Climigration and the Private Sector

A.R. Siders and Carri Hulet

As the effects of climate change grow more severe, millions of people in the United States and around the world will relocate away from hazards. This climate-induced relocation, or "climigration," will have significant consequences for the private sector. Businesses that operate or serve populations in risky areas; developers and real estate agents who build or sell vulnerable real estate; banks, insurers, and financiers whose portfolios include at-risk properties should all consider what innovative and profitable paths they might create to facilitate this transformation. Rather than wait for government and civil society to develop proactive options, companies could devise ways to incentivize property owners and communities to move to safety before their homes and infrastructure are damaged or destroyed. Companies who engage early could enjoy a first-mover advantage and position themselves to mitigate the reputational, financial, and regulatory risks created by climate uncertainties. There are numerous benefits for private sector engagement in climate adaptation, which others have described.[1] Our purpose here is to highlight climate-induced relocation as a type of adaptation that involves unique risks and opportunities for those in the business of community investment and development.

Climigration

Climigration is occurring and will occur in many places in response to a range of climate hazards. As an example, consider U.S. coasts. Waterfront property is, today, some of the most valuable. Over 126 million people–40 percent of the U.S. population–live in coastal counties, and those counties produce more than $8.3 trillion in goods and services.[2] Faced with such prosperity, it is difficult to imagine a past when coastal areas were considered high-risk and undesirable for development. It is even harder to imagine a future where coasts are abandoned, becoming too risky for concentrations of commercial or residential use.

Yet, global sea levels are expected to rise three-to-six feet in the coming decades, placing millions of people and trillions of dollars' worth of infrastructure at risk.[3] Recent research

1 Agrawala, S. et al. "Private sector engagement in adaptation to climate change: Approaches to managing climate risks," *OECD Environment Working Papers*, No. 39, Organisation for Economic Co-operation and Development (2011). doi: 10.1787/5kg221jkf1g7-en; Biagini, B. and Miller, A. "Engaging the private sector in adaptation to climate change in developing countries: Importance, status, and challenges," *Climate and Development*, 5(3) (2013), pp. 242-252; and Terpstra, P. and McGray, H. "Adaptive to climate change: The private sector's role," World Resources Institute (November 14, 2013), available at https://www.wri.org/blog/2013/11/adapting-climate-change-private-sector-s-role.

2 National Oceanographic and Atmospheric Administration. "Coastal economics and demographics" (2014), available at https://www.coast.noaa.gov/states/fast-facts/economics-and-demographics.html.

3 Hauer, M.E., Evans, J.M., and Mishra, D.R. "Millions projected to be at risk from sea-level rise in the continental United States," *Nature Climate Change*, 6 (2016), pp. 691-695. doi: 10.1038/nclimate2961

suggests oceans are warming faster than previously projected,[4] which means sea levels may rise more quickly and hurricanes and other coastal storms may be even more frequent and intense, as they gather energy from warmer waters.[5] Some 4 to 13 million Americans are expected to be completely inundated by 2100.[6] The Intergovernmental Panel on Climate Change (IPCC), U.S. National Climate Assessment, Union of Concerned Scientists, and other experts all confirm that global climate change will pose significant threats to coastal infrastructure and communities. Already, weather-related disasters caused $307 billion in damage in the U.S. in 2017.[7] 2018 was the fourth-most expensive year since 1980 for catastrophe insurance.[8] Sea level rise threatens drinking water supplies and sewage infrastructure in Miami and South Florida.[9] Faced with these challenges, people move, seeking safety and new opportunities.[10] Some communities will be defended by sea walls, shoreline armoring, and beach nourishment,[11] but these solutions will only be possible in some areas and may be limited in duration. According to the 4th U.S. National Climate Assessment, in all but the most conservative estimates of sea level rise, relocation "will become an unavoidable option."[12]

4 Cheng, L. et al. "How fast are the oceans warming?" *Science*, 363(6423) (2019), pp. 128-129. doi: 10.1126/science.aav7619

5 Trenberth, K.E. "Warmer oceans, stronger hurricanes," *Scientific American*, 297 (2007), pp. 44-51. doi: 10.2307/26069374

6 Hauer, M.E. et al. "Millions projected to be at risk" (2016).

7 Mooney, C. and Dennis, B. "Extreme hurricanes and wildfires made 2017 the most costly U.S. disaster year on record," *The Washington Post* (January 8, 2018), available at https://www.washingtonpost.com/news/energy-environment/wp/2018/01/08/hurricanes-wildfires-made-2017-the-most-costly-u-s-disaster-year-on-record/?utm_term=.fcc152efc8da.

