Climate Mobility and the Pandemic: Art-Science Lessons for Societal Resilience

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CLIMATE-INDUCED HUMAN DISPLACEMENT AND CONSERVATION LANDS

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ABSTRACT

As climate change leads to both internal displacement and mass migrations, we need not only new places for people to live but also new locations for infrastructure projects and other public needs. Some of the most attractive areas for these new land uses are currently unoccupied land, including land set aside for conservation. Numerous laws restrict the availability and possible uses of public conservation land. Individual agreements and property restrictions encumber private conservation land, varying in the ease with which the restrictions can be modified. For example, privately protected areas in the United States are often encumbered with perpetual conservation easements. The rigid rules of such protected areas combined with the increased number of private interests involved make them legally unattractive for land-use change even when they might be socially desirable locations for settlement. This Article examines opportunities and constraints for expanded use of conservation lands to meet climate

* Professor, University of Miami, School of Law. I am grateful to the participants at the Climate Migration, Displacement, and Relocation Conference in Honolulu in December 2016 for sharing their research and experiences. A particular thanks to Maxine Burkett and Alexander Zahar for their thoughtful comments on an early version of this piece. I also benefited from the comments of colleagues at the University of Miami and the 2019 Southeastern Environmental Law Scholars workshop. My work in this area is continually being updated and improved through interactions with the "On the Move" climate migration research group at UM (Xavier Cortada, Katharine Mach, and Ian Wright). Part of this piece was written while I was a visiting professor at the Universidad Pontificia Comillas (ICADE) in Madrid, Spain, and I am thankful for their support.
migrant needs. I explore how these areas could respond to needs that develop in the context of climate change migration and illustrate the dangers of overly rigid land-use laws. Policymakers and conservationists should consider these tensions when drafting agreements and laws.

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I. INTRODUCTION

Despite the position of some politicians, there is no doubt among scientists that climate change is a reality whose impacts are already being experienced.\(^1\) To many people, the debate over the details of climate science is immaterial. They are already feeling the effects of climate change in dramatic ways. In Africa,\(^2\) the Arctic,\(^3\) the Pacific,\(^4\) the Gulf Coast,\(^5\) and many other parts of the globe, negative impacts of climate change are forcing people from their homes. Others may not yet be experiencing the impacts, but instead of denying that changes are likely to occur, they are


beginning to plan their responses. Members of Native Alaskan Villages are voting to move their entire populations.\(^6\) The U.S. government is funding community relocation efforts in Louisiana.\(^7\) Outside the United States, there are widespread reports of impacts and relocations. The people of Kiribati are slowing buying up land in Fiji\(^8\) and trying to physically elevate their island.\(^9\) Other Pacific island nations are developing their own migration strategies.\(^10\) This is occurring alongside large-scale migrations of people and animals in countries like Bangladesh and Kenya where the climate change impacts are also acute.\(^11\)

There is an undeniable link between climate change impacts and migration. Climate change is expected to contribute to increased movements of people.\(^12\) The Environmental Justice Foundation predicts climate change will displace 150 million

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6. Annie Weyiouanna, Panelist at the Symposium on Climate Displacement, Migration, and Relocation: Community Perspectives on the Impacts of Climate Change (Dec. 13, 2016); see also Peyton Jaffe, Relocation of Native Alaskan Communities, ARCGIS STORYMAPS (Dec. 11, 2019), https://storymaps.arcgis.com/stories/b2fcaf62c9024114ad66dc0909a7988 [https://perma.cc/UEW8-LXFG]. The village of Shishmaref is under severe threat from climate change and is literally falling into the Chukchi Sea. A majority of the villagers voted to move their entire community a few miles inland (to protect the unique language and culture of the Inupiat Indians) hoping to ward off an eventual forced relocation to Anchorage or Nome where the community would be scattered. Merrit Kennedy, Threatened by Rising Seas, Alaska Village Decides to Relocate, NPR (Aug. 18, 2016, 7:49 PM), https://www.npr.org/sections/thetwo-way/2016/08/18/490519540/threatened-by-rising-seas-an-alaskan-village-decides-to-relocate [https://perma.cc/8JHT-LPLF].

7. Coral Davenport & Campbell Robertson, Resettling the First American ‘Climate Refugees,’ N.Y. TIMES (May 3, 2016), https://www.nytimes.com/2016/05/03/us/resettling-the-first-american-climate-refugees.html [https://perma.cc/V2JA-XBHU]. The U.S. Department of Housing and Urban Development issued a $48 million grant to Isle de Jean Charles, Louisiana to relocate the entire community, as it is struggling with climate change impacts. In 2016, the Isle de Jean Charles community of Biloxi-Chitimacha-Chocotaw Indians became the first community in the United States to be moved by the federal government based on climate change implications. Id.

8. Laurence Caramel, Besieged by the Rising Tides of Climate Change, Kiribati Buys Land in Fiji, GUARDIAN (June 30, 2014, 8:00 PM), https://www.theguardian.com/environment/2014/jul/01/kiribati-climate-change-fiji-vanua-levu [https://perma.cc/77J7-V3MV].


people by 2050,\textsuperscript{13} while others predict this figure to be much greater.\textsuperscript{14} Climate change hits hardest at the poorest countries and the poorest people within those countries.\textsuperscript{15} The link between climate change and migration may be particularly important for society to tackle because of its intertwining with conflict and violence.\textsuperscript{16} Climate change migration will influence the form and location of violent conflicts as the movement of people changes resource constraints and introduces cultural conflicts.\textsuperscript{17}

Because of the challenges and opportunities that accompany relocation of climate migrants, this Article explores ways to ease the process. Specifically, this Article explores places where relocation occurs, with a close examination of the role conservation lands play. Conservation lands have often suffered encroachments and intensification of use when other lands become more marginal or as populations grow.\textsuperscript{18} My investigation involves looking both at the impact of such relocations on conserved areas and the obstacle to relocation that conservation rules might impose. This double-edged sword creates a moral conundrum. The impacts of climate change mean that conservation lands will be of heightened importance while also serving as attractive spots for relocation of humans, nonhumans, and infrastructure. Relocation to conservation lands, however, could heighten environmental stressors and create negative feedback loops that worsen environmental conditions and pressures to relocate. This Article examines the legal obstacles (or lack thereof) to using conservation lands as receptors of new users and uses. While the phenomenon occurs worldwide, this Article examines laws and lands within the

\begin{itemize}
\item \textsuperscript{13} Env't Just. Found., No Place Like Home: Where Next for Climate Refugees? 14 (2009).
\item \textsuperscript{14} Brown, supra note 5, at 11 (placing the number of climate refugees at 200 million people and describing it as originating from analyst Norman Myers of Oxford University).
\item \textsuperscript{15} World Bank Grp., Groundswell: Preparing for Internal Climate Migration, at xxi (2018) (suggesting over 143 million people will be displaced by climate change by 2050).
\item \textsuperscript{17} Null & Herzer Risi, supra note 12, at 5.
\end{itemize}
United States. Such a focus is increasingly salient as other countries model their land conservation legal regimes on U.S. concepts.  

Exploration of these questions requires understanding the types of movements occurring. Therefore, Part II presents examples of climate change relocations. The examples highlight the challenges involved in relocation, including consideration of where people are moving. Part III briefly discusses the types of land most likely to come under pressure from relocation. Homing in on conservation lands, the heart of this Article examines the property and land-use rules on conservation lands in the United States, discussing which lands are likely places of relocation and exploring what rules could either hamper or facilitate movement of people.

Land conservation is an important public policy goal, but we must confront the social and ecological struggles of climate change and consider a program that helps us best satisfy competing but equally laudable policy goals. This Article does not detail how communities should balance the policy goal of accommodating climate change adaptation and land conservation but instead details what land-use restrictions might serve as impediments to meet social goals (or alternatively serve to protect them). With a fuller understanding of the pressures of climate migration and the limitations on shifting land uses, government agencies and community members can have a more informed decision-making and priority-setting process in climate planning. I encourage state and local governments (along with interested NGOs) to think carefully about how they structure conservation land restrictions and how courts might approach conservation and relocation disputes. Specifically, a shift away from the most rigid definitions and tools for conservation lands is more likely to accommodate climate adaptation that includes migration. Yet, increasing flexibility to accommodate climate migrants may put conservation lands at risk of deterioration. In the final analysis, however, people, plants, and animals will be moving. Denying climate migration is no more fruitful from a policy perspective than denying climate change. Planning sensibly for climate migrants

will likely have greater environmental benefit in the long run than making strict prohibitions. Ignoring this problem is likely to lead to chaotic migration, putting greater pressures on open land and constraining resources.

II. CLIMATE DISPLACEMENT, RELOCATION, AND MIGRATION

A. Slow-Onset and Rapid-Onset Climate Impacts

Understanding how people move in response to climate change means understanding two types of change: slow-onset changes (chronic hazards) and rapid-onset changes (extreme episodic disasters). While climate change impacts are complicated, most fall into one of these two categories. Researchers have ably detailed the potential impacts of climate change that motivate people to leave their homes. The paragraphs below provide examples, not comprehensive assessments.

