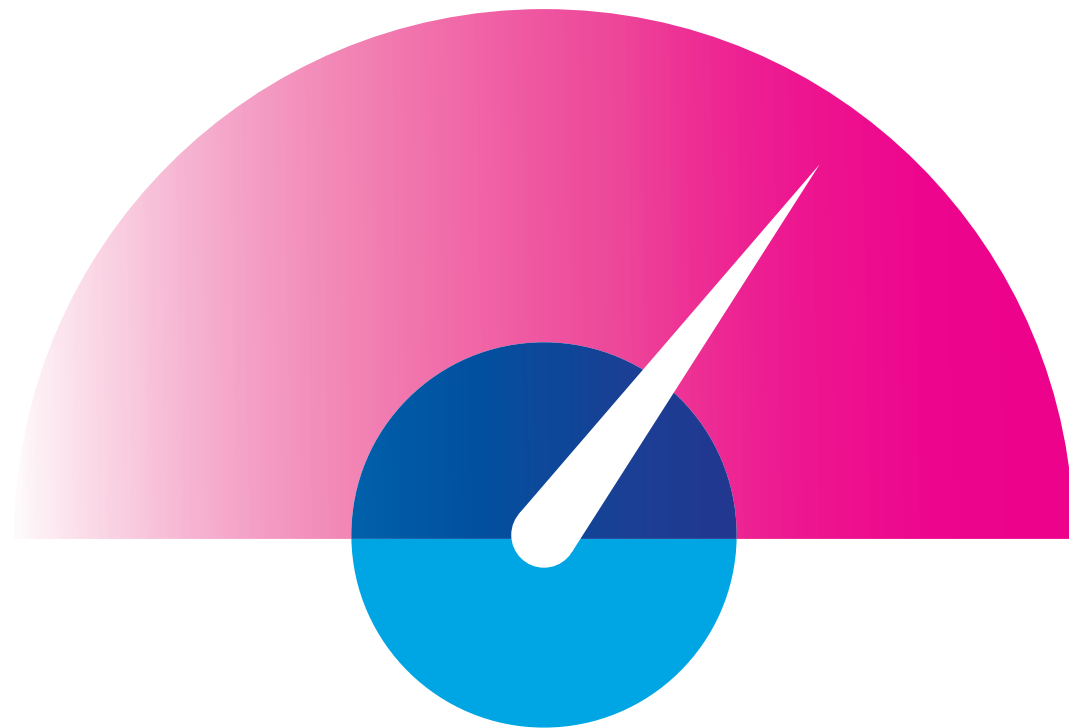


REASSESSING CLIMATE RISK



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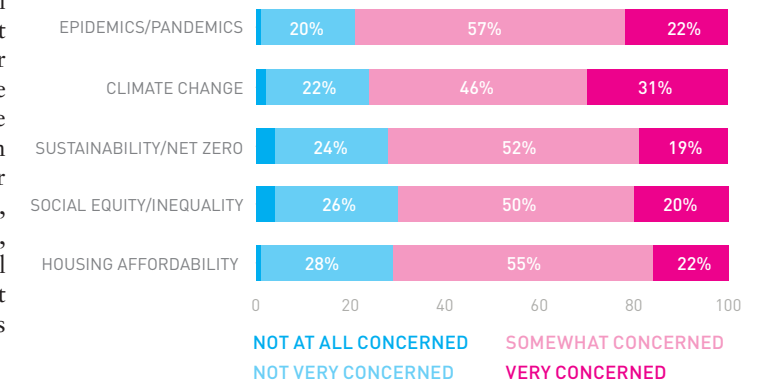
The commercial real estate industry may not yet fully grasp the actual relationship between climate risk and asset pricing and value. But the knowledge is coming fast.

Many institutional real estate investors have significant exposure to cities and regions that are economically important but increasingly susceptible to climate change impacts. Climate change is becoming one of the most important structural forces and risks that long-term investors need to proactively consider in building resilient portfolios. While climate events are not new, there is growing evidence that the frequency, intensity, and geographic spread of climate events have increased in recent decades and this dynamic coincides with the emergence of more chronic events including temperature and sea level rise.

Exhibit 1 provides recent survey evidence that illustrates industry awareness and concern amongst AFIRE members. Almost 80% of responses to AFIRE’s annual investor survey indicated that they are either “concerned” or “very concerned” about climate risks. The existence of climate risk does not necessarily mean that investors should avoid or withdraw from those places, but a reassessment of risks, allocations, and potential mitigation actions is important to protect or limit impacts on performance.

