



CLIMATE INSTABILITY

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Real Estate, Redefined: Location, Duration, Regulation



In Florida, average annual losses for residential real estate due to storm surges amount to US\$2 billion (S\$2.78 billion) today. By 2050, this is projected to rise up to US\$4.5 billion (S\$6.25 billion).

Image: One Shot from Pexels

After taking for granted the environments in which investments are made, the real estate industry has been forced to adapt to a world threatened by climate change. Forget the old mantra of “location, location, location”, says Dr Spencer Glendon. It is time for a new model that incorporates development with shifting profitability and regulatory action.



Real estate developed its mantra, ‘location, location, location’, in a stable climatic environment.

What will we do now that the era of stability is over?



All of civilisation as we know it was built during a time of climate stability. There were hotter years and colder ones, wetter and drier, but the average was stable. This stability is evident in the language we use to describe places: London *is* rainy, India *depends* on the monsoon, and mountain snowmelt *feeds* the valleys of northern California throughout the summer. We use the present tense but imply that is how these places are, have been and will be.

For the first 95% of human existence—roughly 200,000 years—talking about location this way would not have made sense as the earth’s climate was constantly changing. Over millennia glaciers expanded and receded thousands of kilometres, and the oceans rose and fell by hundreds of meters in inverse proportion to one another.

In a world in which the climate was always changing, how did our ancestors live? On the move. They were nomads.

Around 10,000 BC, however, the climate stabilised. The atmosphere reached a composition at which it trapped just enough heat that it was too warm for new glaciers to form

and yet too cold for existing glaciers to melt away. Glaciers expanded in the winter and contracted in the summer, but the minimum, maximum, and average size stayed the same.

Moreover, this stabilisation was at a temperature that was ideal for us: predictable and mild, with no place on earth too hot for humans to live. Sure, there were fluctuations, but weather patterns stayed in familiar ranges and the past was a good guide to the future.

This unprecedented equilibrium gave humans a chance to stop chasing good weather. The nice places stayed nice. A stable climate allowed for settlement, planning, investment and wealth. Humans began behaving quite differently, gradually developing the place-based institutions we now call civilisation.

In this environment real estate developed its mantra, “location, location, location.” Find the best location and own it for the long term.

That was good guidance in a stable world. What will we do now that the era of stability is over?



Drivers manoeuvre through floodwater after torrential rains in Alexandria, Egypt. Extraction of ground water is causing the land to subside while the Mediterranean Sea rises.

Image: Ibrahim Ramadan / Anadolu Agency via Getty Images

Location

I spent more than two decades in academia and finance studying prosperity and calamity in many countries, looking intently at the successes and failures of cities, regions, countries and industries. My approach was to consider factors that, while not radical, fell outside of standard orthodoxies.

In this spirit I started investigating climate science: I figured it might be insightful and no one talked about it at work. Early in my inquiry I noticed something I had overlooked in my databases, spreadsheets, conversations and research trips: the physical world.

I discovered that while finance and economic models were considered fantastic if they did better than a random number generator, climate science had produced a set of explanations of the past and predictions about the future that were uncannily accurate.

Here is a short list of predictions made in climate publications in the 1970s and early '80s: warmer average temperatures, a wider range of temperatures (more extreme heat but not correspondingly fewer days of extreme cold), more record hot nights than days (an atmosphere that traps more heat does not allow the earth to cool as much during the night), later winter and earlier spring, more deluges and fewer gentle showers, increased drought and wildfire, receding glaciers, rising sea levels, hurricanes and typhoons at higher latitudes.

Sound familiar? It turned out that climate scientists had offered mankind's first good long-term forecast and here it was lying unused, even by people whose work, wealth and way of life depended on location in the physical world.

Consider the Nile Delta. Home to Cairo and Alexandria, this region's

history spans nearly from the dawn of what we call civilisation to today. Looking from a satellite, it is obvious why this green fan on the northeastern edge of Africa was attractive to settlers. The regular patterns of rainfall and snowmelt in the mountains further south provided a freshwater lifeblood, while the Mediterranean Sea offered cooling breezes and other benefits.

