts of climate change migration on their borders. The Justice and Home Affairs Agencies’ Network combines different agencies that contribute “to the implementation of EU’s objectives in the fields of migration, asylum and external border management” (JHA 2022). The

Network, with the European Border and Coast Guard Agency (Frontex) at its helm, is aware of the “challenge” of climate migration (21).<sup>1</sup> In two recent publications (JHA 2022; Frontex 2021), the agencies identify climate change as a threat to European borders and propose centrally devised, comprehensive means to manage the EU’s external borders, even with the help of monocentrically employed “artificial intelligence-based capabilities” (Frontex 2021, Cover).

This bolsters concerns that fears of climate migration will be used as a pretext to harden borders (Boas et al. 2019). Therefore, it is increasingly important to ask how a more polycentric approach to migration might be beneficial.

## **Polycentric Adaptation in Border Communities**

Immigration restrictions enable a set of decision-makers from central governments to impose a single plan, attempting to artificially control migration and subordinate it to a monocentric hierarchy. Allowing polycentric systems to operate and adapt from the bottom up enables individuals, including climate migrants and individuals in both sending and receiving communities, to discover the adaptations that work for them. In this section, we discuss how polycentricity in markets, civil society, and local government can enable this type of bottom-up adaptation.

### **Markets**

As discussed in the previous section, immigration restrictions constitute a form of central planning that interferes with the operation of labor markets, housing markets, and entrepreneurial talent markets. Allowing a greater scope of freedom for market participants, such as migrants, employers, homeowners, and landlords, to make their own decisions would unleash a polycentric market process that would benefit migrants and non-migrants alike.

One way to unleash polycentric decision-making is to abolish numerical restrictions on immigration. A numerical restriction on immigration entails government officials setting an upper limit on the number of immigrants who may enter the country.

Numerical restriction requires several difficult interrelated decisions. The first decision pertains to the number at which to set the ceiling. The second decision is whether to place a ceiling on all immigration or instead to have two immigration streams, one numerically limited, the other numerically unlimited. If the second decision is to have two streams, then the third decision pertains to the characteristics to be used for exempting one stream from the ceiling. The fourth decision, applying to all numerically limited immigrants, is how to choose from among a pool of applicants, for example, by a first-come/first-served rule or by lottery or by granting preferences or points. If the outcome of the fourth decision is to grant preferences or points, then the fifth decision pertains to the criteria to be used. A sixth decision is whether to add unused visas to the next year’s supply of visas. (Jasso 2021, 2)

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<sup>1</sup> Member Groups of JHA are Frontex, European Union Agency for Fundamental Rights, EUROPOL, European Monitoring Centre for Drugs and Drug Addiction, European Union Agency for Asylum, European Union Agency for Law Enforcement Training, Eurojust, European Institute for Gender Equality, and eu-LISA.

Each of these decisions is made by individuals in the central government, rather than autonomous individuals or organizations. Government officials choose the number of immigrants as well as which categories of immigrants are preferred.

If numerical restrictions on immigration were abolished, there would be more room for immigrants to autonomously choose whether to move, and immigration could increase in response to changing conditions. For instance, as climate change renders some areas less habitable or less productive, more individuals would be free to migrate to countries that are more habitable or have better productive opportunities.

Prospective migrants would be able to try moving to a new place, starting a business, applying for jobs, or applying their creativity in any number of ways. Individuals interested in collaborating with prospective migrants could make deals with them without needing to acquire government permission. All of this would reduce the barriers to immigrant entrepreneurship and mutually beneficial exchange with migrants, enabling individuals to use their local knowledge to discover positive-sum ways to adapt to new conditions, including conditions that result from climate change. Unleashing this type of polycentric market process would have significant benefits.

Research on the “place premium” shows that workers could earn substantially more by moving to rich countries and that this reflects their higher productivity in wealthy countries (Clemens, Montenegro, and Pritchett 2019). This understates the economic benefits of immigration liberalization because immigrants also act as entrepreneurs and innovators (see Bedi and Wiseman 2021; Bedi and Jia 2022; Jia and Bedi 2022; Azoulay et al. 2022).

However, even if some numerical restrictions remain, there are ways that they can allow *more* polycentric market decision-making than they currently do. One option is to liberalize immigration by increasing the number of available visas. Another is to allow more private sponsorship of immigrants, which would shift the decision-making power over who is permitted to migrate from government officials to private individuals and firms who would be empowered to grant permission to those they wish to invite or hire.