EXHIBIT 1: GLOBAL REAL ESTATE INVESTOR OPINIONS OF CLIMATE RISK AND OTHER FACTORS

Source: AFIRE International Investor Survey (2021). Percentage totals may not sum to 100% due to rounding.



Recent industry commentary and analysis reveals the challenges associated with incorporating complex risk considerations into valuation and investment processes and decisions. The Urban Land Institute (ULI) in conjunction with real estate investment management firm Heitman lays out many of the issues and explore current industry practice in surveys of industry participants.¹ These reports, consistent with the AFIRE survey, find significant investor awareness.

In going a step further to assess if awareness has led to action, the studies conclude that the industry is in the early stages of incorporating heightened climate risk into the investment and valuation process. Many investors are beginning to work with one or more of the growing rosters of forward-looking climate risk assessment firms to incorporate climate risk into investment and asset management decisions. However, connecting the perceived risk to valuation and pricing is more tenuous.

A major impediment to a rigorous forward-looking assessment of the financial impacts of climate risks on asset values is lack of knowledge and empirical evidence about how property markets have responded to past extreme weather events and how they are responding today to more chronic forces such as sea level rise.

To help fill the gap and investigate this, a team of researchers from University of Reading (UK) and York University (Canada) worked to collate and assess the existing empirical evidence for the extent and channels through which real estate values and prices have responded to recent extreme weather events.² If climate change risks are in fact already recognized by market participants, then their impact should be observable through pricing behavior at purchase/sale or in OpEx/CapEx decisions. They analyzed mainly recently published studies of pricing and investment behavior following extreme weather events for evidence of such impacts. The research revealed a fairly thin and inconclusive empirical evidence base and suggests that the industry has not yet come to grips with quantifying the relationship between physical climate risk and pricing and value.

Historically property markets have managed the damages and disruption from extreme weather.

Insurance, building design and location choices, codes and standards, government infrastructure investment, and governance capacity all contribute to resilience and can support asset values, and there is some evidence that that climate risk is partially capitalized in values. But even if this is the case, this level of risk absorption may be insufficient against the increased projected severity of acute and chronic climatic effects and likelihood of compounding physical and economic harm. It is imperative then to assess the extent to which markets are, or are not, appropriately pricing physical climate risk now and to understand more about the basis against which forward-looking modelling and analyses (services for which are widely available) are being made.³

SHORT-TERM VERSUS LONG-TERM ADJUSTMENT DYNAMICS

There is ample evidence that prices drop after acute climate events, but, generally, the drop is modest and short-lived. This has been shown in residential markets,⁴ and more recently in commercial markets.⁵ These studies and others assessed markets where major storms were more common. This could imply that the threat is realized and that the risks are already capitalized into property prices, but a short-term, myopic approach to investor/owner value and pricing cannot be ruled out.

Some recent research suggests a softening of this dynamic, although this is limited to analyses following Superstorm Sandy. There may even be a permanent post-event price discount which appears to apply to properties directly affected by Sandy, properties that were unaffected directly but within the storm affected area, and potentially coastal properties in other markets not directly affected by Sandy but exposed to similar events.⁶ This last instance may be a case of “belief updating” where risk information is becoming more available and better internalized within individuals and institutions and markets are adjusting accordingly.⁷

LIQUIDITY RISK CONSIDERATIONS

Immediately following climate events, acute market impacts may be assumed; that is, fewer listings and sales and/or lower prices for assets that do sell. Pricing tends to be a lagging or post-hoc indicator of how markets are absorbing physical climate risk so trading volumes or time on market may be better leading indicators. Prices, sale volumes, and velocity should be studied to fully capture the market’s response.⁸ The availability and cost of lender financing and re-financing, as well as insurance, are likely key determinants of investor behavior and liquidity in areas historically subject to climate events, and importantly for areas generally unexposed in the past but subject to shifting patterns and conditions (including chronic factors such as sea level rise).

Research focused on Florida residential markets has looked at prices and volumes for areas exposed to sea level rise and has found that sale volumes declined in more exposed areas relative to less exposed areas even while prices held generally steady (at least until recently). The authors suggested this was driven by a change in buyer demand, as there was, at that time, no evidence for a shift in the practices or availability of insurers/insurance and lenders/credit.⁹

MORTGAGE LENDING AND SECURITIZATION

There has been a lack of academic research on the impact of severe weather events on real estate debt markets and no published academic research that has focused on commercial mortgage markets. Yet credit rating and mortgage analytic firms all have significantly increased their physical climate risk-related analyses of and focus on the mortgage sector, especially in US mortgage-backed securities (MBS) markets, and the municipal finance and infrastructure areas that could ultimately impact property pricing in higher risk locations.