Yet now, this delta is a good place to see the consequences of climate change. Consider that list of climate predictions: Cairo is hotter on average and has more extremes; the flow of the Nile is altering due to changing seasonal timing and shrinking snowpack on the mountains; and the country upstream, Ethiopia, is coping with intense rainfall by building huge dams.

At the same time, the 95 million Egyptians living in that little green



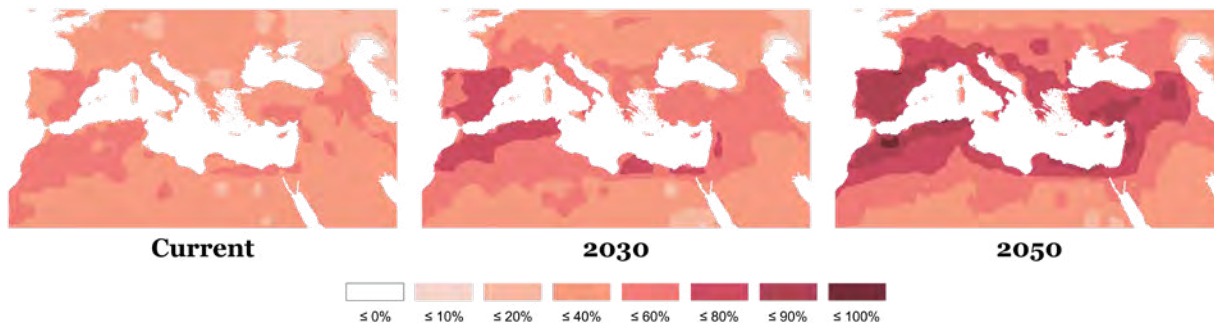
Road markings appear distorted as the asphalt starts to melt due to the high temperature in New Delhi, India. In June 2019, temperatures touched 48°C, the hottest June day in the Indian capital on record.
 Image: Harish Tyagi / EPA

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fan are extracting ground water, causing the land to subside while the Mediterranean Sea rises. The Nile Delta no longer is what it was and the environmental trends highlighted above are set to continue. The Egyptian government is now developing new locations in the desert for urbanisation. The story of Jakarta is eerily similar. Indeed every city in the world faces new physical challenges.

How will the real estate industry change as the climate does? I recommend fewer spreadsheets, more maps and more walks outside. Everyone involved must become more aware of the physical world and how it is changing.

I was speaking with an executive whose company recently sold large properties in Houston to global investors. “They didn’t ask about



Share of decade spent in drought in the Mediterranean region. Drought is defined as a rolling 3-month period with Average Palmer Drought Severity Index <-2.
 Image: Woods Hole Research Center

flooding,” he told me. Not asking detailed questions about flooding in Houston is obviously gross negligence now (and will likely be germane in future lawsuits), but the difficult prospects for Houston were available to people who queried climate models long before the “1-in-100” and “1-in-500 year” floods started arriving multiple times a decade. Everyone in real estate needs to start incorporating the probable futures ahead when making decisions.

Over the last year, scientists at the Woods Hole Research Center and I participated in a research project with McKinsey & Co. about physical risks associated with climate change. This research shows clearly that climate change will not disrupt civilisation through marginal change. It will do so by crossing thresholds.

Only a small fraction of homes, subways, or buses in Western Europe have air conditioning. As summers get hotter, sleeping, commuting, and working become miserable and offices need new heating, ventilation, and air conditioning (HVAC). In North America the grades of concrete used in the past are now inappropriate given the frequency of very hot days. Sewer systems everywhere need to increase their capacities because new storms contain so much more water. Drought and wildfire are persistent problems in Mediterranean climates that used to get just enough rain to sustain their flora and fauna. Now, though, they face near permanent drought—crossing a new environmental threshold.

If you develop, own, manage or occupy real estate, it should be a fiduciary responsibility to know the thresholds of your buildings and the infrastructure on which they rely.