One form of current private sponsorship is the Welcome Corps, a program launched by the Biden administration that allows individual Americans to directly sponsor refugees to resettle in their communities. A second example is the Uniting for Ukraine program which allows private citizens to guarantee to provide financial and social assistance to refugees from Ukraine. Ukrainians admitted through this process can stay for up to two years in the United States.

So far, these programs have largely applied to refugees from war-torn regions like Afghanistan, Ukraine, or Venezuela, but schemes like them will become especially relevant with regard to migrants and refugees when they adapt to climate change and its consequences. Said programs will reduce the likelihood of monocentric governments making mistakes in their decisions about how many additional immigrants from regions impacted by climate change are to be welcomed in the nation. Instead, individuals, companies, and regions within the nations of the Global North could decide in a more polycentric fashion how to adapt.

Other options include proposals for a market for visas or tradable immigration quotas (Becker, 2011; Fernández-Huertas, Rapoport, 2014). While this still allows the state to set a cap on the number of legal immigrants, it enables market processes to aid the allocation of immigration

permissions. Each of these options has significant disadvantages compared to abolishing numerical restrictions entirely, but each of them also allows markets to work to a greater extent than they currently do.

Some may object that while such market liberalization enables mutually beneficial exchange between migrants and the citizens of receiving countries, there may also be negative externalities that result from migration. In this view, the polycentric market process benefits migrants and those who trade with them, but may also impose inefficient costs on third parties. The monocentric imposition of immigration restrictions may be efficiency enhancing under these circumstances. While this is theoretically possible, there are several reasons to doubt that immigration restrictions constitute a welfare-enhancing response to negative externalities of immigration.

The first is the knowledge problem that we have already mentioned. Absent some process that reveals the costs associated with the negative externalities and discovers welfare-enhancing ways to reduce these costs, how can migration planners know that their interventions are welfare enhancing? A second problem, closely related to the first, is that typical immigration restrictions take the form of command-and-control regulations. In contrast with Pigouvian taxes, which increase the price individuals must pay and thereby create incentives for them to discover least-cost methods for reducing an externality, command-and-control regulations prescribe a particular solution to the externality. This tends to be more socially costly than allowing individuals to discover least-cost solutions to the externality.

A third problem with the externality objection is that existing research on alleged negative externalities of immigration often finds that such externalities are small or undetectable. For instance, some may be concerned about fiscal externalities caused by immigration. However, at least in the United States, it appears that immigrants pay more in taxes than they consume in government services at the federal level (Blau and Mackie 2017; Blau and Hunt 2019). Similarly, some might be concerned that immigrants may commit crimes and victimize individuals from receiving countries. However, a large body of research finds that immigration is not associated with crime, with much of the research finding an inverse relationship between immigration and crime (see Ousey and Kubrin 2018 for a review of the literature). Consistent with these findings, increased deportations and immigration enforcement do not reduce violent crime or property crime (Hines and Peri 2019). Another proposed externality is the erosion of various formal and informal institutions. Nowrasteh and Powell (2020) empirically examine purported institutional consequences of immigration and find very little evidence to support these concerns. Some recent scholarship (Jones 2022) does find more evidence that immigrants alter formal and informal institutions, largely by changing culture.

To whatever extent immigration does cause negative externalities, there is good reason to think that polycentric institutions may be a good approach to addressing these externalities. While research does not find net fiscal costs to immigration at the national level, there appear to be net fiscal costs to immigration at the state and local level, largely due to the costs of educating the children of immigrants (Blau and Mackie 2017; Blau and Hunt 2019). Polycentricity allows governance at multiple scales, which allows for responding to externalities at the scale of the externality. Externalities that occur at scales roughly the size of localities and states are likely to be better addressed via local and state responses rather than one-size-fits-all nationwide immigration restrictions. Moreover, to the extent that perceived negative externalities of migration occur via

cultural change, polycentric institutions that enable cultural exchange may help alleviate resulting conflicts. We therefore turn our attention to two important forms of non-market polycentric association: civil society and local governments.

## **Civil Society**

While markets are one important polycentric system, polycentricity can occur in a variety of other contexts. Civil society provides a space for individuals to form voluntary associations that are neither markets nor states. Richard Cornuelle (1965) called this “the independent sector.” Many such voluntary associations have been formed to assist migrants to the Global North and are likely to assist in the process of adaptation to climate change–induced migration, too.