There is evidence, though, that US residential lenders are becoming more aware of risks that could ripple through to default rates and that they are using this information for decisions on which loans to retain versus those sold to government-sponsored enterprises (e.g., Fannie Mae and Freddie Mac) for securitization. These findings pertain to both post-storm behavior as well as areas considered to be at risk from sea level rise.¹⁰

Understanding how property values could be materially affected by the physical impacts of climate change is of paramount importance to investors.

ASSET LEVEL RISK MITIGATION

Insurance clearly supports investor returns and the ability to lend against assets. Obvious risks to both arise if insurance becomes unobtainable, or even if terms such as exclusions, higher excesses and/or significant changes to premiums are seen. There is little evidence yet from the literature that this has been seen. And in fact, the US National Flood Insurance Program (NFIP) may be creating moral hazard and propping up prices¹¹—though proposed changes to the NFIP may offer a case study once information accumulates as most policy holders are expected to see an increase in rates.

For commercial real estate, insurance issues may influence occupier behavior and thus feed into owner cash flow considerations.¹² Owners can improve resilience through actions to ‘harden’ assets against extreme weather and there is anecdotal evidence that some owners and managers are making ‘defensive’ capex decisions to remain aligned with market expectations. This decision-making is complicated by the fact that many climate risks may not yet be properly reflected in CRE market values, so the benefits from mitigation expenditure might not be fully recognized either. To date, insurers have not incentivized resilience expenditure through premium discounts or other market influencing actions.¹³

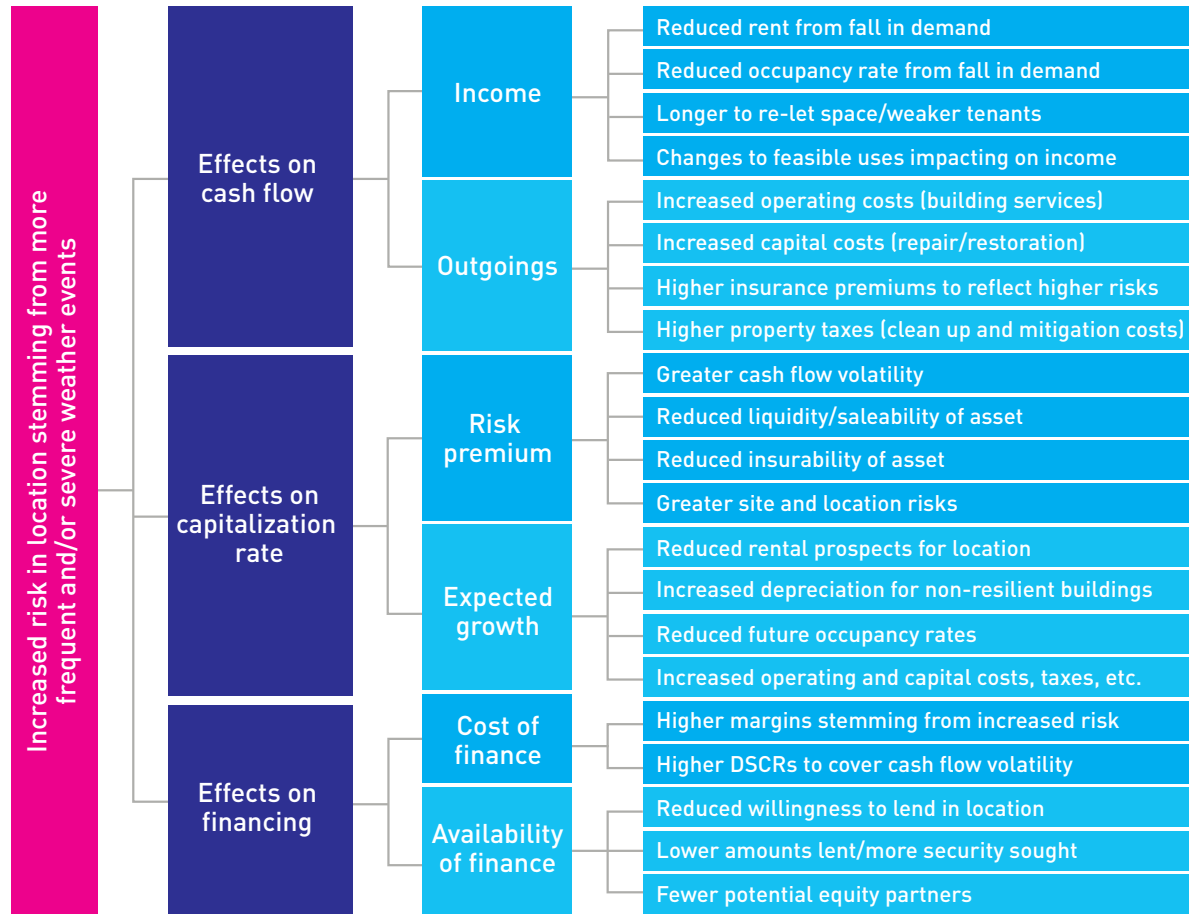
IMPLICATIONS FOR ASSET VALUING AND MODELLING