Slow-onset climate change impacts are many and varied. They can include things like a gradual spread of diseases (for humans or other species), shifting water availability, changes

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in growing seasons, and a variety of problems created by sea-level rise. Slow-onset changes include gradual shifts that happen over time as temperatures increase and sea levels rise. Obvious slow changes include gradually increasing temperatures leading to lower crop yields and a need for farmers to shift crops. Species may gradually migrate to higher elevations or northern landscapes. Diseases may spread along with these migrations as animal disease vectors head further north and live longer into the


fall.\textsuperscript{27} Sea-level rise leads to coastal erosion.\textsuperscript{28} Thinning ice changes hunting and fishing patterns.\textsuperscript{29}

Rapid-onset disasters tend to attract more press. Rapid-onset climate impacts are essentially changes based on natural disasters or reaching tipping points. The most obvious of these are the big hurricanes that have increased in frequency and intensity, devastating the Atlantic and Gulf Coasts in the United States.\textsuperscript{30} Increased droughts and accompanying fires have reached unprecedented levels in Australia,\textsuperscript{31} California, and elsewhere.\textsuperscript{32} While some climate migrants choose to leave based on long-term slow degradation to the landscape that affects culture and livelihoods, the most common climate migrant is one responding to a specific natural disaster or similar threat. Millions of people


relocate based on natural disasters\textsuperscript{33} like hurricanes,\textsuperscript{34} tropical storms,\textsuperscript{35} flooding,\textsuperscript{36} mudslides,\textsuperscript{37} and fires.\textsuperscript{38} While such events have happened for millennia, climate change increases both the intensity and frequency of such disasters.\textsuperscript{39} The IPCC predicts a general increase in climate-related migration with a displacement of 150 million people by 2050.\textsuperscript{40} The IPCC anticipates migration

\begin{itemize}
  \item[38.] Podesta, \textit{supra} note 33; Anthony L. Westerling & Benjamin P. Bryant, \textit{Climate Change and Wildfire in California}, 87 CLIMATIC CHANGE S231, S244 (2008); see also Wildfires and Climate Change, CTR. FOR CLIMATE & ENERGY SOLS., https://www.c2es.org/content/wildfires-and-climate-change/ [https://perma.cc/ZUY2-ZB2P] (last visited Sept. 28, 2020) (explaining that there are many more wildfires every year and the fire seasons are getting longer).
  \item[39.] Maarten K. van Aalst, \textit{The Impacts of Climate Change on the Risk of Natural Disasters}, 30 DISASTERS 5, 8–9 (2006) (explaining generally that there are increased risks due to natural disasters as climate change worsens).
  \item[40.] ENV’T JUST. FOUND., \textit{supra} note 13, at 14.
\end{itemize}
will accelerate even more if action is not taken to combat global warming or to improve adaptation mechanisms.\textsuperscript{41}

Many communities affected by disasters are also experiencing slow-onset problems. For example, warmer air and water leads to more hurricanes and more intense ones.\textsuperscript{42} These storms often hit communities that are already grappling with problems of sea-level rise.\textsuperscript{43} Indeed, the slow-onset problem of sea-level rise can make a community more vulnerable to disasters as coastal buffer zones diminish.\textsuperscript{44}

\section*{B. Migration as Adaptation}

Successful climate change responses proceed along two trajectories: mitigation and adaptation. Mitigation measures seek to reduce the overall impact of climate change by reducing its intensity (generally through programs in carbon reduction or sequestration).\textsuperscript{45} We have passed the point where climate change efforts only focus on mitigation, although no one denies the importance of this prong.\textsuperscript{46} Adaptation refers to the measures that

\begin{thebibliography}{99}
\bibitem{41} \textit{INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY} 736 (Christopher B. Field et al. eds., 2014) [hereinafter IPCC, CLIMATE CHANGE 2014].


\bibitem{46} Climate-change response strategies have long focused on mitigation, which is the heart of international climate change law and is embodied by the Kyoto Protocol and Paris Accord. See Paris Agreement art. 4, Dec. 12, 2015, T.I.A.S. no. 16-1104; Thomas J.
people undertake in response to the impacts of climate change.\textsuperscript{47} While mitigation measures tend to have one overarching goal—reduction of the level of greenhouse gases in the atmosphere—adaptation is more varied. While mitigation measures have global effects, adaptation measures are local in nature. Moreover, because the impacts of climate change vary greatly, so do adaptation responses. Adapting to a drought requires a different approach than adapting to increased flooding (of course some regions face both these concerns at the same time, presenting an additional adaptation challenge).\textsuperscript{48}

Wilbanks, Sally M. Kane, Paul N. Leiby, Robert D. Perlack, Chad Settle, Jason F. Shogren \& Joel B. Smith, Possible Responses to Global Climate Change: Integrating Mitigation and Adaptation, 45 ENVIRONMENT 28, 30 (2003) (describing how focus on mitigation "dominated early discussion" of how best to respond to climate change). Yet, mitigation efforts have not been successful in staving off negative impacts from climate change and the shift in focus to add adaptation efforts is key. Early proponents of adaptation efforts were originally viewed as "giving up" to the polluters of the world and suggesting that we learn how to get used to the new normal instead of working to prevent it. Roger Pielke, Jr., Gwyn Prins, Steve Rayner \& Daniel Sarewitz, Lifting the Taboo on Adaptation, 445 NATURE 597, 597 (2007). That attitude has shifted as the number of people suffering under climate change continues to rise and it is clear that reductions in greenhouse emissions, no matter how great, will not be able to prevent negative climate-change impacts. See IPCC GLOBAL WARMING, supra note 1, at 6–7.

47. Definitions of climate change adaptation vary slightly. The United Nations Framework Convention on Climate Change defines adaptation as "[a]ctions taken to help communities and ecosystems cope with changing climate conditions." ELLINA LEVINA \& DENNIS TIRPAK, ORG. FOR ECON. COOP. \& DEV., KEY ADAPTATION CONCEPTS AND TERMS 5 (2006). The United Nations Development Programme calls it a "process by which strategies to moderate, cope with and take advantage of the consequences of climatic events are enhanced, developed, and implemented." \textit{Id.} I prefer the IPCC's definition, which describes adaptation as "the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities." IPCC, CLIMATE CHANGE 2007, supra note 45, at 6. The IPCC continues to identify three types of adaptation:

\begin{itemize}
  \item Anticipatory adaptation—Adaptation that takes place before impacts of climate change are observed. . . .
  \item Autonomous adaptation—Adaptation that does not constitute a conscious response to climatic stimuli but is triggered by ecological changes in natural systems and by market or welfare changes in human systems. . . .
  \item Planned adaptation—Adaptation that is the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state.
\end{itemize}

\textit{Id.} at 869 (emphasis omitted). All three types of adaptation could manifest as migration or relocation.

Migration and relocations are adaptation responses to climate change. Moves spurred by climate change and other factors come in many forms. People working in this area use the terms migration, displacement, and relocation to contain all forms of that movement. The International Organization for Migration defines migration as movements of people that happen both within and across international borders. To some, the term migration is reserved for the relocations across international borders. Others use the term to refer to internal migration where those pressured by climate change move to other parts of their own country. The World Bank for example, specifically defines climate migration to be long-term (not temporary, seasonal, or cyclical) movement within a country but at a distance greater than fourteen kilometers. Mariya Gromilova uses the somewhat cumbersome phrase “climate-induced population movement” to refer to the migrations and relocations that occur in response to changing climatic conditions. To minimize confusion in this Article, I refer to all movements as migrations or relocations and where necessary specify whether I am referring to internal or cross-border movement.

C. Climate Refugees?

A complication to this definitional discussion is whether climate change migrants are ever appropriately called or thought of as climate refugees. While climate refugee is a popular term, it may not be correct or useful. First, it can be hard to determine when an individual or family is moving for climate change reasons even though we can decipher large movement trends. Second, the term refugee may be particularly misleading. Meriting the label climate migrant can be hard to demonstrate as many factors likely contribute to a family or individual moving. It can be useful to identify people who move due to pressures and problems created by climate change because

it helps us understand the policy decisions that caused the problem, allocate responsibility (particularly in terms of funding relocation efforts), and address the root cause of the problem. In some cases, however, writers argue that using the label climate migrant or climate refugee can enable the government to avoid accepting blame or responsibility. For example, some people who study the large Syrian migration and conflict agree that the droughts (droughts exacerbated by climate change) in Syria were a major force behind the outflow of migrants. However, the policies of the Syrian government that affected land tenure, agriculture practices, and reinforced a stratified societal structure are also part of the story. A label of those leaving as climate migrants may offer Al-Assad some cover suggesting his (or his father's) policies are less blameworthy.

Even if accepting that environmental conditions are linked to migrations, labelling the environmental obstacles as climate-related can be challenging. The United Nations Environmental Programme (UNEP) first acknowledged the problems of environmental migrants in a 1985 definition:

53. See NULL & HERZER RISI, supra note 12, at 29.
54. See, e.g., Peter H. Gleick, Water, Drought, Climate Change, and Conflict in Syria, 6 WEATHER CLIMATE & SOC'TY 331, 332, 336 (2014); Colin P. Kelley, Shahrazad Mohtadi, Mark A. Cane, Richard Seager & Yochanan Kushnir, Climate Change in the Fertile Crescent and Implications of the Recent Syrian Drought, 112 PROC. NAT'L ACADEMY SCIENCES 3241, 3241–42 (2015). But see Francesca de Châtel, The Role of Drought and Climate Change in the Syrian Uprising: Untangling the Triggers of the Revolution, 50 MIDDLE E. STUDIES 521, 522 (2014); Jan Selby, Omar S. Dahi, Christiane Fröhlich & Mike Hulme, Climate Change and the Syrian Civil War Revisited, 60 POL. GEOGRAPHY 232, 232 (2017) (asserting that “there is no clear and reliable evidence that anthropogenic climate change was a factor in Syria’s pre-civil war drought” and that the drought was not a contributing factor to the civil war or to migration).
58. See NULL & HERZER RISI, supra note 12, at 29; Selby, Dahi, Fröhlich & Hulme, supra note 54, at 241 (suggesting the linkage between the conflict and the war is overblown); Cullen S. Hendrix, A Comment on “Climate Change and the Syrian Civil War Revisited,” 60 POL. GEOGRAPHY 251, 251 (2017) (responding to Selby et al. and noting both benefits and drawbacks from identifying climate change as a contributor to conflicts in Syria and elsewhere).
those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life.\(^{59}\)

Having already acknowledged that it can be hard to determine whether a person is moving because of environmental conditions, it can be even more complicated to grapple with whether the environmental problems are created or exacerbated by climate change. Indeed, environmental problems are frequently linked to or exacerbated by climate change issues, but it can be tricky to suss out exact causes of such changes and prolonged debates over the root causes of the environmental harms may distract from action more than they spur action.

Equally complicated is the use of the word refugee. The term climate refugee lacks any formal definition or status.\(^{60}\) When relocation is beyond a country’s borders, many use the label climate refugee even though these relocators rarely fit the actual definition of refugees under international and national laws. To qualify as a refugee and thereby receive protected status, a person must demonstrate that her migration is due to her “well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion.”\(^{61}\)

In the only case to directly consider whether a climate refugee should qualify as a refugee, the New Zealand Supreme Court rejected the claims of Ioane Teitiota from Kiribati who argued that he should be able to avail himself of refugee protection based on the rising sea levels and environmental harm he faced in his home country.\(^{62}\) The New Zealand Immigration and Protection Tribunal recognized that Kiribati was suffering from effects of both “sudden

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60. NULL & HERZER RISI, supra note 12.


onset environmental events (storms) and slow-onset processes (sea-level-rise). But, the court held that there was no evidence Teitiota was being persecuted based on any protected status and it found Kiribati was trying to protect its citizens from the impacts of climate change, albeit unsuccessfully. In particular, the tribunal noted, Teitiota voluntarily relocated and was not forced. While it did not grant Teitiota’s petition, the court left open the question of whether some level of climate change harm could serve as the basis for a viable refugee claim. The New Zealand Supreme Court upheld the decision of the tribunal, but noted that climate change, “environmental degradation resulting from climate change or other natural disasters could ... create a pathway into the Refugee Convention or protected person jurisdiction.”