The activities of civil society are so broad with regard to migration that it is almost impossible to describe them sufficiently. Among the various actions that they take is to support private individuals in the Global North to sponsor individuals to come to countries like the United States (Niskanen Center et al. 2022). They help immigrants to learn the language of their destination countries to remove barriers, build leaders, and cultivate community (Refugee Language Project 2022), or they help refugees find jobs (Refugee Employment Partnership 2022). Analogously to markets, civil society organizations help immigrants and receiving communities to adapt to changing circumstances because it affects the place where they live. This bottom-up process is exceptionally appropriate because through their local knowledge of circumstances, they have an advantage over more centralized and comprehensive mechanisms to help.

To demonstrate this with one particularly good example of local and bottom-up polycentric adaptation to migratory changes, we consider the example of No More Deaths. No More Deaths operates in the US-Mexico borderlands, especially Arizona. It leaves water and other supplies along the dangerous routes that unauthorized migrants traverse on their journey to the United States. As part of the prevention-through-deterrence policy, the Border Patrol has hardened security near relatively safe routes, such as those surrounding urban areas. This diverts migrants to more dangerous desert routes. Multiple empirical studies find that these types of policies increase migrant deaths (Chambers et al. 2019; Bansak, Hall-Blanco, and Coon 2022). No More Deaths actively provides humanitarian aid to prevent these deaths, and it also works with other civil society groups to document the conditions that cause these deaths (see Caminero-Santangelo 2009; Failinger 2006; Androff and Tavasolli 2012; Coalición de Derechos Humanos and No More Deaths 2016).

No More Deaths has also faced various forms of retaliation and restrictions from the state. For example, its camps have been raided multiple times by federal agents (Deveraux, 2020). Members of the group have also faced criminal charges. Misdemeanor charges against No More Deaths volunteers “include Abandonment of Personal Property, Entering a Wilderness Area Without a Permit, and Driving in a Wilderness Area” (No More Deaths n.d.). In addition to these misdemeanor charges, No More Deaths volunteer Scott Warren faced “two counts of felony harboring and one count of felony conspiracy under 8 U.S.C. 1324,” which could have resulted in “up to 20 years in prison” (Deveraux, 2019). Warren’s charges resulted in multiple trials. One ended in a mistrial, while another ended in an acquittal. Eventually, prosecutors dropped the charges that remained (Ingram 2020).

These types of prosecutions involve the centralized state using coercion to deter voluntary associations from engaging in humanitarian aid along the border. Ceasing such prosecutions and raids



would enable civil society to work, as individuals would have greater scope to choose to form and join organizations that assist one another, including assisting migrants.

As we indicated earlier, No More Deaths is certainly not the only civil society group that assists migrants or helps communities adapt to changes that result from migration. Border Angels, another nonprofit organization, leaves water and other supplies along desert routes, a strategy very similar to that used by No More Deaths. It also provides humanitarian aid to migrant shelters and offers legal aid to migrants (Camacho 2020).

There are many other voluntary associations that aid migrants in a wide variety of ways. One insightful example of the polycentric character of public goods provision through civil society is Sea-Watch e.V.<sup>2</sup> Sea-Watch is a nonprofit organization “that conducts civil search and rescue operations in the Central Med[iterranean]” (Sea-Watch, 2022). Since the central solutions of government organizations like Frontex regularly fail and threaten human life, Sea-Watch members use their local and tacit knowledge and private donations to make ships ready for sea and save refugees who try to enter the EU via the Mediterranean. Since the Mediterranean route will become especially salient for migrants from future hot zones on the African continent, it serves as one possible approach that provides an adaptive response in a polycentric fashion.

But open-ended, polycentric processes can also produce worrying results. For years, different right-wing so-called “citizens-militias” have emerged to hinder migrants from crossing the US border. Militias like the Minuteman Project or the Minuteman Civil Defense Corps, for example, have patrolled the US-Mexican border to hinder immigrants from entering the country because they accuse the centralized government of not acting swiftly enough to enforce immigration restrictions. These grassroots projects pose a challenge because they show that polycentric governance through civil society can lead to responses that are themselves anti-adaptive. While we take the issue seriously, we have two reasons to believe that the worry is overblown.

First, in a comparative institutional analysis it is important to refrain from providing panacea-solutions that give in to the naive assumption that all problems can be solved frictionless with one uniform approach. If we compare the well-researched downsides of intensified securitization, militarization and monocentricity of climate migration with the potential downsides of polycentric border management, we have good reason to assume that monocentricity holds more potential harms than polycentricity. But we admit that further empirical research has to be conducted to assess our assumption in favor of polycentricity.