8 Ralph, O. "Swiss Re forecasts $79bn in catastrophe losses for insurers in 2018," *Financial Times* (December 18, 2018), available at https://www.ft.com/content/e6c4d79c-02d4-11e9-9d01-cd4d49afbbe3.

9 Flavelle, C. "Miami will be underwater soon. Its drinking water could go first," *Bloomberg Businessweek* (August 29, 2018), available at https://www.bloomberg.com/news/features/2018-08-29/miami-s-other-water-problem; and Harris, A. "A $3 billion problem: Miami-Dade's septic tanks are already failing due to sea rise," *Miami Herald* (January 10, 2019), available at https://www.miamiherald.com/news/local/environment/article224132115.html.

10 King, D. et al. "Voluntary relocation as an adaptation strategy to extreme weather events," *International Journal of Disaster Risk Reduction*, 8 (2014), pp. 83-90. doi: 10.1016/j.ijdrr.2014.02.006; Neumann, B. et al. "Future coastal population growth and exposure to sea-level rise and coastal flooding - A global assessment," *PLoS ONE* (2015). doi: 10.1371/journal.pone.0118571; and Hamilton, L.C. et al. "Climigration? Population and climate change in Arctic Alaska," *Population and Environment*, 38(2) (2016), pp. 115-133. doi: 10.1007/s11111-016-0259-6

11 Gittman, R.K. et al. "Engineering away our natural defenses: An analysis of shoreline hardening in the US," *Frontiers in Ecology and the Environment*, 13(6) (2015), pp. 301-307. doi: 10.1890/150065

12 Jay, A. et al. "Overview," *Impacts, Risks, and Adaptation in the United States: The Fourth National Climate Assessment*, (Reidmiller, D. et al. [eds.]), U.S. Global Change Research Program, Vol. II (2018), p. 64. doi: 10.7930/NCA4.2018.CH7

Some individuals will move across national boundaries. Others across town. All will face obstacles, challenges, and costs.[13]

In fact, retreat is already occurring. It happens in a haphazard fashion as individual homeowners, fed up with repeated floods and the threat of disaster, sell or abandon their homes and relocate to safer sites. In a few places, climigration occurs through managed retreat: a purposeful, often government-sponsored program to move people and infrastructure away from vulnerable areas.[14] Climigration, whether managed or unmanaged, tends to favor people with greater financial means because moving is costly and often involves changes to employment, schools, medical services, child and elder care options. The fact that approximately 40 percent of Americans living in coastal counties are socioeconomically vulnerable in some fashion (e.g., living in poverty, households where English is not the primary language, elderly)[15] means relocation for nearly half of coastal residents is particularly challenging.[16]

Relocation rates have been slow to date partly because the true risk of living in a coastal area is hidden from property owners and local governments. National Flood Insurance Program (NFIP) premiums do not accurately reflect risk.[17] After disasters, federal funds pay significant portions of the recovery costs. Because of this, the perverse reality is that the economically rational choice for most coastal property owners is to stay in place and wait for a crisis to force (and fund) them to relocate. This will not be the case for long. Relocation is expected to become more frequent and to occur at larger scales in the future as the effects of climate change become more apparent and regulatory changes reduce subsidies for at-risk living.

The Private Sector's Role

Currently, the responsibility of relocation rests largely on the shoulders of individuals and government. There are advantages to this, and no private sector solution is likely to unseat the government as the anchor institution for these efforts. However, government action is

13 Hori, M. and Schafer, M.J. "Social costs of displacement in Louisiana after Hurricanes Katrina and Rita," *Population and Environment*, 31(1–3) (2010), pp. 64-86. doi: 10.1007/s11111-009-0094-0; Binder, S.B., Baker, C.K., and Barile, J.P. "Rebuild or relocate? Resilience and post-disaster decision-making after Hurricane Sandy," *American Journal of Community Psychology,* 56(1-2) (2015), pp. 180-196. doi: 10.1007/s10464-015-9727-x; and Eray, S., Uçar, H.N., and Murat, D. "The effects of relocation and social support on long-term outcomes of adolescents following a major earthquake: A controlled study from Turkey," *International Journal of Disaster Risk Reduction*, 24(3) (2017), pp. 46–51. doi: 10.1016/j.ijdrr.2017.05.026

14 Siders, A.R. Managed coastal retreat: *A legal handbook on shifting development away from vulnerable areas*, Columbia Law School, Center for Climate Change Law (2013); Hino, M., Field, C.B., and Mach, K.J. "Managed retreat as a response to natural hazard risk," *Nature Climate Change*, 7 (2017), pp. 364-370.