Despite formal recognition and protection of refugees, many international efforts acknowledge the struggles of climate migrants and are working to improve conditions and support relief efforts. The United Nations Commission on Human Rights has recognized the category of “environmental migrants” and adopted a set of nonbinding principles that acknowledge that governments have a responsibility to protect and assist people displaced by natural disasters. The Paris Climate Accord acknowledges that climate-related displacement is an issue, and it calls upon the Executive Committee of the Warsaw International Mechanism of Loss and Damage to “establish ... a task force to ... develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change.” That taskforce (the Task Force on Displacement on Climate Change, Report of the Conference of the Parties, ¶ 49, U.N. Doc. CP/2015/10/Add.1 (Jan. 29, 2016), https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf (calling upon relevant bodies “to develop recommendations for integrated approaches to avert, minimize and address displacement related to the adverse impacts of climate change” and adopting the Paris Agreement); EXEC. COMM. OF THE WARSAW INT’L MECHANISM FOR LOSS AND DAMAGE, TASK FORCE ON DISPLACEMENT 6 (2017), https://unfccc.int/sites/default/files/tfd-handbook.pdf (describing the workplan and terms of reference for the taskforce).
or TFD) presented its plan of action at the conference of the parties in December 2019. The plan focuses on gathering information of climate displacement and making it useful to the parties and others, improving training, looking for funding, and helping parties and others to assess displacement risks and impacts.

D. Type of Movements

Research is helping us better understand how physical movement of a population can be a successful adaptation strategy. This physical movement can take many forms. First, it may be temporary or permanent. Second, it may be internal or external. And relatedly, it can involve long or short distances. Some moves may be only individuals or families; other moves may be entire communities or even nations.

A report from the World Bank (the Groundswell Report) concluded that by 2050, there would be 143 million internal climate migrants (those that do not leave their own country but relocate within it). The Groundswell Report asserts most of these people will be in the developing world: 85.7 million in Sub-Saharan Africa, 40.5 million in South Asia, and 17.1 million in Latin America, representing 2.8% of the populations in these areas. This represents 55% of the developing world. As the report looks only at internal migration and does not include seasonal or cyclical migration, it significantly undercounts the amount of climate migration occurring. Rapid-onset events seem to be displacing around 26 million people a year and that number is only expected to increase. Katrina Wyman explains that despite the uncertainty in the exact level of climate migrants, the number is undoubtedly large but hard to assess because of the confluence of

70. Id.
71. Black, Bennett, Thomas & Beddington, supra note 11, at 447–49.
72. WORLD BANK GRP., supra note 15.
73. Id. at xv.
74. Id. at xix.
75. Id. at vii.
76. Id. at 4.
climate change and other migration-inducing factors.\textsuperscript{77} There is a general lack of data on climate migrations.\textsuperscript{78}

As mentioned above, most climate migrations are likely to be temporary ones.\textsuperscript{79} This is particularly true for relocations in response to rapid-onset events. That is, people will move to stay with friends and family during drastic weather events. Such moves are not only temporary but also tend to be internal, moving only a short distance before returning.\textsuperscript{80} Slower onset impacts are associated with slower relocation responses. Where slower changes to growing seasons and water availability reduce agricultural productivity, it can be several years before a family decides that the best choice is to move. When such moves do come, they are more likely to be long-term moves without intentions to return to the same land or areas.

Most relocations (whether temporary or permanent) are expected to be within a country.\textsuperscript{81} The United Nations estimates that 75\% of all migrations are internal, and there is no reason for environmentally motivated migrations to be different.\textsuperscript{82} Some of the Alaskan villages threatened by sea-level rise are considering moves of only a few miles.\textsuperscript{83} Many climate migrants relocate within the same state, sometimes even within the same city, depending on the climate change impact at issue.\textsuperscript{84} For example, the community of Isle de Jean Charles is moving forty miles inland.\textsuperscript{85}

The desire to stay within one's country is likely strong as cultural, language, and familial ties are better established. Crossing borders is complicated. When climate migrants move to other countries, the movement is most likely to be from one


\textsuperscript{78} \textit{See} WORLD BANK GRP., \textit{supra} note 15, at 57 (the first report to examine migration due to slow-onset climate impacts).

\textsuperscript{79} NULL & HERZER RISI, \textit{supra} note 12, at 7.

\textsuperscript{80} \textit{Id.}

\textsuperscript{81} \textit{Id.}

\textsuperscript{82} \textit{Id.}


developing nation to another developing nation. Only one-third of cross border migrants move from a developing country to a developed country. Social networks, family connections, and resource availability are the strongest determinants for who migrates and where they migrate to, easily trumping environmental factors.

Like other migrations, climate change migrations are often moves by individuals and families based on a variety of pressures. They may not be planned far in advance or be part of coherent public policies. Perhaps counter-intuitive to many, wealthier people with greater resources and social connections may be most likely to move. Greater financial resources, skills, and social networks make such people more mobile generally and more resilient to climate change impacts. It can be, however, quite difficult to understand exactly which factors motivate a move. Several research institutes, including the United Nations, have noted a lack of data on the issue, with a particular dearth of information on environmental impacts.

86. NULL & HERZER RISI, supra note 12, at 7 (citing a United Nations Development Program report that estimates only a third of migrants move from developing countries to developed countries).

87. Id.

88. See Alisher Mirzabaev, Jianguo Wu, Jason Evans, Felipe García-Oliva, Ismail Abdel Galil Hussein, Muhammad Mohsin Iqbal, Joyce Kimutai, Tony Knowles, Francisco Meza, Dalila Nedjraoui, Fasil Tena, Murat Türkeş, Ranses José Vázquez & Mark Weltz, Desertification, in INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE AND LAND: AN IPCC SPECIAL REPORT ON CLIMATE CHANGE, DESERTIFICATION, LAND DEGRADATION, SUSTAINABLE LAND MANAGEMENT, FOOD SECURITY, AND GREENHOUSE GAS FLUXES IN TERRESTRIAL ECOSYSTEMS 249, 285 (2019), https://www.ipcc.ch/site/assets/uploads/sites/4/2019/11/06_Chapter-3.pdf [https://perma.cc/9HQR-XWBP] (describing migration decisions as being influenced by many factors with climate change "playing relatively lesser roles" in drought-stricken areas); DELIA DAVIN, INTERNAL MIGRATION IN CONTEMPORARY CHINA 49 (1999); IPCC, CLIMATE CHANGE 2014, supra note 41, at 617 (describing complexities in urban-rural migration due to climate change).


90. Those who prove more resilient to COVID are likely to prove more resilient to climate change. See Katherine Mach, Xavier Cortada, Nicholas Mignanelli, Jessica Owley & Ian Wright, Climate Mobility and the Pandemic: Art-Science Lessons for Societal Resilience (unpublished manuscript on file with Author).

91. NULL & HERZER RISI, supra note 12, at 8.
Nearly all climate migrants are reluctant movers. Climate migrants are not using climate change as an excuse to justify abandoning their homes but instead generally move only once there are threats to their lives or livelihoods.\textsuperscript{92} Out-migration hotspots include low-lying cities, coastal areas, and zones of high water stress—often agricultural zones.\textsuperscript{93} Generally, in-migration occurs in cities—Bangalore, Guatemala City, and Nairobi are all expected to increase in population due in part to an influx of climate migrants.\textsuperscript{94} Migrants go to where they believe they will find employment, housing, and social services.

E. What Else Is Moving?

When thinking about relocation, we need to remember not only people move, but land uses also change. We see shifts in areas for grazing, hunting, and agriculture. For example, environmental conditions in Kenya are pushing herders onto private land including into nature preserves.\textsuperscript{95} Climatic problems and other pressures have robbed pastoralists of land adequate for grazing their animals. They have no choice but move on to private lands, but we don't know what the impacts of this migration will be.\textsuperscript{96} Nonhumans will also be moving. Animal migration is not a new phenomenon, but the locations and patterns of migration for both plants and animals will differ under climate change.\textsuperscript{97} Climate planning needs to consider their movements (and human ability to control or guide such movements as well).

Climate responses are complicated and some of the mechanisms developed to respond to climate change (for example, conserving land, shifting agriculture, and biodiversity protection measures) can actually contribute to the displacement of people

\begin{itemize}
\item \textsuperscript{92} World Bank Grp., \textit{supra} note 15, at 23.
\item \textsuperscript{93} Id. at xxii.
\item \textsuperscript{94} Id.
\item \textsuperscript{96} Adam Cruise & Bibi van der Zee, \textit{Armed Herders Invade Kenya's Most Important Wildlife Conservancy}, GUARDIAN (Feb. 2, 2017, 2:00 AM), https://www.theguardian.com/environment/2017/feb/02/armed-herders-elephant-kenya-wildlife-laikipia [https://perma.cc/8HLM-TBR4].
\end{itemize}


anticipated climate impacts on the country are varied and severe. Islands including Puerto Rico and states along the Atlantic Gulf Coast are expected to be hit hard and frequently by tropical storms.103 These communities will also be grappling with sea-level rise and associated problems like erosion and salt-water intrusion.104 Other parts of the United States will be occupied with impacts of higher temperatures on their living conditions and crops.105 We can also expect spreads of wildfires and diseases.106 Such a range of potential impacts makes it hard to summarize the climate change future we should expect.

Because some impacts are already being experienced, we can see where people might go and begin to understand the magnitude of how many people will be affected. It is hard to model climate change migration in the United States or elsewhere. The modelling of climate change impacts itself is challenging, adding into the analysis projections of how humans will react to the change is even harder.107 To help illustrate the climate change migration likely to occur in the United States, I summarize some larger studies and then give examples from four different areas of the types of migration we might expect to emerge.

A study of migration due to sea level rise suggests 13 million homes will become uninhabitable by 2050 and relocation will be necessary.108 Geographer Mathew Hauer suggests migration will occur along pre-existing pathways and will be linked to social


105. See Growing Seasons in a Changing Climate, supra note 23 (explaining that climate change has “substantial direct and indirect effects” on crops and livestock).

