

FUTURE-PROOFING REAL ESTATE FROM CLIMATE RISKS

Many assets held by real estate investors are in cities that may be vulnerable to the effects of climate change—ranging from more intense and frequent weather events such as hurricanes, typhoons, and wildfires to more gradual changes such as sea-level rise or shifting weather patterns.

The impacts of the actual and perceived risks of climate change are already beginning to be reflected in residential market pricing. Studies published in 2017 and 2018 looking at the United States, Germany, and Finland found that homes exposed to flood risk or sea-level rise have sold for less than comparable properties or have seen values increase at a reduced rate in comparison to similar properties without flood risk.¹

For commercial real estate located in areas that may be vulnerable to climate risks, the impact on pricing and value could be even worse. For example, more than \$130 billion of U.S. institutional real estate is in metropolitan areas that rank in the top 10 percent for exposure to sea-level rise, according to recent research on the U.S. market by Heitman and climate risk analytics firm Four Twenty Seven.

Assessing the potential impacts of climate change, considering how they could affect the long-term viability of real estate assets, and reflecting them in investment pricing is challenging. This paper presents the preliminary findings of a research project being carried out by ULI in partnership with Heitman, the global real estate investment management



Flooding in Houston after Hurricane Harvey. (istockphoto © Karl Spencer)

firm, on how real estate investors are factoring climate risk into their investment decision-making and management processes. The research conducted so far indicates that while there is much left to learn, industry leaders are beginning to identify actionable steps to evaluate and manage climate risk.

WHY DO CLIMATE RISKS MATTER FOR REAL ESTATE?

Sustainability and environmental, social, and governance (ESG) factors have become increasingly important in real estate investment. The initial focus has been primarily on improving building resource efficiency, occupant health, and well-being, and reducing greenhouse gas emissions. These efforts can lower operating costs and make a property more desirable, which may boost rental income and improve liquidity.

The drive to improve sustainability is motivated by other factors as well. Many institutional investors are pushing the real estate sector to

catch up with the leadership in this area seen in other sectors, while some form of sustainability certification (such as Leadership in Energy and Environmental Design [LEED]) is often an occupier requirement for Class A office space in competitive markets.

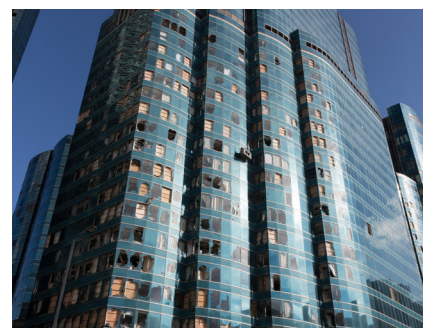
As valuable as these operational efforts can be, they often do not address the location-specific threats posed by factors such as sea-level rise, increasingly frequent hurricanes and wildfires, heat stress, and water stress. In 2017, insurers paid out a record \$135 billion globally for damage caused by storms and natural disasters.² This figure does not represent actual damages, which in the United States alone were \$307 billion, according to National Oceanic and Atmospheric Administration estimates.³ Beyond damages, climate and weather events can lead to increased insurance, maintenance, and operational costs and, potentially, a decrease in property liquidity, and value.

HOW CAN CLIMATE RISK AFFECT REAL ESTATE INVESTMENT?

The threats climate change may pose to real estate investment can be divided into *physical* risks and *transition* risks.

Physical risks are those capable of directly affecting buildings, and include extreme

weather events, gradual sea-level rise, and changing weather patterns. Transition risks include changes in resource availability, shifting market preferences, lower demand for at-risk properties, and new regulations. Both physical and transition risks have the potential to affect investment returns and decision-making processes.



Office building in Hong Kong damaged by super typhoon Mangkhut. (istockphoto © Winhorse)