15 National Oceanographic and Atmospheric Administration. "Coastal economics and demographics" (2014).

16 de Vries, D.H. and Fraser, J.C. "Citizenship rights and voluntary decision making in post-disaster U.S. floodplain buyout mitigation programs," *International Journal of Mass Emergencies and Disasters*, 30(1) (2012), pp. 1-33, available at http://www.ijmed.org/articles/589/download/; Siders, A.R. "Social justice implications of US managed retreat buyout programs," *Climatic Change* (2018), pp. 1-19. doi: 10.1007/s10584-018-2272-5

17 Craig, R.K. "Coastal adaptation, government-subsidized insurance, and perverse incentives to stay," *Climatic Change* (2018), pp. 1-12. doi: 10.1007/s10584-018-2203-5

often slow and, at times, stymied by private sector resistance. The private sector could have a role in facilitating sensible, equitable, and profitable climigration. Private sector engagement need not be viewed as charity; rather, actions to facilitate climigration should be seen as long-term, strategic moves that lead to market fit and capture. Climate change broadly poses risks to companies, according to the Financial Stability Board (FSB), through regulatory change, physical interference, market responses, litigation, reputation, and technological change.[18] When seen through the lens of relocation, some of these potential risks become even more acute. They may also be understood as opportunities.

So, what can the private development community do to be proactive in this area? This article provides a few suggestions to prompt further consideration–and perhaps creative thinking.

First, the private sector should anticipate regulatory reform; develop strategies to benefit from reform; and then support, rather than impede, those reforms. For example, politicians and economists have long argued that the NFIP needs massive reform to raise premiums, enforce mandatory insurance purchase, and expand enrollment. Three congressional bills to reform the process have been proposed over the last fifteen years, but numerous companies and trade associations have lobbied to prevent or repeal legislative change.[19]

Many companies oppose insurance reform because it poses short-term risks to profits through reduction of coastal property values and slowing of coastal development. Yet, opposing reform and continued investment in coastal areas creates long-term risks for the private sector. At some point, reforms are likely to occur, as the costs of continually bailing out a bankrupt NFIP become untenable to the federal government. Companies that prepare for these changes, and then support and adapt to reforms early on, could face lower reputational and regulatory risks than those who hold out in hopes that reform will never come. Early adopters may also achieve a competitive advantage.

A second suggestion is for companies to locate their interests in safe areas and partner with "receiving" communities to provide necessary public support for the people who will follow. This action both reduces physical risk exposure to company assets and operations and facilitates rational, non-crisis relocations by creating an economic draw to safer places. Physical risks are salient for businesses with operations, headquarters, customer base, workforces, supply chains, necessary public services (e.g., water, electricity, roads), or insured or financed portfolio holdings. Banks that have written mortgages for coastal properties face losses if those properties are damaged and the owners are unable to make payments. Such risks are not insurmountable, though. During Hurricane Sandy, the New York Stock Exchange closed,

18 Petkov, M., Plesser, S., and Wilkins, M. "Climate change-related legal and regulatory threats should spur financial service providers to action," S&P Global Rankings (May 4, 2016), available at https://www.scribd.com/doc/311698033/Climate-Change-Related-Legal-and-Regulatory-Threats-Should-Spur-Financial-Service-Providers-to-Action-04-05-2016.

19 Hunn, D., Handy, R.M., and Osborne, J. "Build, flood, rebuild: Flood insurance's expensive cycle," *Houston Chronicle* (December 9, 2018), available at https://www.houstonchronicle.com/news/houston-texas/houston/article/Build-flood-rebuild-flood-insurance-s-12413056.php.

but many traders had already established contingency plans following the terrorist attacks on September 11, 2001, including secondary headquarters in New Jersey and online trading platforms.[20] Companies could make long-term plans modeled after these examples to move their headquarters and operations to areas outside of floodplains. If numerous companies coordinate their moves to a common secondary location, they could preserve the benefits of an agglomerate economy. Beyond headquarters and branch offices, companies would do well to consider where their workforce will live and how they will get to work. If workers increasingly want to live in safe areas, companies with headquarters in those same areas will have a larger candidate pool. Inland roads, free from high-tide flooding, provide more reliable commutes. As consumers relocate inland, businesses may be inclined to relocate with their consumer base and logistical networks, if proximity is important to their business.

In addition to locating their headquarters in safer areas, businesses could offer remote positions to help workers who want to relocate but not change jobs. Companies could pay relocation expenses, not as taxable income but as a business expense, to encourage already remote workers to live in safer areas. Such a move would improve continuity of service as well, if employees are not disrupted by floods or other climate-induced weather events.