106. Welch, supra note 21 (explaining that climate change has many potential disease implications); Wildfires and Climate Change, supra note 38 (suggesting that climate change will increase fire risks and lead to longer wildfire seasons).

107. See Milman, supra note 84 ("It is very difficult to model human behaviour under such extreme and historically unprecedented circumstances . . . .").

networks. He examined internal migration data from the Internal Revenue Service to map where he thought likely relocations would occur. He suggests large numbers of people will leave southern Florida, Louisiana, and the San Francisco Bay area as well as migrate from New Jersey and areas along the east coast. He projects that many people will relocate to noncoastal areas in Texas, Georgia, and California with in-migration centered in and around large cities including Austin, Dallas, Atlanta, and west of Los Angeles along with Chicago and the Washington D.C. area.

Hauer’s research suggests that most areas of the United States will be affected by sea-level rise migrants either as locations of out-migration or in-migration. Many people focus their attention on the migration losses that will happen in Florida (he projects an out-migration of 2.5 million residents with many southern Florida residents staying in the state but moving north toward Orlando). Not enough attention, however, is being given to areas like Texas where Hauer anticipates 1.5 million new residents with a 1.8-meter increase in sea level. Even with adopting adaptation measures (something we have yet to do in a real concerted way), Hauer’s projections of movement within the country are high. These numbers suggest that climate change mitigation and adaptation efforts are not going to stop a flow of migrants due to climate change impacts within the United States.

Real estate expert Jesse Keenan is one of the first researchers to find an already-present impact on real estate prices from

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109. Mathew E. Hauer, Migration Induced by Sea-Level Rise Could Reshape the US Population Landscape, 7 NATURE CLIMATE CHANGE 321, 324 (2017). When Hauer released his fascinating study projecting movements of people within the United States due to sea level rise, he took out households earning more than $100,000 a year under the theory that such people would have a greater ability to adapt to changes (retrofit homes, rebuild after disaster, etc.) than lower income families. Id. at 322. Others suggest, however, that wealthier households are more likely to move. Milman, supra note 84; NULL & HERZER RISI, supra note 12, at 7. Such a pattern may be particularly influenced by the particular climate change impact that a community is facing. As discussed in the examples in this Section, wealthy residents of Phoenix are getting tired of the heat and moving north to Flagstaff. See infra Section I.F.3.

110. Hauer, supra note 109, at 321 (explaining how Hauer’s migration projections were based on the Internal Revenue Services’ annual county-to-county migration data).


113. See id. at 323.

114. See id.

115. See id.
climate change impacts. He suggests climate migration within the United States could be "something twice as large as the Dustbowl." To highlight the different types of moves we see in the United States, I offer examples of four different parts of the country. These are stories of out-migration combined with some ideas about where these people might go.

1. Shishmaref. Sometimes, entire communities move based on a coherent policy. For example, Alaskan Native Villages Shishmaref, Newtok, and Kivalina are holding community votes to decide what to do. Shishmaref is on a barrier island just south of the Arctic Circle. As arctic ice melts, the people of Shishmaref are losing their coastline to erosion. As the ice pack changes, their ability to hunt suffers. As the ice melts, it becomes treacherous. As a conscious adaptation measure, the community is exploring wholesale relocation.

Climate change impacts in the arctic region are more severe than in the rest of the world, putting Alaskan communities on the

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117. Milman, supra note 84.


119. Mele & Victor, supra note 118.


frontline of climate change. The changing albedo effect associated with the loss of snow and ice, along with the positive feedback loop that comes with melting water, means that the Arctic experiences greater warming than the rest of the world.\textsuperscript{123} The darker ground reflects light differently, leading to higher rates of melting.\textsuperscript{124} As the melted ice uncovers and then alters the permafrost, the ground becomes sand, which deteriorates quickly when exposed to waves.\textsuperscript{125} The sea ice freezes later into the fall and winter each year, and then fall storms hit the land harder without a zone of sea ice to act as a buffer.\textsuperscript{126} These impacts have altered the patterns of the wildlife in the area and hampered hunting and fishing.\textsuperscript{127} The GAO found that 86\% of Alaskan Native Villages experience problems with flooding and erosion.\textsuperscript{128}

The people of Shishmaref are an Inupiaq hunting community with a largely traditional lifestyle.\textsuperscript{129} This 600-person village is descendent from peoples who have been in the area for thousands of years.\textsuperscript{130} Previously a nomadic group, Alaskan statehood followed by the discovery of oil in the area and a mandate for children to attend school forced the community into a fixed location.\textsuperscript{131} The people of Shishmaref did not choose the location of the village and originally lobbied for other lands. Now catastrophie flooding and erosion have led to a loss of homeland and impacts on hunting.\textsuperscript{132}

\begin{thebibliography}{99}
  \bibitem{winton2006amplified} Michael Winton, \textit{Amplified Arctic Climate Change: What Does Surface Albedo Feedback Have to Do With It?}, 33 GEOPHYSICAL RSCH. LETTERS, no. L03701, 2006, at 3.
  \bibitem{marino2015fierce} ELIZABETH MARINO, \textit{FIerce CLIMATE, SACRED GROUND: AN ETHNOGRAPHY OF CLIMATE CHANGE IN SHISHMAREF, ALASKA} 5 (2015).
  \bibitem{id} Id.
  \bibitem{GAO} U.S. Gov't Accountability Off., \textit{supra note 80, at 7–8.}
  \bibitem{ARMY} \textit{Id. at 12; see also U.S. ARMY CORPS OF ENG'RS ALASKA DIST., supra note 118 (discussing governmental efforts to curtail erosion in seven Alaskan Native Villages); U.S. ARMY CORPS OF ENG'RS ALASKA DIST., ALASKA BASELINE EROSION ASSESSMENT at 1-1, 6-1 (2009), https://www.post.usace.army.mil/Portals/34/docs/civilworks/BEA/AlaskaBaselineErosionAssessmentBEAMainReport.pdf [https://perma.cc/F6P8-752J].}
  \bibitem{marino2015note} MARINO, \textit{supra note 125, at 2.}
  \bibitem{marino2015note2} Marino, \textit{supra note 122, at 377.}
  \bibitem{marino2015note3} MARINO, \textit{supra note 125, at 2.}
\end{thebibliography}
Shishmaref is not sure what the path forward will look like for them. Some residents say that climate change is “forcing the community to consider migration as the only possible response.”133 As they lose homes and infrastructure, they cannot afford to rebuild.134 This makes them dependent on the federal and state government or possibly private donors. They want to relocate, if they must, within their traditional Kigiqtaamiut territory.135 Their current efforts are focused on building on nearby tribal land.136 The community had its first vote on relocation in 2002, and it was not successful. In 2016, the community voted to relocate and is now working with the government to see if they can make it happen.137

While they are not proposing a relocation of many miles, it will be expensive.138 No other sites within their traditional territory have infrastructure.139 They will need to bring in everything: electricity, airports, roads, etc.140 Some balk at the government paying so much for relocation of only 600 residents.141 Failure to create a relocation plan for the community, however, will likely result in diaspora as residents instead move to different towns within Alaska. The Army Corps of Engineers completed a cultural impact assessment of relocation to Nome or Kotzebue in

133. Id.
134. Marino, supra note 122, at 377.
135. Id. at 15.
136. Id. at 16.
137. Id. at 6. There have been many complicated and unfortunate side impacts. For example, they can’t get anything repaired now that they are going to relocate. Jaffe, supra note 6; Weyiouanna, supra note 6. In the years it will take to complete the move, they will have to live with broken schools, lack of medical facilities, etc.
139. Id. at 32–37 (discussing infrastructure construction needs for a potential relocation).
140. Id.
141. In discussing the similar conditions in Kivalina, Alaska, noted Native American activist Winona LaDuke suggested it might make more sense just to give each resident $1 million. Winona LaDuke, RENEW Distinguished Lecture: The Need for Water Protectors (Nov. 16, 2018), https://buffalo.app.box.com/s/u4q3m1drkobw6xp5mh4c82za0uoxg94 [https://perma.cc/UML4-VWGN].
2005 and concluded it would likely result in a loss of language, tradition, and village government structure.\textsuperscript{142}

The Native Village of Kivalina is facing similar climate change threats but has added complications from the disruption of the hydrological regimes of a nearby river along with an influx of invasive species and thinning ice.\textsuperscript{143} In response to the climate change concerns, the people of Kivalina elected to move to a nearby area that they dubbed Kiniktuuraq in 2000.\textsuperscript{144} Now, the Army Corps of Engineers believes that Kiniktuuraq is also in danger.\textsuperscript{145} Kivalina is still hoping to relocate its 450-person community,\textsuperscript{146} but no one is clear on how it will afford to do so.\textsuperscript{147} The Native Village of Newtok also plans to move. It has already identified a new site and has some federal funding.\textsuperscript{148}

While the Alaskan villages offer examples of community relocation where legal and political structures will (hopefully) be maintained, we can look to island nations in the Pacific to see entire, fully independent nations that are contemplating relocation in response to rising sea levels.\textsuperscript{149} For example, there are proposals for the country of Nauru to relocate to Australia\textsuperscript{150} while the country of Kiribati has been buying land in Fiji.\textsuperscript{151}

\begin{enumerate}
\item \textit{Relocating Kivalina}, supra note 118.
\item Id.
\item Id.
\item Milman, supra note 84.
2. Miami. Studies by Hauer and others suggest that South Florida generally, and Miami in particular, will be the focal points for out-migration.\textsuperscript{152} Some believe the process has already begun, with at least anecdotal stories of people moving and studies showing a drop in the housing market.\textsuperscript{153} People in the Miami area are already selling up and moving out.\textsuperscript{154} Even the former mayor of South Miami, Philip Stoddard, considered heading north.\textsuperscript{155}

Jesse Keenan, Thomas Hill, and Anurag Gumber have documented a climate change signal in the real estate market, writing about the phenomenon of what they label “climate gentrification.”\textsuperscript{156} Using Miami-Dade County as a case study, Keenan and colleagues studied likely impacts on the real estate market from predicted climate change impacts.\textsuperscript{157} Prices of beachfront homes in Miami are going down\textsuperscript{158} with an increasing discount over the past decade.\textsuperscript{159} The effect does not exist in rental

\textsuperscript{152.} E.g., Hauer, supra note 109, at 323.
\textsuperscript{153.} E.g., Keenan, Hill & Gumber, \textit{supra} note 116, at 1, 9.
\textsuperscript{154.} \textit{See} Milman, \textit{supra} note 84 (telling the story of Chase Twichell who sold her Miami Beach apartment where she planned to spend her retirement and returned to upstate New York and explained, “It was like end of the world stuff . . . . It’s like a movie where there’s a terrible volcano that is destroying everything, only it’s much slower than that.”).
\textsuperscript{156.} Keenan, Hill & Gumber, \textit{supra} note 116.
\textsuperscript{157.} \textit{Id. at} 8–9.
rates,\textsuperscript{160} which seems to suggest people are not worried over current conditions but thinking of future potential damage to property or loss of land.\textsuperscript{161}

As climate change and its effects accelerate, some areas (think inland and north for the most part) become more attractive and others less (think coastal and south). Combining the predicted amount of exposures to climate change impacts with social vulnerability and the patterns of who moves and who gets left behind can present real environmental justice problems. Florida politicians worry about the communities that will be left behind with fewer people to care for the community or pay for government services.\textsuperscript{162}

At the same time that Miami is anticipated to have one of the highest out-migration rates, in-migration from the Caribbean, Venezuela, and elsewhere continues.\textsuperscript{163} Many people who fled Hurricane Maria in Puerto Rico went to Florida with several deciding to remain there.\textsuperscript{164} This is an example of the phenomenon of climate migrants moving from one precarious position to another.