TYPES OF CLIMATE RISK AND THEIR POTENTIAL IMPACT ON REAL ESTATE

	Category	Potential impact
Physical risks	Catastrophic events Extreme weather such as hurricanes and wildfires.	<ul style="list-style-type: none"> • Costs to repair or replace damaged or destroyed assets; value impairment • Property downtime and business disruption • Potential for increased insurance costs or reduced/no insurance availability
	Changes in weather patterns Gradual changes in temperature and precipitation—such as higher temperatures, rising sea levels, increasing frequency of heavy rain and wind, and decreased rainfall—which are likely to exaggerate the impact of catastrophic events.	<ul style="list-style-type: none"> • Increased wear and tear on or damage to buildings, leading to increasing maintenance costs • Increased operating costs due to need for more, or alternative resources (energy and/or water) to operate a building • Cost of investment in adaptation measures, such as elevating buildings or incorporating additional cooling methods • Potential for increased damages from catastrophic events • Potential for increased insurance costs or reduced/no insurance availability
Transition risks	Market The possibility that markets vulnerable to climate change will become less desirable over time. Rising capital costs to pay for building and maintaining infrastructure to manage climate risks.	<ul style="list-style-type: none"> • Reduced economic activity in vulnerable markets • Reduced occupier demand for properties • Reduced asset value • Potential for increased real estate taxes
	Policy and regulation Regulations to address climate change—e.g., climate risk disclosure, tougher building standards, carbon pricing, emissions caps, changes to subsidies—as well as changing policies for providing funding for infrastructure or rebuilding after major events.	<ul style="list-style-type: none"> • Increased cost of doing business due to new disclosure requirements and compliance measures • Increased taxes—both those resulting from public policies such as carbon taxes and those for funding adaptation infrastructure • Loss of subsidies or other funding opportunities • Additional capital investment to comply with stricter regulation
	Resource availability Changes in the availability of key resources such as energy and water, including water scarcity.	<ul style="list-style-type: none"> • Increased costs and reduced net operating income due to higher prices for water and energy • Additional capital expenditures to adapt buildings to operate with reduced/alternative resources
	Reputation and market position Growing stakeholder preference to work with companies incorporating climate risk into investment decisions, and consumer preference for real estate products incorporating climate mitigation.	<ul style="list-style-type: none"> • Risk to company brand and reputation if no action taken • Lower liquidity and/or reduced attractiveness of assets that have not incorporated climate mitigation

WHAT IS THE INDUSTRY DOING IN RESPONSE?

For this project, ULI interviewed real estate professionals working for institutional investors, investment managers, and investment consultancies from across Europe, North America, and Australia, asking questions developed with Heitman. This summary synthesizes preliminary findings. The complete findings, as well as case studies, will be presented in the final report later in 2018.

Interviews revealed that while there is growing awareness of the impacts climate risk could have on real estate investment, the industry has not yet developed a standardized response. At this early stage, investment managers view insurance as the primary means of financial protection against physical damage from climate events. However, insurance will not protect against a reduction in demand for assets in locations seen as vulnerable to climate risks.

Some influential institutional investors are beginning to ask their investment managers how they are incorporating climate risk into portfolio construction, creating a ripple effect throughout the industry. Pioneering investment managers also understand the importance of taking action to protect asset value and investment returns and want to mitigate risk at the property and portfolio levels. However, at this early stage of discussion on climate change's potential impacts on the real estate

sector, no standard climate risk analysis exists for managers to incorporate. All those interviewed agreed that climate risk is likely to be increasingly recognized and addressed across the industry over the next five years.

EMERGENT CLIMATE-RISK MITIGATION STRATEGIES

Preliminary findings from this research identified a variety of strategies and practical steps investors and investment managers are using as they begin to address the potential impact of climate risk.

Assess Physical Climate Risks at the Property and Portfolio Level

Many of the real estate investment managers interviewed had recently undertaken, or were in the process of undertaking, mapping exercises to understand the current and future climate risks affecting assets in their portfolios.

Some firms are analyzing the data in house, while others are working with insurance partners or hiring climate data analytics specialists. Among the climate-related risks examined are sea-level rise, flooding, heavy rainfall, water stress, extreme heat, wildfire, and hurricanes, as well as nonclimate risks such as earthquakes and terrorism.

"We are doing this to be proactive," said one investment manager. "We want to be able to understand what the upper bound of the value impact is so we can adjust for it with our investment strategy."

Evaluate Climate Risks in Investment Decision-Making Processes

Most interviewees' firms are still in the early stages of incorporating climate-risk considerations into investment decision-making processes.

During due diligence, many investment managers assess a building's operations to identify ways to reduce resource use and review high-level physical risk assessments regarding the threat of flood, hurricane, and earthquake. Advanced tools that assess the magnitude of exposure to those risks as well as to a wider range of climate risks—such as sea-level rise, wildfires, heat stress, and water stress—can help in modeling how climate risk could affect returns throughout the hold period (e.g., higher capital and operating expenses, higher escalations for insurance and taxes).

One global investment manager uses an environmental risk index that incorporates climate risk and is assessing each property against the index. Many interviewees noted that they expect consideration of certain types of climate risk in the investment process to be a standard practice within the next five to ten years.

Incorporate Additional Mitigation and Adaptation Actions for Assets at Risk

Many investment managers indicated that they are exploring how climate mitigation strategies—such as seawalls, dikes, building hardening, increased elevation, and additional cooling systems—can be incorporated into properties to improve their resilience.