Tied to this consideration is the opportunity for the private sector to invest in safer geographic locations. Some real estate speculators are already purchasing land in cities where they believe coastal residents will move. Development in these towns would not only be safe, both physically and as an investment, but may help draw residents away from the coasts, speeding up climigration and directing it toward cities that will have the physical and social infrastructure necessary to accommodate growing populations. However, disinvestment in risky neighborhoods, and targeted investment in safe neighborhoods, if done solely in pursuit of profit, can lead to gentrification and a concentration of at-risk populations in vulnerable locations.[21] History is laced with examples of minority and poor populations being moved to make way for new developments or left behind as economic opportunities arose in other locations. There is an opportunity for the private sector to turn this trend around and use adaptation investment to right historic wrongs.[22] Private sector leaders who are cognizant of inequity and recognize the opportunity to facilitate development that serves the needs of the whole community may provide the most innovative solutions. They may also be first in line for mutually-beneficial private-public partnerships.

20 Brown, A. "What can close the NYSE? World war, presidential funerals and Hurricane Sandy," *Forbes* (October 29, 2012), available at https://www.forbes.com/sites/abrambrown/2012/10/29/what-can-close-the-nyse-world-war-presidential-funerals-and-hurricane-sandy/#5bc32acf11e6.

21 See, e.g., Keenan, J.M., Hill, T., and Gumber, A. "Climate gentrification: From theory to empiricism in Miami-Dade County, Florida," *Environmental Research Letters*, 5(13) (2018), 054001. doi: 10.1088/1748-9326/aabb32

22 See, e.g., Gibson, J.R. "Why climate change and equity matter for infrastructure: An interview with Chione Flegal of PolicyLink," *Union of Concerned Scientists Blog* (February 13, 2018), available at https://blog.ucsusa.org/jamesine-rogers-gibson/why-climate-change-and-equity-matter-for-infrastructure-an-interview-with-chione-flegal-of-policylink.

A third suggestion is for companies to disclose their risks and actions to their investors. Climate-related disclosures are already recommended,[23] and disclosures that specifically address climigration, both as risk and opportunity, could also be seen in a positive light by environmental-social-governance (ESG) investors who support companies that address both environmental and social issues. Companies that pay attention to social vulnerability and welfare in their plans to facilitate climigration may be able to secure additional support from government and civil society partners.

Fourth, the financial sector has a unique role in, and motive for, innovating climigration solutions. Already many insurance agencies and investors are taking action. Moody's Investor Service, Inc. considers the degree to which cities are preparing for climate risks when setting credit ratings for state and local bonds.[24] Cities at risk from extreme events are more likely to default, and cities whose property values are decreasing due to inundation, and therefore losing property tax revenue, may also be less likely to pay. By taking these factors into consideration, investors not only motivate local governments to take action on climate risks but also protect their own investments. Conversely, financial organizations may want to find ways to reward destination cities that are actively preparing to receive people and businesses that are relocating. Providing more favorable credit ratings for these cities could help them build the infrastructure they will need to accommodate larger populations and to subsidize the relocations of less privileged populations.

Mortgage companies may similarly want to offer different rates in vulnerable areas. A home in a 100-year floodplain has, in theory, a one-in-four chance of flooding during the course of a 30-year mortgage. However, this risk is very likely to be much higher given the inadequacy of flood insurance rate maps in the face of climate change and the politicization of the mapping process itself. If this occurs, the home may be substantially damaged and homeowners unable to pay their mortgage. It has been observed that foreclosure rates spike after disasters, or after post-disaster forbearance periods expire, if residents are unable to make payments.[25] Forbearance periods and insurance can temporarily mitigate this risk, but an estimated 40 percent of homes with federally-backed mortgages that are required to carry flood insurance remain uninsured in many parts of the country.[26]

23 Government Accountability Office. "Climate-related risks: SEC has taken steps to clarify disclosure requirements," *Government Accountability Office Fast Facts* (February 20, 2018), available at https://www.gao.gov/products/GAO-18-188; Task Force for Climate-Related Financial Disclosures. "Publications" (2018), available at https://www.fsb-tcfd.org/publications/.

24 Flavelle, C. "Moody's warns cities to address climate risks or face downgrades," *Bloomberg* (November 29, 2017), available at https://www.bloomberg.com/news/articles/2017-11-29/moody-s-warns-cities-to-address-climate-risks-or-face-downgrades.

