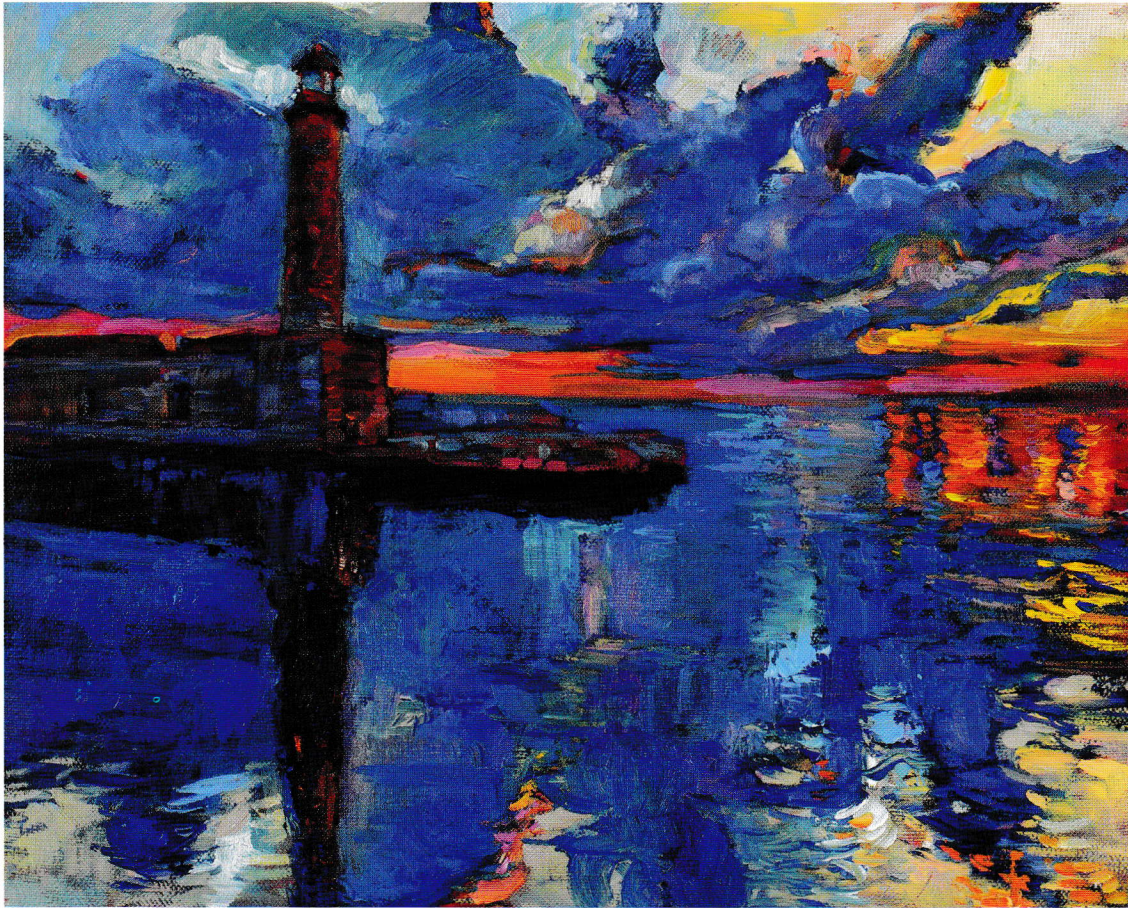


# Institutional Real Estate

*Asia Pacific*

The investor-focused global real estate publication



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# Fire and rain

## *Investing in the era of extreme weather and climate change*

by Molly McCabe

It turns out singer and songwriter James Taylor was prescient when he wrote, “I’ve seen fire and I’ve seen rain.” We may well look back and view the summer of 2017 as a turning point — a pivotal moment when our trajectory shifted and challenges such as extreme weather, overbuilding, poorly-designed infrastructure, urban density, population growth, limited resources and increased risk all suddenly came into focus.

***As the frequency of extreme weather events increases, and the costs of dealing with the aftermath skyrocket, we must recognise prevention is cheaper than recovery.***



**Molly McCabe**  
**HadenTanner LLC**

We’ve seen a never-ending array of natural disasters: severe flooding in South Asia; hurricanes slamming Texas, Florida and Puerto Rico; heavy rain and landslides in Washington and Oregon; and drought, record-high temperatures and deadly wildfires across the western United States.

According to the United Nations Office for Disaster Risk Reduction, which is responsible for the International Strategy for Disaster Reduction (UNISDR), the number of disasters worldwide has more than quadrupled since 1970. Research from reinsurer Munich Re shows hydrological events are six times more common than they were in 1980. In fact, 2016 set a new record, according to UNISDR, and 2017 is on track to break that record. Scientists predict things will only get worse.

Asia, which has already experienced serious flooding, will likely see a 20 percent increase in heavy rainfall over the next 30 years. Europe has suffered through deadly wildfires, more thunderstorms, intense hail, unprecedented rains and even a rare Atlantic hurricane.