Second, we believe that the relevance of right-wing militias in border regions will actually decrease when a more polycentric approach is introduced. Organizations like the Minutemen emerged to enforce existing monocentric immigration restrictions because federal and state law enforcement are oftentimes too short staffed to enforce the restrictions. In addition, they are responding to perceived chaos at the border and the visibility of unauthorized migrants engaged in irregular border crossing. Liberalizing immigration policy would allow for more legal and regularized pathways, including paying airlines for flights into the interior of the United States, which would reduce visible chaos at the border and therefore reduce the incentives for organizations like the Minutemen to emerge in the first place.

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<sup>2</sup> E.V. stands for “eingetragener Verein,” or “registered association.” It is a corporate legal category that applies to many German nonprofit organizations.

It is at the core of polycentric approaches and arguably its great advantage to not exactly know what the response of civil societies to climate change migration will be. This might include less desirable responses, too. We, however, believe that a real-world comparison between monocentricity and polycentricity, as well as a focus on the bad incentives created by monocentric immigration restrictions, provide prima facie reasons to believe that polycentric arrangements will generate a greater degree of functional adaptation than monocentric arrangements.

## **Polycentric Community Governance**

Markets and civil society are nonstate mechanisms that might help to adapt to climate change-induced migration in a polycentric fashion. But polycentric adaptation through state and government action is also feasible. It is true that government directives are largely responsible for the monocentric militarization at borders in the Global North that prevent successful adaptation to climate change-induced migration. However, it is also feasible to harness the adaptive capacities of polycentricity within the realm of the state. The idea of federalism is only one branch of thinking about the power of government where power is not vested in one single decision center but in multiple autonomous and competing decision centers. The decentralized political system of the United States, although not perfect, illustrates how multiple autonomous and competing political decision centers help to adapt to climate change-induced migration and provide immigration-related governance in a polycentric fashion.

Regarding immigration, the conflict between different autonomous political decision centers during the Trump administration is illustrative. The Trump administration took multiple actions on immigration, including a travel ban, the cancellation of DACA, and “measures to end asylum applications at the Southern Border” (Blitzer, 2020). Most of the actions prompted legal challenges, which oftentimes led to a block of the administration’s plans. As we mentioned before, legal separation of government power and legally enforced checks and balances through the judiciary are important parts of polycentric governance.

The most illustrative example of polycentric political adaptation to immigration pressure, however, is sanctuary cities. While there is no specific legal definition for a sanctuary city, it usually refers to cities, counties, or states in the United States that protect undocumented immigrants who are supposed to be deported according to federal immigration law by limiting or refusing cooperation with immigration authorities like United States Immigration and Customs Enforcement (ICE). Modern sanctuary policies usually “forbid local officials from inquiring into individuals’ immigration status and in some cases holding undocumented immigrants on ICE detainers if they have not been charged with a violent offense” (Collingwood and O’Brien 2019, 5).

Proponents of sanctuary policies argue that local government collaboration with ICE would hinder the provision of local public goods such as security, education, and trust among the local community and institutions. If undocumented immigrants get in touch with official bodies that participate in immigration enforcement, they are at risk of being asked for documents, caught, and deported to their home countries. Out of fear of official bodies and local law enforcement, immigrants oftentimes do not report crime or cooperate with local law enforcement. Sanctuary cities hope to reduce overall crime by limiting the powers of law enforcement officers to inquire into the immigration status of witnesses.

Empirical research seems consistent with this argument. Several studies find either no relationship or a negative relationship between sanctuary policies and crime (Martínez et.al. 2018; Martínez and Martínez-Schuldt 2021; Wong 2017). The positive effects of sanctuary policies on the provision of other local collective goods like health (Cebula 2016; Rhodes et al. 2015) and economic performance has been shown, too (Kobach 2008; Pham and Van 2010).

Sanctuary policies work well because they solve the knowledge and incentive problems of local adaptation to immigration pressures: local politicians and government officials *know* better than distant politicians in the central government and have greater *incentive* to act on their knowledge to eventually provide local public goods because they are directly accountable to their local electorate. But not all jurisdictions in the United States are sanctuaries. The polycentric and autonomous character of local governments allows communities to not embrace sanctuary policies and therefore compete with the jurisdictions that do so. A polycentric system of autonomous and competing decision centers is no “panacea” (Ostrom et al. 2007, 15176). Different decision centers can take different courses of action to adapt to the challenge of increased climate change–induced immigration—and this can lead to different degrees of success and failure, which might be unequally distributed.