25 DePillis, L. "How these hurricane-ravaged states have avoided a housing disaster–so far," *CNN Business* (April 22, 2018), available at https://money.cnn.com/2018/04/22/news/economy/hurricane-foreclosures-houston/index.html; Scotsman. "Foreclosures may tick up in hurricane-affected areas," *Scotsman Guide* (August 17, 2018), available at https://www.scotsmanguide.com/News/2018/08/Foreclosures-may-tick-up-in-hurricane-affected-areas.

26 Vecsey, L. "Coastal area residents stunned by flood insurance rate hikes," *Forbes* (October 22, 2013), available at https://www.forbes.com/sites/zillow/2013/10/22/coastal-area-residents-stunned-by-flood-insurance-rate-hikes/#1325ace34895.

Lenders could play a greater role in enforcing regulations and requiring homeowners to carry flood insurance. Lenders may also want to consider offering shorter terms or higher interest rates in areas where long-term repayment is risky. Such actions may affect coastal real estate markets by signaling the true extent of the risk to homebuyers, and this, in turn, could facilitate relocation away from at-risk areas. Such actions also run the risk of creating inequity so lenders should proceed with caution. Making coastal property more expensive, or accessible only to people who are able to pay higher down payments or shortened mortgage timelines, without providing some outlet for lower-income residents, could leave people trapped in risky areas or create coasts owned only by the wealthy. If lenders do pursue altered terms in at-risk areas, these policies may need to be paired with relocation support, provided either by private sector or government, to offer trapped populations a way out. Potentially, banks could explore options to transfer mortgages on coastal properties to post-foreclosure (REO) properties in safer areas as a way of facilitating relocation. Banks could then work with government agencies to purchase the flood-prone properties. This would require modification of existing federal buyout programs, and it is just one example of the type of creative thinking we hope financial institutions will apply.

As a final thought, companies should consider their moral obligations. Is it ethical for developers to build homes in areas they know face a one-in-four chance of damage or destruction over the coming decades? Is it ethical for realtors to conceal a history of flood damage from potential buyers? What disclosure should be required by due diligence? At some point companies may face legal liability for knowingly placing people in harm's way or for failing to learn about and mitigate risks.[27] Companies who exploit consumers' lack of risk awareness may face litigation and potential liability in the future. Current liability is likely limited, and the potential for and extent of future liability has yet to be determined, but lawsuits on this basis have been filed and are being heard. For example, one recent lawsuit in Texas has been filed on the basis that a flood-prone neighborhood should not have been built in an at-risk location.[28] Rather than continue to build in risky areas, developers, realtors, construction companies, financers, insurers, and investors could all seize the opportunity posed by climigration to develop new communities in safer areas.

The private sector has already shown remarkable vision in helping migrants in Europe through app development, skill matching, job search assistance, and other services.[29] This same spirit of innovation and community aid could help people as they relocate away from

27 Kusler, J. "Professional liability for construction in flood hazard areas," Association of State Floodplain Managers (2017), available at https://www.floods.org/PDF/ASFPM_Professional_Liability_Construction.pdf.

28 Shay, M. "'Neighborhood should have never been built': Homeowners file lawsuit against developer after flooding issues," *Eyewitness News* (September 27, 2017), available at https://abc13.com/homeowners-file-lawsuit-against-developer-after-flooding-issues/2461702/.

29 Sutherland, P. "Why the migration crisis needs a private-sector response," World Economic Forum (September 14, 2016), available at https://www.weforum.org/agenda/2016/09/why-the-migration-crisis-needs-a-private-sector-response.

areas at risk from climate change. For example, the private sector could develop technological solutions to help keep health services, elder and child care, or other social services in place throughout the relocation transition.

Conclusions

The ideas in this article represent a modest step forward. The goal of this article is to encourage private actors to think creatively about the actions they can take to benefit themselves and the communities both sending and receiving residents due to climigration. The same innovation that drives commercial success can, we believe, be applied to climate adaptation in general and climigration in particular. Companies play major roles in community development and can help drive solutions as society reimagines what it means to live in resilient, climate-safe communities and economies.

As we have noted repeatedly, climigration is rife with equity challenges. Communities are in need of the solutions that informed, progressive private sector actors might invent. We challenge those who recognize the tremendous business opportunities in climigration to deal seriously with these equity issues so private sector leadership leads to a more just society in the long run.

A.R. Siders is an assistant professor in the Disaster Research Center, Biden School of Public Policy and Administration, and department of Geography and Spatial Sciences at the University of Delaware and Carri Hulet is a senior mediator at the Consensus Building Institute.