\textsuperscript{162} E.g., Milman, supra note 84 (quoting the then-mayor of South Miami).


3. Phoenix. Phoenix, Arizona has always been hot, but lately things have been getting worse. The average annual high temperature in Phoenix is 87 degrees, but from June to September, the average high is 100 degrees or higher.165 In 2017, 155 people died in Phoenix due to the heat.166 People from Phoenix are beginning to look elsewhere to find a way to escape the heat.167

Coral Evans, the mayor of Flagstaff, explains that they are beginning to arrive in her town.168 Approximately a two-hour drive north of Phoenix,169 Flagstaff is about 5,000 feet higher in elevation.170 In a pattern that might also merit the label climate gentrification, the new occupants in Flagstaff are wealthy people buying second homes.171 This has increased the housing prices and the cost of living in the area.172 Poor residents will be priced out of places like Flagstaff and likely struggle to move away from Phoenix.

It is not clear how to reconcile these moves out of Phoenix due to high temperatures when, at the same time, other studies suggest Phoenix is a place likely to receive migrants fleeing sea level rise, flooding, and tropical storms.173 Such a phenomenon also illustrates a pattern revealed in other countries where climate

166. Milman, supra note 84.
168. Id. (quoting Evans as saying, “As it gets hotter, we are getting a lot of climate refugees.”).
171. Milman, supra note 167.
172. Id.
173. See, e.g., Hauer, supra note 109, at 324 & tbl.1.
migrants settle in areas that are also prone to environmental risks, perhaps creating a pattern of migration unlike previous ones we have experienced.

Political scientist Amir Jina suggests that the movements due to the slow onset problems of heat in the south will lead to "insidious climate migration" and it will be more difficult to understand how these pressures "will reshape population in the 21st century." These migration patterns are harder to predict in terms of both out-migration and in-migration. They will happen gradually as opposed to coming quickly in response to disasters.

Some people will only move during part of the year. High temperatures affect quality of life and livelihoods but generally leave structures intact. This may lead to people leaving during the summer to find work elsewhere. With a home still in one piece and infrastructure in place, migrants from these areas will follow different patterns.

4. Midwestern/Oklahoma Farmers. It has always been hard to sustain family farms, and climate change isn't helping things. In some parts of the United States, the biggest climate impacts will be on livelihoods that depend on natural resources. Farmers will have to grapple with both higher temperatures and increased flooding. There is also the potential for increased pest outbreaks leading to a need for costly pesticides, making the ability to make ends meet a challenge. Such people are more likely to be economically forced from their home rather than ousted by particular weather events. Indeed, the plight of farmers illustrates the challenge of determining whether someone is an environmental migrant or an economic one, showing that the drivers of relocation are often intertwined.

This problem is being felt across the United States. By 2050, Texas County, Oklahoma is expected to spend an additional forty days a year over ninety degrees. This is the largest wheat-producing county in Oklahoma. Rising temperatures in the

174. Milman, supra note 84 (quoting Jina).
175. Prasanna Gowda, Jean L. Steiner, Tracey Farrigan, Michael A. Grusak & Mark Boggess, Agriculture and Rural Communities, in 2 IMPACTS, RISKS, AND ADAPTATION IN THE UNITED STATES 391, 399, 404 (David R. Reidmiller et al. eds., 2018) (providing details on the state of the farming community from the Fourth National Climate Assessment).
177. Milman, supra note 84.
178. Id.
Midwest and Plains states are expected to diminish yields for maize, soybeans, and wheat.\(^\text{179}\) Land suitable for growing wine in California is expected to drop by 70%,\(^\text{180}\) and wildfires are exacerbating the situation. Some assert that farmers will not be able to continue to grow corn profitably without the use of genetically modified seeds, finding a geoengineering adaptation solution possible.\(^\text{181}\)

### III. Climate Migration Pressures on Land Use

With a grounding in who is moving around the United States based on climate change, we can now begin to think more carefully about where they are moving to. Few studies have discussed where climate relocations will occur.\(^\text{182}\) This Article is not an attempt to map the movements of people but instead to think about the impact of climate migration on certain land types. The goal of this Article is to invigorate relocation discussions and minimize chaotic


\(^{182}\) Hauer, supra note 109, at 321 ("[Q]uestions of where the millions of potentially displaced persons will go remain unanswered despite a general understanding that [sea level rise] displaced persons are likely to have profound effects on future population landscapes.").
displacement,\textsuperscript{183} where communities only begin to grapple with the implications of climate migration once people start rolling into town.

Without delving deeply into trade-offs between renovations and relocations, we can see that sometimes migration is the best climate change adaptation strategy. Adaptation in place has its limits. If local adaptation policies are not well developed or options appear few, migration may be the best decision. Some policies deter out-migration where it should be encouraged. For people living in truly marginal areas or zones that are likely to be subject to repeated disasters, policies that encourage them to remain in place (think flood insurance) can actually be maladaptive policies that make things worse in the long term. For example, communities that can survive based on remittances are not as likely to be displaced by climate impacts to crops or livelihoods.\textsuperscript{184} In this way, remittances could be undermining needed policy changes.\textsuperscript{185} Thus, we need to think about migration strategies in a way that facilitates them where migration is appropriate.\textsuperscript{186}

This Part contemplates sites of relocations, considering the variety of people and range of land uses that might need a place to go. It is hard to figure out where people are going. The majority of people live in cities, and urban areas are traditional receptors of migrants.\textsuperscript{187} For migrants moving from rural areas or those whose expertise lies in agriculture and other livelihoods more likely to be found in rural areas, we should anticipate rural migration. Hauer’s maps of migration based on sea-level rise show a lot of


\textsuperscript{184.} See \textit{World Bank Grp., supra} note 15, at xxii (illustrating that 20 million people in Bangladesh are experiencing health problems based on saltwater intrusion due to sea level rise but the availability of remittances delays the urgency of relocating).


\textsuperscript{186.} This Article focuses on in-migration, asking what happens when migrants want to use new lands. An equally important inquiry is to consider what happens to the hollowed-out cities left behind.

movement (in and out) in coastal areas but also a net gain in many rural counties.\textsuperscript{188}

Human and nonhuman climate migrations along with shifting needs for infrastructure could place pressures on many types of land. Lands perceived as not in active use may be particularly attractive for development.\textsuperscript{189} While hopefully migratory pressures would lead to urban renewal projects by pushing for use of abandoned buildings or disused facilities for housing and other services, many developers seek out landscapes that do not already have any buildings. Vacant lands may be easier places to obtain permits or create large projects.\textsuperscript{190} This often means either conservation lands or agricultural lands. Such lands are less likely to have a history of contamination, especially compared to industrial sites.\textsuperscript{191} Vacant lands tend to have fewer landowners to negotiate with during condemnation, sales, or leases compared to the same number of acres in an urban setting. Larger parcels are likely to have fewer neighbors. Construction costs are often lower on land where there are no structures and no need for demolition or remediation. Open lands are categorized as either disturbed (soils already disturbed such as with agricultural land, golf courses, or landfills) or undisturbed land (generally preserves or conservation land) with conservationists lobbying for developing already disturbed land.\textsuperscript{192} While many agree that the protection of pristine or undisturbed habitats should be a priority, attitudes differ in response to disturbed land.

\begin{itemize}
\item [188] Hauer, supra note 109, at 322 fig. 1.
\end{itemize}
A. Agricultural Lands

The “disturbed” land most attractive to developers is generally agricultural land.193 The American Farmland Trust (an NGO that promotes protection of farmland and tracks farmland conversion to other uses) estimates that over eighty acres of farmland are lost every hour in the United States.194 In California, for example, farmland faces pressure to convert to housing, solar facilities, and environmental conservation zones.195 There have been proponents of developing on other disturbed but open areas like landfills and old mining sites, but people worry about environmental contamination and other potential negative effects (and the liability that goes with them).196 Thus, agricultural land is attractive and conversion of such lands seems less politically contentious than conversion of conservation lands. While the issues regarding climate adaptation measures on agricultural land (not for agricultural purposes) is a complicated and important issue to address, the remainder of this work considers the potential legal constraints on use of conservation lands.

B. Conservation Lands

While a majority of migrants are likely to aim for urban areas, conservation lands present a particularly important element of the story. Conservation lands can be attractive for settlement because of the amenities that come with them, including their aesthetic beauty. There is a feeling that conservation lands are unoccupied and therefore less likely to be places of conflict between migrants and previous residents. Struggles over resource rights and lands in particular are consistently identified as a source of conflict between migrants and local inhabitants worldwide.197 Moreover, conservation lands have an important role to play in both

197. NULL & HERZER RISI, supra note 12, at 16.
mitigation and adaptation programs and may therefore warrant special protection efforts.

Encroachment onto conservation lands has already been happening around the world as people face environmental and other pressures. Lack of active human occupiers of the land may be a factor in the likelihood of people moving onto such lands. In the United States, conservationists hypothesize that conservation lands will quickly be the target of infrastructure and energy projects as climate impacts decrease the viability of planned or current sites. Such lands are already the location of illegal activities because of the lack of vigilant oversight and trespasses for grazing and other agriculture uses are frequent.