Wildfire researchers see a new pattern unfolding across the globe. In both the United States and Europe, researchers note the fire season is now three months longer than it was in the 1970s. As at mid-October, wildfires had consumed more than 3.4 million hectares across the United States, making 2017 one of the most destructive fire years on record. At the same time, hurricanes and related flooding have devastated large swathes of the United States.

This year likely will end as the second warmest on record. Severe weather, fuelled by human-caused climate change, will almost certainly continue to put hundreds of millions of people — along with their possessions, savings and investments — at risk.

### **Economic and social impact**

Through the first nine months of 2017, the Chinese government estimated torrential rains, flooding and other disasters resulted in more than 600 deaths and US\$47.7 billion in direct economic losses.

Over the same period in the United States, the National Oceanic and Atmospheric Administration’s National Centre for Environmental Information catalogued 15 major (US\$1 billion minimum) climate/weather-related events resulting in US\$21.7 billion in losses and 282 deaths. And those totals don’t include the losses from smaller events; the costs associated with Hurricanes Harvey, Irma or Maria; or the damage and loss of life from California’s horrific October wildfires.

According to CoStar Group, 27 percent of Houston’s gross leasable area of commercial real estate — about US\$55 billion of multifamily, office, retail and industrial assets — flooded during Hurricane Harvey. S&P Global estimated about US\$2.2 billion of exposure in rated RMBS portfolios. Insufficient drainage and excessive hardscape exacerbated the flooding. With only 20 percent of affected properties carrying flood insurance, much of the cost will be borne by private individuals and investors. Credit Suisse Group noted private reinsurers would be hit the hardest, as many standard private insurers have left coastal areas in the past 15 years.

In California, a CoreLogic analysis estimated more than 172,000 homes were at risk from fire-related damage and loss in Napa and Santa Rosa counties alone. As at 20 October, 5,700 homes and other structures had been destroyed and approximately 100,000 people evacuated. Total reconstruction costs may run US\$85 billion or more.

All these events have significant economic impacts. The United States alone had an annual average of five-and-a-half US\$1 billion natural disasters between 1980 and 2016. Over the most recent five-year period — 2012 to 2016 — that almost doubled to 10.6. And 2017 has already topped the previous record.

What has changed? Urban populations have continued to grow, while severe weather events have become more frequent.

If we only considered the impacts from natural disasters, we would stop investing in high-risk areas

— but that hasn't happened so far. Strong demand for homes in high-risk natural hazard areas has helped to accelerate price appreciation, despite the potential for devastating damage. Demand is driven, in part, by the natural beauty, but also largely by economic fundamentals — the presence of good-paying jobs, transit systems, educational opportunities and urban lifestyles. We build and invest where returns are expected to be highest. According to Munich Re, property losses in these desirable areas have risen exponentially over the past several years. The combination of increasing frequency and intensity of weather events, alongside new construction and density, results in greater exposure and larger property claims, notes the firm. A 2013 AECOM study prepared for the US Federal Emergency Management Agency estimated by 2100, those areas requiring flood insurance would increase by 45 percent. If NOAA's predictive models for sea-level rise based on unchecked climate change are correct, one study shows almost 1.9 million homes in the United States are at risk of being underwater by 2100.

Some evidence shows, however, real estate owners in certain areas are beginning to factor natural-hazard risk into their decisions. "Counter to the national trend, home-price appreciation is slower in Florida and Louisiana cities with the highest flood risk than in cities with the lowest flood risk", according to Attom Data Solutions' 2017 US Natural Hazard Housing Risk Index. Homeowners in particular, and investors more broadly, are taking a closer look at risk and their ability to insure their properties at a reasonable cost, if at all. In a 2016 report, S&P noted, "while the overall impact of climate change on the insurance industry is difficult to quantify, the multilayered effects of regulation, reputation and litigation will be 'considerable' over the long term."

### Resilient cities

As investors, it behoves us to take a thoughtful approach to understanding and ameliorating these risks. For too long, we've developed and invested with little regard to the stresses being put on our planet. Of course we want to keep houses as inexpensive

as possible, to build at the least-possible cost and to maximise our investment returns. As the frequency of extreme weather events increases, however, and the costs of dealing with the aftermath skyrocket, we must recognise prevention is cheaper than recovery. By creating strong, resilient communities with holistic development patterns, social networks and environmental structures that anticipate these events, we avoid decimated communities, the expense of repair and rebuilding, lost business income and tax revenue, and rising insurance premiums.

Land-use decisions can lock in permanent systemic relationships that are either inherently resilient over the long term, or which exacerbate the risk. Cities facing rapid urbanisation are often reactive rather than proactive. The lack of forethought, loose or non-existent codes and zoning, results in damage often worse than need be. Flooding, for example, is exacerbated by sprawl and the overuse of hard infrastructure, which limits the ability of excess water to percolate through the natural ecosystem.

Cities that start with a holistic long-term vision fare better than those reactive to growth. A well-designed, walkable, mixed-use neighbourhood that integrates green space reduces the demand for fossil fuel-based transportation, creates a cohesive village and lowers production of harmful greenhouse gases. Utilisation of green infrastructure creates the dual benefit of flood control and urban parks. Water- and energy-conservation programmes mean reduced costs and dependency on limited natural resources. A mix of affordable housing creates community cohesion.