Some proposed that these interventions should be required and catalogued during due diligence, or even that assets at risk could receive additional capital expenditure funding to physically address vulnerabilities or obtain enhanced insurance. Others indicated a willingness to invest capital to protect against climate risk for high-performing assets in competitive locations identified as long-term holds.



High-tide flooding on a sunny day in downtown Miami, Florida. (© Wikimedia Commons)

However, according to most interviewees, investments in climate mitigation need to have other types of benefits—such as reduced operational costs or improved tenant experience—in order to be justifiable given the impact on short-term investment returns and the current expectation that insurance will cover damages.

Proactively Address Potential Issues with Insurance Coverage

Insurance was a key theme in interviews. Insurance will not cover loss in asset value, but it can cover damages from catastrophic events. Many asset managers are looking to insurance partners to help anticipate rising premiums due to climate risks and availability of coverage, and to understand opportunities for mitigation. Interviewees also noted that they are not currently rewarded by insurance providers for investing in resilience or mitigation, but hope to see this happen in the future.

Monitor and Address Policy and Regulatory Risk

Regulations or policy changes intended to reduce the extent of climate change or shift locational patterns in light of it could pose a threat to the value of real estate assets.

This was highlighted in particular by European interviewees, who were aware of the potential impact of new regulations enacted in an effort to achieve national emission-reduction targets. For U.S. real estate, a change in policy by or funding through the National Flood Insurance Program (NFIP) could be a cause for concern. Globally, the Financial Stability Board's Task Force on Climate-related Financial Disclosures

(TCFD) asks organizations on a voluntary basis to disclose climate-related financial risk.

While it may take some time for weather patterns to change, new policies or abrupt regulatory shifts could pose a shock to real estate markets. Interviewees emphasized the importance of tracking emerging policies and their potential implications, and working with industry bodies to contribute to the development of appropriate regulations to ensure that the industry is prepared for upcoming policy changes.

Evaluate Market Risk and Engage with City-Level Resilience Strategies

No interviewees had redlined or ruled out investing in otherwise attractive markets solely due to climate risk. However, some companies are experimenting by reducing the exposure of any single fund or client portfolio to high-risk areas.

Many interviewees discussed how a city government's preparedness for climate change influenced their decisions regarding whether to invest long term in those markets. They are seeking markets where governments have the authority, function, and funding to address climate risk, whether at the municipal-government level or through supportive national policies and practices.

One investment manager noted upcoming plans to meet with elected officials in a city with well-documented climate risk, explaining, "We want them to know that we, as major asset owners in their city, are thinking about this issue and want to see action taken."

A LOOK AHEAD

The commercial real estate investment industry is in the early stages of addressing how to take climate risk into account and what tools to use in investment decision making and management processes. The full report from this project, scheduled for publication this winter, will contain a deeper review of current industry practices, lessons that can be learned from the front-runners in this area, and the challenges practitioners are likely to face as they work to incorporate climate-risk considerations into investment decision making.

- Report launch and global webinar: winter 2018–2019.
- Local ULI council roll-out and events: throughout 2019.

For further information on this project, contact Billy Grayson, executive director, ULI Center for Sustainability and Economic Performance, or Amanprit Arnold, Senior Manager, Research and Advisory Services, ULI Europe.

Notes

1. Asaf Bernstein, Matthew Gustafson, and Ryan Lewis, "Disaster on the Horizon: The Price Effect of Sea Level Rise," *Journal of Financial Economics* (forthcoming), published online May 4, 2018; First Street Foundation, "As the seas have been rising, Tri-State home values have been sinking," August 23, 2018; Jesse H. Keenan, Thomas Hill, and Anurag Gumber, "Climate gentrification: from theory to empiricism in Miami-Dade County, Florida," *Environmental Research Letters* 13, April 23, 2018; Jens Hirsch and Jonas Hahn, "How flood risk impacts residential rents and property prices: an empirical analysis," *Journal of Property Investment & Finance*, 36, no. 1 (2017), 50–67; Athanasios Votsis and Adriaan Perrels, "Housing Prices and the Public Disclosure of Flood Risk: A Difference-in-Differences Analysis in Finland," *Journal of Real Estate Finance Economics* 53, no. 4 (November 2016), 450–471.

2. Hiroko Tabuchi, "2017 Set a Record for Losses From Natural Disasters. It Could Get Worse," *New York Times*, January 4, 2018.

3. Adam B. Smith, "2017 U.S. billion-dollar weather and climate disasters: a historic year in context," *Climate.gov*, January 8, 2018.



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