The potential for climate migration and relocation of services due to climate change on these lands means that it is important to understand the constraints and potentials for these lands now, before the pressures intensify. The following Part thus examines


current legal constraints on conservation lands, indicating barriers to development and opportunities for communities and governments to clarify potentially conflicting social goals and provide guidance for judges and other decisionmakers.

Land use needs of climate migrants range from housing (temporary or permanent) to grazing and agricultural lands. In some places, migrants will look to conservation lands for shelter and in other places for livelihood or subsistence needs. Also, where conservation lands serve as recreational lands or spiritual respite for city dwellers, conservation lands near likely in-migration sites are likely to see increased use.

IV. LEGAL RESTRICTIONS ON CONSERVATION LANDS AND THEIR IMPLICATIONS

Conservation lands in the United States and elsewhere come in two main flavors: public and private. While there is a complicated mixture of public and private interests on all land, this Part looks at the underlying landowner and categorizes property based on whether it is held by a government entity and thus "public" or owned by a nongovernmental organization or individual and thus "private." This Article examines the U.S. situation as a model, but most of the analysis here applies elsewhere as well. Many countries follow similar patterns in their approach to land conservation and some have even more complicated categories of land protection initiatives and ownership.

A. Public Conservation Land

In the context of this Article, public land conservation refers to conservation of land owned by a public entity, not measures undertaken by the political branches to effect environmental protection on private lands. Governments own many acres of land. In the United States, the federal government owns about twenty-seven percent of all land and holds the subsurface rights over thousands of additional acres.201 Beyond the federal level, state and local governments also hold millions of acres of land.202 Lands under public ownership can be targeted for conservation or other


public uses. As land in public hands, we generally think of such property as being available to the government holders to use for any public purpose, giving them a relatively free hand in determining what the conservation rules should be or how such lands might be used to respond to climate change. Yet, the mere ownership of land by a public entity does not actually give that entity free rein with respect to the use of that land.

Federal lands in the United States are under the management of federal land management agencies. The four largest land managers are the Bureau of Land Management, the U.S. Forest Service, the National Park Service, and the U.S. Fish and Wildlife Service. Most agencies were created by statute, generally termed the “organic act” of the agency. This Section details the management mandates operating on the majority of federal land, organized by land management agencies.

1. National Parks. While the National Park Service (NPS) is not the federal agency that holds the most land, it is the best known and the most beloved. Its management mandate is the most restrictive. The 1916 Organic Act requires the NPS to “conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” This terse statute creates a tension between protecting the land and helping people to enjoy it. Additionally, when Congress creates individual parks, the establishment acts provide further instructions regarding park operations and purposes. Based on these statutes, the NPS has passed

203. VINCENT, BERMEJO & HANSON, supra note 201, at 3. Additional land is held and managed by the Department of Defense, the Bureau of Reclamation, the U.S. Army Corps of Engineers, and other agencies that hold even smaller parcels. Id.

204. Federico Cheever, The United States Forest Service and National Park Service: Paradoxical Mandates, Powerful Founders, and the Rise and Fall of Agency Discretion, 74 DENVER U. L. REV. 625, 629, 631 (1997). While the National Park Service and U.S. Forest Service have clear organic acts, the other two agencies were actually formed before their organic acts, meaning that they operated for several years before having clear statements of their missions. See Robert L. Fischman, The National Wildlife Refuge System and the Hallmarks of Modern Organic Legislation, 29 ECOLOGY L.Q. 457, 459 (2002) (explaining that the National Wildlife Refuge System did not get a congressional charter explaining the goals and policies for land management until 1997).

205. The Department of Defense is the other large land manager, owning 8.8 million acres (and this does not include the public works projects governed by the Army Corps of Engineers). VINCENT, BERMEJO & HANSON, supra note 200, at 3, 6. Together, these five agencies govern 96% of the federal lands. Id. at 3.

206. 54 U.S.C. § 100101(a) (amending and replacing 16 U.S.C. § 1 (repealed 2014)).
regulations\textsuperscript{207} governing the management of its 421 sites and over 85 million acres of land.\textsuperscript{208} The NPS interprets its mandate as highly restrictive of activities that can take place on the land. It prohibits resource extraction, hunting, and most permanent occupation.

These laws not only instruct the National Park Service, but they also serve as the basis for litigation against the NPS for its management choices. Through the Administrative Procedure Act, anyone with standing can sue the NPS for failing to comply with either the agency's organic act or the unit's enabling act.\textsuperscript{209} Over the years, several court cases have sought to challenge the balance that the NPS strikes between environmental protection and recreational enjoyment.

Because of the NPS's statutory mandate and historical park practices, it is unlikely that this federal land will provide opportunities for climate migrants. Desires to cultivate or graze on parkland would run directly counter to law. Permanent and long-term housing has only been allowed in narrow circumstances to provide for park employees and volunteers.\textsuperscript{210} The only extractive activities allowed are actions that have been grandfathered in.\textsuperscript{211}

For these very reasons, park service land may also be attractive. It is rich in natural resources and offers open space and clean water. Expanding permissible uses to include those needed by migrants would require a statutory change. Such a move would be regrettable, however. While the acreage may sound large, it is a small portion of the country that is being set aside for conservation purposes and parkland provides much needed refuges for various species as well as spiritual refuge for humans. Protection of these sites is a necessary component of climate change mitigation and adaptation.

\textbf{2. U.S. Forest Service Lands.} Congress created the U.S. Forest Service in 1897, predating the National Park Service and serving as the federal government's first land management

\begin{thebibliography}{9}
\bibitem{207} 36 C.F.R. §§ 1–99 (2019).
\bibitem{209} John Lemons, Revisiting the Meaning and Purpose of the “National Park Service Organic Act,” 46 Envt’l Mgmt. 81, 84–86 (2010).
\end{thebibliography}
Today, the Forest Service manages roughly 193 million acres of federal land on behalf of the people of the United States. Forest Service lands produce a significant amount of lumber but also provide other ecosystem services and amenities. The contours for how the Service manages lands are outlined by statute. The original Organic Act from 1897 states that the purposes of the federal forest reservations are “to improve and protect the forest... or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States.” Thus, the permissible purposes of the forests are limited.

The 1897 Act also charged the Secretary of Agriculture to make rules and regulations governing the “occupancy and use” of the forests as well as “to preserve the forests thereon from destruction.” While the Act tells us that the purposes of forest must be to protect timber and water, the language does not suggest that other compatible uses would be prohibited. Indeed, there appears broad leeway for the Forest Service (the created agency) to set rules regarding forestland, but as an overarching goal, the agency must work to prevent destruction of the forest. Following these guidelines, the Forest Service has allowed grazing, mineral development, hunting, water diversions, and other extractive uses.

The Organic Act language above, only provides a general background of initial uses of the forests. Two later laws modified the potential purposes of the forestlands with the 1976 National Forest Management Act (NFMA) explicitly superseding the 1897 Organic Act. For over fifty years, the U.S. Forest Service had operated with only the basic instructions of the Organic Act, meaning that the agency had a lot of flexibility in its regulations and permitting. A result of this was a heavy emphasis on logging and resource extraction. Congress became involved in efforts to expand the operations of the Forest Service in 1960 with the


214. KLEIN, CEEVER & BIRDSONG, supra note 212, at 297.


217. KLEIN, CEEVER & BIRDSONG, supra note 212, at 297.
Multiple-Use Sustained-Yield Act (MUSY).\textsuperscript{218} While this statute had no enforceable obligations, it nominally expanded the Forest Service’s goals to include providing for “outdoor recreation, range, timber, watershed, and wildlife and fish purposes”\textsuperscript{219} while still reinforcing the original purposes of the Organic Act.\textsuperscript{220} While the MUSY Act did not immediately mandate a change in agency behavior, it did begin an acknowledgment that forests have value beyond the timber they supply and showed that Congress was ready to delve into the actual workings of the Forest Service.

After a 1975 district court case\textsuperscript{221} demonstrated that the Forest Service Organic Act was not a workable statute in terms of providing on-the-ground rules for timber harvesting and management, Congress passed the National Forest Management Act of 1976.\textsuperscript{222} The essence of NFMA is that the Forest Service must acknowledge the multiple desirable uses of the forest as outlined in the 1960 MUSY statute. It also required the Forest Service to create forest management plans for each forest unit to determine the best use of the public resources.

Alongside these general forest laws, individual forest units (and sometimes areas within forests) may be governed by laws that are more restrictive. The establishment act for a particular forest often has rules that are more restrictive. The Norbeck Organic Act of 1920, for example, created the Norbeck Wildlife Preserve, which is currently part of the Black Hills National Forest in South Dakota.\textsuperscript{223} For land within the preserve area, the Forest Service must set wildlife protection as the dominant purpose of the land. Some rules cover multiple lands like the Roadless Area policies (protecting forestlands where roadbuilding has not yet occurred).\textsuperscript{224} Designated wilderness areas must comply with the strict prohibitions of the Wilderness Act of 1964, which prohibits permanent structures, roads, and commercial uses, among other things.\textsuperscript{225}

\textsuperscript{218} 16 U.S.C. §§ 528–531.
\textsuperscript{219} Id. § 528.
\textsuperscript{220} Id. (“The purposes . . . of this title are declared to be supplemental to, but not in derogation of, the purposes for which the national forests were established . . .”).
\textsuperscript{221} Izaak Walton League of Am., Inc. v. Butz, 522 F.2d 945, 948, 954 (4th Cir. 1975). This case is commonly called the Monongahela case.
\textsuperscript{222} 16 U.S.C. §§ 1600, 1604.
\textsuperscript{225} 16 U.S.C. § 1133(c).
Forests are more than just sites of timber production. Forest Service land includes ski resorts, lakes, wilderness areas, historic sites, rangeland, and sites of active mineral exploration and extraction. In this context, forestlands provide opportunity sites for accommodation of climate migrants and expanded use by migrants to meet housing and livelihood needs. Under the current planning framework, agency officials can create proactive strategies for determining good areas for expansion of rangeland, erection of temporary housing, as well as increases in hunting and permitting the gathering of nontimber forest products. There should be no general legal impediment because of the recognition that the land could provide multiple uses as long as the Forest Service works to minimize destruction of forest resources. While one must carefully review the laws pertaining to each individual unit, there are often large areas where the flexibility of the planning process and the existence of multiple goals will leave room for climate adaptation even where that adaptation may include higher intensity uses of the land. Because of the legal structure at work here, accommodating climate migrants on forest service lands will be possible through executive action. It will not require statutory changes from Congress as is the case with the National Park Service.