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Residential apartments are seen next to the dried-up Ratanpura lake on the outskirts of Ahmedabad.
 Image: REUTERS / Amit Dave



Charred cars and buildings in the aftermath of a forest fire in Mati, a northeast suburb of Athens, Greece in July 2018.
Image: Yannis Kolesidis / EPA / EFE

Duration

Just as the real estate industry will become more aware of the physical world, so too will financial markets. When they do, capital will dry up not just spatially, but temporally. Equipped with good information about prospective climate outcomes, buyers, borrowers and lenders will all start asking not just “where?” but “for how long?” about every asset’s profitability, insurability and even viability.

Perhaps the most obvious application of climate science in finance will be by major banks and global investors who start to look at places in the world that will cross thresholds of extreme heat, overwhelming rainfall, wildfire, drought and sea level rise in the next 10, 20 or 30 years and simply decide not to invest or offer long-term loans in such places.

This is what I call the coming disappearance of duration. Consider

Australia’s fragile climate. The record temperatures behind the unprecedented fires during the 2019-2020 season, according to a paper by scientists Benjamin Sanderson and Rosie Fisher, are likely to be roughly average by 2040, unless emissions are curbed.

How does this knowledge affect your willingness to offer a 30-year mortgage?

First of all, the real estate industry should embrace climate science. It is mankind’s first good environmental forecast. It can be your guide. As I have shown above, its findings have been borne out by recent events and will become intuitive.

Second, do not expect someone else to tell you the risk for your industry. In particular, do not mistake the risks of climate change with regular insurance

risk. A common misconception is that climate change is principally an insurance problem. Insurance companies do need to incorporate good climate science to understand risks and many are seriously lagging in their efforts, but it is essential to keep in mind two things insurance companies generally do not offer: policies that protect land value and policies that last longer than a year.

As one expert at a leading reinsurance company explained to me, “The first flood is an insurance problem as the policy pays to replace the windows and fix the lobby. The second flood probably is as well. After that each subsequent flood is an equity problem” because prospective buyers and lenders start to dry up.

This is where regulation comes in.



People seek refuge at Mallacoota Wharf in Victoria, Australia, as bushfires closed in, in December 2019.
 Image: @Travelling_au_family



Children play in the overflowing water along the banks of Ciliwung River, East Jakarta in February 2018.
 Image: World Meteorological Organisation / Kompas / Agus Susanto / Flickr

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Regulation

If we act quickly, we can make changes that allow people to continue working and living in a world that might be more challenging and expensive but similar enough to the past for peace of mind.

If we do not, a rapidly changing climate will cause suffering that is hard to conceive of and likely induce migration in numbers that are far beyond any precedent. But going back to the impermanent nomadism of our ancestors would be unviable.

How do we preserve civilisation's great sources of wealth (and here I mean not principally monetary wealth, but the institutions, cultures, norms and systems that constitute civilisation)?

By returning to stability.

The good news is that the same science that accurately foretold the changes we are now experiencing

tells us how to regain equilibrium: net zero emissions of heat-trapping gases, especially CO₂ and methane.

Construction materials like steel and cement, heating, lighting and other facets of real estate account for a huge share of emissions. In addition, city planning and building have a massive influence on transport-related emissions.

To achieve net zero, we need action by every investor, developer, landlord and tenant from every city in every country. I concede that this sounds dramatic, but it is actually straightforward. Zero is clarifying. It is not some opaque ESG (Environment, Social and Governance) score.

What is also clear is the only way to get there: regulation. Confronting the loss of wealth that is likely from climate change has to involve coordination. If every reader of this magazine tells the officials in the places where they live, work

and invest that net zero has to be a non-negotiable goal, and that we need to prepare our communities for the environmental changes that are inevitable, we will be on the right path.

In real estate this will be largely through enlightened building codes, science-informed bond ratings, smarter infrastructure, retrofitting and giving nature more space in the city. The same frameworks that illuminate risks can be used to guide good, long-term decisions.

I know mitigating climate change is daunting, but take a walk and look around you. This civilisation is worth keeping. 📍