### Getting down to business

An investment strategy that responds to climate, energy, land-use and demographic changes is crucial for long-term success. As investors, how do we incorporate climate change, resiliency and changing global dynamics alongside age-old investment criteria — vacancy, market rent growth, competitive environment and capital availability? Which characteristics are critically important? Fine-grain analysis of cities — including geographic information system-based mapping of

## Grosvenor's resilient cities framework

### ■ Vulnerability

- Climate vulnerability — physical events (eg, sea-level change, drought, wildfire, hydrological, earthquakes, population dislocation/management)
- Environment — pollution, overconsumption of land due to urban sprawl
- Resource accessibility and cost — energy, water, food
- Infrastructure — housing, transportation, utilities
- Community/social cohesion — housing affordability, education, health, religious/cultural freedom, transparency/honest government, business environment

### ■ Adaptive capacity

- Governance — transparency and accountability (eg, democracy, community participation, freedom of speech, long-term view)
- Institutions — governmental and private: capacity and track record
- Technical/learning — innovation, technology, universities, partnerships
- Planning systems — risk-based land-use planning, disaster management plans in place and rehearsed
- Funding structures — access to external capital, internal budgeting resources

physical risks and mitigation plans and discrete asset-level solutions that are inherently resilient over the long term — can lock-in investment value.

Mapping city resiliency is crucial when investing in the urban environment. Be mindful of the changing parameters that define resilient cities and properties. Cities and districts that think on a community-wide basis are more resilient than those that don't. Infrastructure, education, affordable housing, jobs, access to clean water and reliable energy, transparency in government, and social cohesion are strong predictors of resiliency. More-resilient cities will have in place infrastructure, capacity and community systems (eg, district-scale solutions, microgrids) and structures that increase adaptability and reduce volatility and vulnerability. These cities take care to consider their physical infrastructure, as well as environmental assets, social networks and vulnerable populations.

Investors should create a means of quantifying the risks and the opportunities systematically across various asset classes and investment markets around the world. Systematic evaluation provides insights that allow investors with diversified portfolios, geographic mix and investment horizons to craft portfolios that optimise returns along standardised risk-return criteria.

#### Key steps:

a. Baseline your existing exposure against these parameters.

b. Review investments against a standardised list of quantifiable attributes.

c. Optimise your investments and portfolio:

- i. Deploy capital to shore up core assets, to reduce risk and capitalise on opportunity.
- ii. Reduce exposure to non-resilient cities and/or assets where the cost-benefit ratio is too high.

Two institutional frameworks that stand as good examples of systematic review are those used by Grosvenor and Blackrock. Blackrock uses a climate score as part of its overall investment due diligence. Broken down into climate-related market risks and opportunities, it incorporates three categories:

- Physical — event frequency, economic impact on growth/productivity, technological advances, adaptability, disruption and stranded assets, such as obsolete real estate
- Regulatory — timing and the potential to jump national/international, risk of compliance failure, cost, subsidies, impact on consumer behaviour/demand
- Social — shareholder action, proactive decarbonisation of investor portfolios

Investments are assigned a climate score alongside traditional investment criteria.

Grosvenor's Resilient Cities framework uses a six-stage process to evaluate a city's vulnerability and adaptive capacity to inform investment decisions. After collecting data from numerous sources, they normalise for each city and rank them. These dynamics change over time as cities evolve. These same factors can be applied as overlay to individual assets and portfolios (see box, page 6).

At one time, not that long ago, I would have included the investment time horizon as a key consideration. Climate risks are clearly compounded the longer you hold an asset — this is true of all risks. Long-term investors harbour more exposure to physical risks and the influence of climate change on economic growth. At the same time, they are more able to capitalise on technologies that have a long-term benefit.

This pivotal fire-and-rain year has shown even short-term investors are affected by extreme weather events, global disruption, and regulatory and policy changes. It matters somewhat less how long you own the asset, if the next investor is looking at their risk and opportunities through this new lens, as well. It is crucial we understand there is a mutual-ity and alignment of interests. To be successful, we must also adapt if we are to grow with — and serve — our investors, clients, tenants and community. ❖

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## Questions to consider

- What geographic areas would you consider high-risk?
- What are the mitigating factors, if any?
- Which areas might benefit from climate change from an investment perspective?
- Are there regions you will choose to invest, or disinvest?
- How do you calculate the risks of different climate-change effects for varying investment terms? What are immediate risks that could affect your current investments? What are the risks associated with a longer-term investment horizon?
- How do you model valuation strategies when it comes to climate-change risks and potential damage/destruction?
- What particular development strategies or development tools can be used to lessen the risks posed by climate change?
- How do you buffer the wide range of potential losses (eg, sea-level rise, coastal erosion, floods, drought and wildfires)?
- How will you mitigate insurance exposure for properties in high-risk areas?
- How will you model future water resources and the effect of more-limited clean water resources on real estate investment?
- Are you investing in water-treatment programmes or water rights?
- How might renewables, micro-grids or other technologies impact investments?