3. The Bureau of Land Management Lands. The Bureau of Land Management (BLM or the Bureau) is the government agency responsible for overseeing the most acres of federal land. Formed in 1946, it governs almost 245 million acres in the United States. The Bureau is responsible for one in every ten acres of land across the United States. The BLM’s responsibilities are defined by the Federal Land Policy and Management Act of 1976. The BLM’s charge is similar to that of the Forest Service with a need to provide for “sustained yields of multiple uses, including recreation,


227. VINCENT, BERMEJO & HANSON, supra note 201, at 4.


grazing, timber, energy and minerals, watershed, wildlife and fish habitat, and conservation.”

The largest array of activities occurs on lands managed by the Bureau including some intensive extractive industries. The Trump Administration actively encouraged increased nonrecreational use of such lands and worked to lessen the restrictions upon them. Thus, these regions represent the best opportunities for expanded and intensive land uses. Such lands may be particularly useful to ranchers in the West needing to expand agriculture activities as hotter temperatures shift or limit vegetation.

4. Wildlife Refuges. The U.S. Fish and Wildlife Service manages 89 million acres for protection of birds and wildlife. The first national wildlife refuge was established in 1903. The Refuge System itself was created in 1966. However, it did not get a true organic act outlining its operational mandate until 1997. These lands have specific goals of protecting wildlife habitat, and it is unlikely that Congress would permit expansion for housing, grazing, or agriculture. Hunting, though, is a common activity on wildlife refuges and may provide some opportunities. Such lands may be particularly helpful to Alaskan Native Villages that need to relocate their towns or shift traditional hunting grounds.

5. Summary. The restrictions on land management agencies likely make little federal land available for extensive use by climate migrants, but still leave open some possibilities. While permanent housing would be hard without a statutory change, renewable resource extraction (agriculture, range, logging, hunting, and fishing) could be consistent with statutory rules for all but park lands. The question of public land availability for climate migrants is not a simple question. One needs to examine

230. VINCENT, BERMEJO & HANSON, supra note 201, at 4.
232. VINCENT, BERMEJO & HANSON, supra note 201, at 5.
234. Fischman, supra note 204, at 459.
both the individual lands at issue and the potential uses of those lands to evaluate whether such uses by migrants could be consistent with the current law. Where it is not consistent (and public outcry is adequate), legislators can alter the statutes to enable greater use of public lands. What Congress creates; Congress can change. If the federal government did want to change policy regarding the management of these lands, it could do so by repealing or amending the statutes establishing the reserves. Such an action would not be easily (nor should it be lightly) done however.\textsuperscript{236}

While the statutes above present reasons to be either optimistic or not about the availability of federal conservation lands to help climate migrants, there is a bigger impediment. A key problem with planning for climate change adaptation through migration on federal lands is that the lands are not evenly distributed. Most federal lands are in the Western half of the country and Alaska. This highlights a particular concern when viewed in conjunction with maps that show likely climate change out-migration zones.\textsuperscript{237} While sea-level rise is not the only area of concern for climate migration, a combination of sea-level rise and communities subject to rapid-onset problems from storms indicate geographical areas for concern. Unfortunately, there are key areas where available public lands and likely in-migration areas do not overlap. While it may seem comforting to know that there is a lot of federal land in California, there is little along the east coast. Additionally, much of the federal land that is in California is well inland and would be a long migration distance for those most affected. Additionally, wildfires increasingly plague these lands.

Nonfederal public lands could play a role. For example, New York has less than one percent federal land, but has vast areas protected by state and local governments. State and local protected areas generally give more flexibility to the government management entities to manage and alter the lands as compared to the federal land managers. This is not always true though. Parks established by statute (for example the Adirondacks in New

\textsuperscript{236} The Trump Administration was eager to loosen the restrictions on federal lands for extractive uses. In theory, this would seem that the government would be open to nonconservation uses of the land. We must couple this, however, with the overly hostile approach to immigrants generally. Maybe the agencies would be open to internal relocations or temporary relocations. We have yet to see how the Biden-Harris Administration will develop its public lands and immigration policies.

\textsuperscript{237} Hauer, Evans & Mishra, \textit{supra} note 108, at 692 fig.2, 693 fig.3; Hauer, \textit{supra} note 109, at 322.
York) have mandates and regulations to which they must adhere. One would have to examine not only the individual state and local laws regarding the land holdings generally but also likely the factors surrounding the creation or establishment of the various public holdings. Again, we may have laws circumscribing their use. Where these are legislative pronouncements, they may be changeable. Sometimes the task may be harder. For example, in New York, the state constitution prevents conversion of parkland to other uses. These concerns help highlight the need to involve private lands in the equation.

B. Private Conservation Land

The unequal distribution of public conservation lands highlights the importance of private lands in the climate migration debate. Figure 1 below illustrates that private lands carry the majority of the forestland in the United States, particularly along the east coast where flexibility and resiliency may be most needed.

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239. The six-million-acre (larger than the Yellowstone, Yosemite, Grand Canyon, Great Smoky Mountains, and Everglades National Parks combined or larger than the entire state of Vermont) Adirondack Park in New York was created in 1892. The Adirondack Park, ADIRONDACK PARK AGENCY, https://apa.ny.gov/about-park/index.html [https://perma.cc/H9KK-8KNG] (last visited Oct. 31, 2020). In 1971, then-Governor Nelson Rockefeller created the Adirondack Park Agency to oversee and plan for the park. History of the Adirondack Park, supra note 238. Although activities within the park boundaries must follow the plans outlined by the agency, there is more flexibility for land use (including use by potential climate migrants) than we have for other parks in the state or for federal parks.

240. N.Y. CONST. art. XIV, § 1; see also Barton H. Thompson, Jr., The Trouble with Time: Influencing the Conservation Choices of Future Generations, 44 NAT. RES. J. 601, 608 (2004).
While there is no comprehensive image of private conservation lands in the United States, we do have some information about lands protected by land trusts and subnational governments. Figure 2 draws upon data from the National Conservation Easement Database. This admittedly incomplete map shows locations of conservation easements in the United States. The shapefiles on the map can be hard to assess at this scale. Some protected areas don’t appear when we zoom out this far and others appear larger than they are, giving perhaps a fuzzy image of the land area under discussion. We can see from this map though that the areas of strong private land protection dominate where there are few public lands.


Private conservation lands come in a few flavors. Some lands are wholly owned by nonprofit organizations that dedicate the lands to conservation for a particular resource, scenic view, or other public goal. Lands held by the Audubon Society serve as a good example. The organization owns many nature centers and reserves across the United States for the purpose of both protecting birds and their habitat as well as providing recreational (mostly birdwatching) and educational experiences.\(^{243}\) Sometimes individual landowners also just decide to protect their land or buy large acres of land for conservation. The Rockefeller family did this famously near Yellowstone but also in upstate New York and elsewhere.\(^{244}\) With private protected lands, the current landowners can decide to change the land uses to meet changing societal or personal needs at any time. Many conservationists seek a greater guarantee of land protection or want to protect more acres than they can possibly own outright (for either financial or

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logistical reasons). In such cases, people use property law tools to encumber the land and ensure long-term preservation. The most common tool in use is the conservation easement.

A conservation easement is a nonpossessory interest in land (meaning that the person who holds the conservation easement does not actually have the right to occupy or possess the land) that restricts the landowner's otherwise permissible behavior with the goal of yielding a conservation benefit.\(^{245}\) The holder of the right is the entity that has the ability to enforce the agreement and by state law must be either a qualifying governmental entity or an NGO.\(^{246}\) The NGOs that work with this tool are called land trusts and there are around 1,700 of them across the United States.\(^{247}\) Conservation easements encumber over 40 million acres in the United States, and their use continues to grow.\(^{248}\)

Conservation easements as a tool are both a boon and a burden for adaptation efforts. Where conservation easements have prevented hardscape development, they secure space for environmental adaptation and enhance resilience.\(^{249}\) For example,


\(^{248}\) There is no comprehensive database of conservation easements in the United States, although the National Conservation Easement Database is trying to serve that function. As of October 2020, it contained data about nearly 32 million acres of conservation easements but also admits that its database is not complete. NAT’L CONSERVATION EASEMENT DATABASE, https://www.conservationeasement.us/ [https://perma.cc/W4XF-L39F] (last visited Sept. 28, 2020).

conservation easements could protect riparian land, leaving room for rivers to flood their banks periodically without risk of harming infrastructure or human habitation. There can be space for nonhuman migrations as plants and animals need to move to more amenable climatic conditions. At the same time, however, these landscapes are encumbered with stringent restrictions that challenge the ability to use the land for new purposes.

The typical conservation easement is a perpetual restriction on land use. Indeed, three states (California, Hawaii, and Florida) require them to be perpetual, one state (North Dakota) prohibits it, and most other states assume perpetuity when not explicitly stated otherwise in the agreement. The perpetual nature of the agreements creates uncertainty regarding the potential for modifying the arrangements. In some jurisdictions, courts and legislatures seem to acknowledge a possibility that changes of surrounding conditions could lead to modification of a conservation easement. However, other areas may take a hard line view and be quite reluctant to find that anything really justifies modification or termination of the agreement. With a relatively short history of using conservation easements in many states, we have yet to learn how courts will interpret the statutes (and the agreements themselves) when someone seeks to modify the rules. In theory, a perpetual agreement should not allow any amendments or changes. If you can change the terms of the agreement, is it still perpetual? Arguably, the only allowable changes should be nonsubstantive.

Because many conservation easements are donated with the goal of obtaining a charitable tax deduction, the Internal Revenue Service is probably the entity that has spent the most

251. Jessica Owley, Conservation Easements at the Climate Change Crossroads, LAW & CONTEMP. PROBS., Fall 2011, at 199, 206 (2011); Adena R. Rissman, Jessica Owley, M. Rebecca Shaw & Barton (Buzz) Thompson, Adapting Conservation Easements to Climate Change, 8 CONSERVATION LETTERS 68, 71 (2015).
time thinking about what the contours of conservation easements should be. The IRS has taken a narrow view of amendment but does have regulatory language indicating that perpetuity may not necessarily last forever.  