Understanding how property values could be materially affected by the physical impacts of climate change is of paramount importance to investors.¹⁴ However, the overall picture from the published literature shows a growing but incomplete evidence base. Using geospatial data to highlight potential risk from asset exposure to acute and chronic climatic events is a meaningful first step and one that many institutions have only just begun to take. But clearly more nuanced and actionable information will be needed.

To help conceptualize this, *Exhibit 2* shows potential financial materiality of climate risk on commercial real estate assets. It demonstrates how climate change physical risks could feed through to income-property pricing in a discounted cash flow (DCF) appraisal framework. These risks could be incorporated in valuations through an impact on three primary components: (1) cash flow—leasing fundamentals (rent, rental growth, and vacancy) net of operating expenses and capital expenditures; (2) capitalization rate—affected by capital market conditions including the overall required return that embeds the required risk premium, plus expectations of cash flow prospects (including exit price) and liquidity; and (3) financing—the cost and availability of funds from both equity partners and mortgage debt finance are directly related to return requirements and indirectly to property liquidity.

EXHIBIT 2: ANTICIPATED EFFECTS ON COMMERCIAL REAL ESTATE ASSET PERFORMANCE OF INCREASED EXPOSURE TO CLIMATE RISK

Source: Clayton et al. 2021, developed with reference to de Wilde and Coley (2011)



Most studies to date have analyzed prices, but not the channels through which prices are determined. There is also a lack of clarity on how different market setters and actors evaluate climate risks and influence investor calculations.

Providers of insurance and debt have their own perspectives on climate risk that may impact on pricing of their products, partly driven by their decision timeframes. Investor hold periods may be 8–10 years, and secured lending agreements range from 3–7 years, while insurance premiums are priced annually. This creates cash flow and financing risks which may later exert downward pressure on prices where physical climate risks are identified or

found to be increasing post-acquisition. Similarly, it is unclear on how occupiers will respond to climate events and risks; and advisors and valuers may lack uniform knowledge, instruction in professional standards on climate risk, and access to data which may impact value. Lastly, government regulations for and investments in resilience plausibly contributes to investor confidence, but how much this affects values and prices is imprecise.

IPPC research makes clear that physical climate change is no longer a factor that any real estate investor can ignore. Greater knowledge and more granular data sets are required to discern factors that protect

investment values and returns, but also to inform a debate about how to protect or manage stock which lacks climate resilience. The UNEP FI sponsored research¹⁵ on which this article is based concludes with recommendations for industry and academe to collaboratively engage on data sharing, financial and valuation modelling practices, asset and area resilience investment planning, and CRE focused research. Outputs from such activities can improve the information flow and evidence base for decision-making and help refine valuation and investment allocation practices with emerging risk factors and their inherent uncertainties.

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- 14 The terms "price" and "value" are being used rather loosely and somewhat interchangeably. However, it is important to distinguish between a valuation, a transaction price, and an assessment of investor worth. A valuation is the opinion by an expert as to a likely sales price, normally based on an analysis of past transactions; it is therefore essentially a backward-looking measure, although it should include a forward look based on an evidenced likelihood of future changes in market sentiments. Price, on the other hand, is what is achieved from sales in the market and, particularly in a residential context, may not have been influenced by professional valuations or advice unless borrowing was required. Finally, an investor's appraisal of worth is based on a forward projection of the likely income flows, capital appreciation and risks over a defined holding period. Clayton, Devaney, Sayce and Van der Wetering (2021) examine the role of valuations and valuation standards in an international context as they apply to climate risk considerations, as well as review the academic literature on the impact of climate risk on valuations.
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