While we, as the authors of this paper, are convinced of the advantages of sanctuary policies, other thinkers and communities might derive different conclusions. The problem rests in the monocentric nature of comprehensive rules about immigration policy. A polycentric order allows communities to assess the costs and benefits of sanctuary politics on a local level and decide based on this calculation. Again, this procedure is no *panacea*—even on a local level, knowledge and incentive problems will arise and might lead to less desirable responses as we have discussed earlier with regards to civil society. However, in a polycentric setting, the harms caused by local policies are contained to local jurisdictions. Polycentric systems, unlike monocentric systems, do not have vulnerabilities associated with a single point of failure.

We have seen that monocentrically imposed immigration policies have led to damaging effects to some local communities. In a world where it is almost impossible to know a priori which institutional solution might work, a polycentric setting might work best because it allows the necessary trial-and-error process to get closer to solutions that work for the people that are directly affected. Polycentric political organization, much like markets and civil society, offers an opportunity to deal with a world of imperfections without the vanity to offer a panacea.

## Conclusion

Immigration will be one of the most important consequences of climate change. And it will have the heaviest impact on the people in the Global South when they must leave their home countries. Policies that welcome migrants would enable migrants to move away from areas that face the most severe consequences of climate change. This would reduce the human costs associated with climate change. However, the last years have shown that citizens of the Global North have grown increasingly worried about additional immigration: mounting pressure at the borders of the United States and the European Union will put administrations and border agencies in the destination countries under increasing pressure to impose stricter immigration restrictions. This means that the costs of climate change for immigrants and their destination countries are to some extent *institutionally*

*contingent*. They result not merely from climate change itself, but from institutions and policies that shape and constrain how people adapt to climate change.

This raises our research question: *what types of institutions give rise to policies and practices that enable effective adaptation to climate change–induced migration?* To answer this question, we applied comparative institutional analysis to examine the different ways that polycentric and monocentric governance arrangements are likely to respond to climate migration. We demonstrated the problems of centrally imposed monocentric restrictions on migration with a special eye on US border policies in the last decades. Immigration restrictions have taken a monocentric and militarized form that falls victim to the epistemic problems of immigration planning, the incentive problem of rent-seeking through private defense contractors, and the reorientation of attention of border agencies from local communities and immigrants to the federal government. Instead of monocentric militarization as a response to climate change–induced migration, we propose polycentric adaptation.

A polycentric approach allows many different decision centers to experiment with the best solutions to help adapt to the consequences of climate change. Markets can help if policies allow greater scope for private individuals, firms, and entrepreneurs to engage in mutually beneficial exchanges with migrants. But the profit motive is not sufficient for polycentric adaptation to work. Civil society organizations like No More Deaths have provided valuable services to help adapt at the US-Mexican border. A heavier reliance on and decriminalization of civil society organizations at the border would help the adaptive process and illustrate a cost-saving way of adaptation to climate change–induced migration. Apart from nonstate polycentric mechanisms like markets and civil society, decentralized political action is another important driver of polycentric adaptation. It is relevant for local states with important borders to the Global South to have their own adaptive legislations to immigration. Sanctuary cities are another part of a polycentric political adaptation that helps to adapt to climate change–induced migration.

We believe that polycentric governance and adaptation is a better way to deal with climate change–induced migration than monocentric militarization at the borders of the Global North. But polycentric governance is no panacea. Since the structure of polycentric governance is defined through its focus on experimentation and evolutionary competition between multiple decision centers, it is based upon—and even hopes for—failure in a contained setting. Only failure in adaptation brings the system closer to finding better institutional solutions. We are convinced that highly complex social changes escape static, one-size-fits-all solutions that promise to solve questions of policy design from scratch. The complex world of climate change migration requires a framework of rules that allows for experimentation, self-adjustment in light of its own performance, and learning through time.

This is the point where further research is highly relevant. Since we argued in broad strokes for polycentric adaptation and against monocentric militarization, more detailed case studies of how polycentric adaptation can take place would be in order. Furthermore, we concentrated on migration from the Global South to the Global North. But a substantial amount of climate change–induced migration takes place within countries of the Global South. Even though we suspect that polycentric adaptation is a comparably efficient way to manage problems there, too, more research is important to clarify this intuition.

Climate change–induced migration will be one of the great challenges of climate change. The success of adaptation to climate change–induced migration is institutionally contingent. Unfortunately, public officials currently conceptualize climate change–induced migration through a securitized lens that directs their attention towards monocentric and militarized solutions. However, political economy provides good reasons to be skeptical of monocentric institutional arrangements. If we compare monocentric and polycentric adaptation to climate change–induced migration, polycentric governance is likely to be the superior institutional arrangement.

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