To place this tool in a climate migration example, consider a typical conservation easement. Imagine a 500-acre parcel that has been in one family for generations. The family mostly uses the land for recreation. A forested portion is periodically logged. A small creek flows through the property, with a nearby marsh. There are two buildings on the property: one house that is the permanent residence of the parents (now in their 70s) and one that serves as a vacation home for the grown children. The family has watched the conversion of nearby land into housing and laments the change in neighborhood. The parents are also concerned about the estate tax implications of passing the land to their children and would not mind taking a present-day tax deduction. They, therefore, donate a conservation easement to a local land trust over the entire 500 acres, reserving a building envelope allowing them to add one more house near the other two. The conservation easement requires them to otherwise retain the property in its "relatively natural state." The agreement forbids any changes to the creek or construction of permanent buildings outside the building envelope. There is to be no commercial enterprise aside from periodic logging of the forested portion, which can only be done in adherence with certified sustainable forest practices. To qualify for the tax advantages, the conservation easement must be perpetual.

What are the possibilities for use of this land in a world with changing landscapes and changing social needs? One concern deals with how we might change the land ecologically to respond to the environmental changes (the line prohibiting altering watercourses might be particularly troublesome), but what if we want to change the restrictions on the land to meet other (arguably nonecological) societal needs? This conservation easement would prevent the building of additional housing. It would also prohibit the use of the land for other public buildings (e.g., a health center). It is also likely that it could not be used for hardscape infrastructure. Building a road would not likely be viewed as a "relatively natural" feature of the landscape. Train tracks,

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257. Owley, supra note 251, at 203.
airports, and other uses would likely meet the same resistance. What could it be used for? Maybe a refugee camp with temporary structures and tents? It is not clear what a court would think of that use should someone challenge it. This does not mean that the land is not producing a public benefit. It could indeed be quite beneficial for environmental and ecosystem adaptation needs, but as we enter into perpetual arrangements, we need to think clearly about what that might mean should our societal conditions change. Additionally, if we think expansively about needs of a growing or changing population, we may see that this land could be used to provide additional hunting land or perhaps foraging land for animals. The restriction to keep the land in its relatively natural state creates confusion regarding what level of grazing might be permitted or possible use of the land for agriculture, but there is an easier argument for those uses compared to housing or infrastructure.

In most states, there is a safety valve for escaping from the onerous restrictions of conservation easements. If the government determines that the land is needed for something else, it can call upon the power of eminent domain to acquire the land. Where land is encumbered with a conservation easement, exercise of eminent domain might be more complicated. Eminent domain is always a time-consuming process that can be tricky politically. The public outcry against conversion of conservation lands might be higher than for conversion of other lands particularly for parcels or landscapes that have become part of the community. Many conservation lands are protected precisely because community members came together to stop the conversion and maybe even pooled resources to purchase the conservation easement.

Even where eminent domain is an option, assessing the fair market value of the land and the conservation easement might be

258. Korngold, supra note 252, at 1081–82.
tricky. The public entity could be condemning the whole parcel and then would need to apportion value amongst the various property interests, or the public entity could potentially just condemn the conservation easement. Some state laws address this valuation question and require compensation to the conservation easement holder of the development value and compensation of the remaining value to the landowner.

With conservation easements removed, the rules of the land will be governed by local zoning rules. While zoning laws were of course in effect before, one of the hallmarks of conservation easements is that they represent more stringent and more detailed restrictions than those entailed in the zoning law. While it is possible for conservation easements to merely mimic existing land conservation laws, such an arrangement would be unlikely. First, it may not seem worth the investment by the holder to negotiate a conservation easement with such little reward. Second, it may not be deemed as worthy of a tax deduction by the IRS. However, local political climates and zoning laws are usually more changeable than conservation easements and duplicating legal restrictions would give an additional private enforcement hook. In some jurisdictions, restraints on eminent domain law may add other complications. In the wake of the Supreme Court's decision in *Kelo v. City of New London*, many states passed statutes or amended their state constitution to limit the use of eminent domain.

Some attorneys and land trusts have been thinking more proactively about climate change than other organizations. For the most part, however, their consideration of climate change has centered on the environmental conditions of the landscape. Few have contemplated the social conditions and concerns. At the annual meeting of the Land Trust Alliance in 2010, conservation easement attorney James L. Olmsted from Oregon presented some concerns land trusts should be having about climate change along

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262. Unclear is what happens over time if these values change? What if the development value was once low and is now high? Generally, we assume that would be the direction of the valuation and this high cost might be an additional deterrent to using eminent domain. What if it goes the other way and becomes cheap to terminate conservation easements? In such cases, we may see conservation easements terminated too easily.


with some sample terms that such organizations might consider including in their conservation easements.\textsuperscript{265} Most people were surprised that he had explicit language addressing climate change refugees. He included sample clauses to prevent firewood collection, foraging, and hunting.\textsuperscript{266} He suggested language that would prevent conversion of the land to agricultural use even in times of food shortage.\textsuperscript{267} He did suggest that where land was needed for shelter, the conservation easement should be accommodated to allow such use. His conservation easement terms were sample language. Olmsted and other conservation easement attorneys would likely quickly point out that the exact terms should be decided by the parties entering into the agreement. Sample terms or clauses are there to start conversations, not end them. His term on climate migrants reads as follows:

Grantor and Grantee agree and acknowledge that global warming and/or climate change-forced human migrations may result in displaced persons seeking to reside on eased properties. In such instances, the residence on the eased property by new inhabitants will almost certainly conflict with the conservation values and purposes of the Easement. In such extreme circumstances, Grantor and Grantee agree that the conservation values and purposes shall become secondary to the provision of life sustaining food and shelter to the new human inhabitants. Accordingly, under such circumstances they shall seek judicial termination of the Easement on the grounds that it is no longer practical. The proceeds of any such termination shall go to Grantee to be used to deploy conservation easements protecting conservation purposes such as those originally protected by the terminated Easement.\textsuperscript{268}

This language allows for accommodation in “extreme circumstances” without defining what that might mean. Many in the audience felt that this was a far-fetched idea and overly alarmist. However, the president of a land trust in a southern coastal state urged everyone to take Olmsted’s language


\textsuperscript{266} Id.

\textsuperscript{267} Id.

\textsuperscript{268} Id.
and concerns seriously. Without a database of conservation easements available, it is impossible to examine the existing encumbrances to see how many people may have incorporated Olmsted's language or addressed the issue.

V. POTENTIAL POLICY ACTIONS

The role of this Article is not to advocate for the opening of conservation land to settlement or conversion to infrastructure projects. Indeed, protection of these landscapes is important. However, individual landowners and conservation organizations are making decisions regarding the landscape—perpetual decisions—without understanding the full implications of not only changing environmental conditions but changing social conditions as well. Failure to plan for climate migration will not stop people and things from moving, but it may lead to less desirable development patterns.

As we place permanent encumbrances on the land, we should contemplate what types of changes we think will benefit the public. Things we should consider:

- Explicitly acknowledging climate change in our conservation easements and spelling out what the parties to the agreement would view as acceptable changes to the land and land use. This could include, shifting locations of natural and built areas on a parcel, allowing changes to working landscapes, increasing public access for hunting and/or foraging.

- State legislatures should address climate change in state conservation easement statutes. State conservation easement statutes limit the use of the tool for conservation purposes and then generally present a list of acceptable conservation purposes. These purposes tend to protect land for open space, environmental conservation, and agriculture with a focus on keeping land in its natural state. Is there room for conservation in advance of climatic changes? Can

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269. In later communications with the Author, this conservationist pointed to the attractiveness of conservation land to refugees providing the example of people fleeing from hurricane Katrina. He was concerned about potential squatters on conservation land, but also suggested that there could be language agreeing not to use deadly force against trespassers. Of course, one should not need a private land agreement to prevent use of deadly force, but land conflicts have often led to violent responses, particularly in southern states with stand-your-ground laws.

we use conservation easements to save space for change? States might also want to address explicitly when amendment in response to climate change should be allowed and what form it should take. Should amendment provisions really defeat conservation easement enforceability?

- Congress should consider the potential public benefit of changing land uses as climate change adaptation measures. I am uncertain in general about the use of tax deductions for conservation easements, but if we do believe that conservation measures merit a tax benefit, we shouldn’t defeat that benefit by enabling changes in response to public needs.

Whether thinking about public or private conservation lands though, a key element for addressing the changing needs of the public in response to climate change is to incorporate climate change scenarios into the land-use planning framework and land management programs. While public entities (and even NGO land trusts) are considering some climate change models, the focus tends to be on the ecological and not the social implications of the changing world. Where governments explicitly eliminate consideration of climate change impacts, the struggle will be more pronounced.

One clear lesson we have from climate change is that, while we know it is coming, we are not very good at predicting exactly what form it will take and when. Moreover, the effects are not continuous. Different locations will feel the impacts of climate change differently. Impose on top of this varied mosaic open space lands with differing restrictions and rules. Together, this tells us that we cannot make a one-size-fits-all plan to address these problems. It will always be context specific. It will involve considering the needs of the individuals and nonhuman actors involved. While we cannot issue a directive today that will address this tension, we can work towards recognizing the interplay between this tension and the uncertainty in the system and think about what mechanisms or approaches might facilitate adaptation in healthy and productive ways.

We often hear people describe climate change as a no-analogue state. In so doing, they are generally referring to the ecological system. There are many uncertainties as to the exact impacts on climate change on geochemical cycles, ocean currents, and species migrations. But this idea of a no-analogue future also describes the political implications of climate change. Our governments have never had to deal with a problem on this scale—
one that interacts with and permeates through every aspect of law and policy. The COVID-19 pandemic can offer us a model of the chaos and controversy that is likely to ensue. Yet, the science of the pandemic is arguably a narrower and better-understood event. Climate change effects will be more varied and without a vaccine to counteract them. And we simply do not know how our political and economic systems will react. This makes it hard to develop policy mechanisms. What we can see so far from the initial movements and conflicts that have arisen is that we need flexible and resilient tools. In the United States, those are not labels we can give to our land protection strategies for the most part.

Migration can actually be a successful and peaceful method of climate change adaptation if it occurs in the context of smart policy that plans for and accommodates such moves. Prohibitions on migration and other adaptation measures will not be successful. Climate change is not going to listen to policy mandates and adaptation must occur in some form. Where it is not allowed to flexibly occur, conflicts and violence are more likely. We need strategies at multiple scales (local and national, for example) to be successful. We need policies that foster flexibility in resource use and allocations. We need strong local institutions. The time has come for communities to plan for the inevitable departures and arrivals.