




ILLUSTRATION: KARI MODÉN

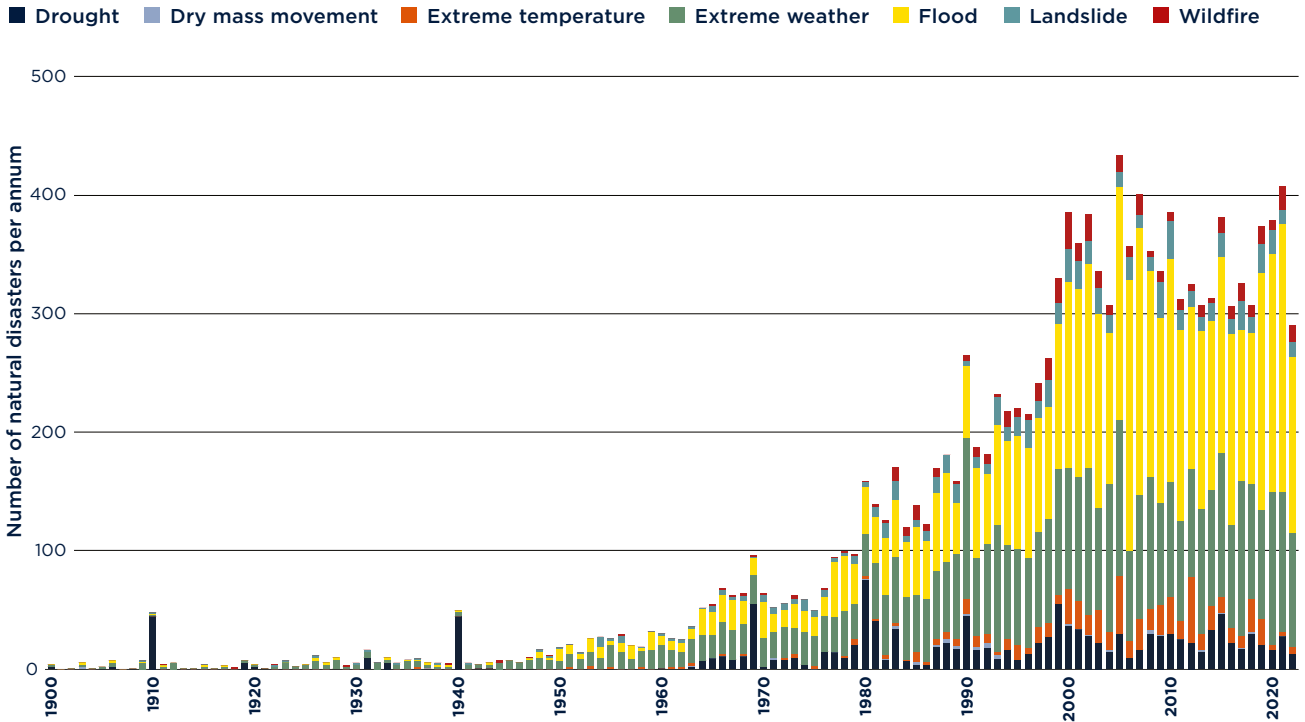
WORDS PAUL TOSTEVIN AND LUCY PALK

CLIMATE RESILIENCE IN CITIES

A stylized illustration of a city landscape. The top half features a large, dark blue water droplet shape. Below it, a large yellow sun is partially obscured by a red and orange arc. A grey house with a blue roof and windows sits on a grey hill. Two dark blue trees are next to the house. In the foreground, three yellow silhouettes of people stand on a blue path. To the right, a stylized fire with orange and yellow flames is visible. The background is a mix of purple, teal, and grey.

**OUR NEW INDEX
OF CLIMATE
RESILIENCE
SHOWS HOW
CITIES ARE
PREPARING FOR
THE COMING
STORMS**

NUMBER OF CLIMATE-RELATED DISASTERS GLOBALLY SINCE 1900



Source: Savills Research using Our World in Data

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City policymakers increasingly understand that, in the face of a changing climate, doing nothing isn't an option. That's the overarching message from our Climate Resilient Cities Index, which looks at the preparedness of major urban centres around the world for the climate-related challenges they face today and those they're likely to face in future.

The background is well known. Since 2000, extreme climate-related events have been happening with alarming regularity. We've seen wildfires in California and floods in Dubai. Extreme climate events have become five times more common since the 1970s.

Our Index focuses on how 23 of the world's largest, wealthiest and most populous cities are fortifying themselves against climate-related events.

These cities attract huge sums in real estate investment; their ability to do so in future may depend on their resilience to climate-related risks.

Climate change adaptation requires awareness

So what did we find? The good news is that nearly every city in our survey is aware of the risks they face, and nearly all have plans in place to mitigate these challenges.

This is important. Climate-related risks are not going away.

A high percentage of current building stock was not designed with such threats in mind. In the near future, a city's appeal as a destination for investment will depend to some degree on the extent and effectiveness of its climate-mitigation strategy.

The bad news is the breadth of the threats our cities face. When we talk about water, for instance, we could be talking about river flooding, rising sea levels or access to drinking water. Climate change is a multi-headed monster. It drives extreme rainfall and severe drought – sometimes in the same location.

Wildfires, landslides and hurricanes have always been a threat to some cities, but climate change is making them more frequent and more severe. Some cities are built to withstand extreme heat, but others are having to adapt to it, as scorching summers become the norm.

Climate risks in real estate to 2050

Our index looks at all these climate-related events and projects into the future, to reveal the threats cities will be exposed to by 2050.

We also look specifically at real estate resilience, including the share of building stock that is resilient, the proportion vulnerable to climate-related hazards and the degree of likely damage escalation up to 2050.

The future view is important because we know that cities can be especially good at dealing with threats they are used to. Tokyo's world-leading building codes have been refined by a history of earthquakes and tsunamis. Cape Town's "Day Zero" water conservation scheme followed years of declining rainfall.

Cities are often good at dealing with the now, but less good at preempting what might be around the corner. In a rapidly changing world, they have to do both.

To that end, the index is, to some extent, an educational tool – a disseminator of best practice for the real estate industry. If a city is getting hotter, wetter or stormier over the next 20 years, here's how others have introduced policies and modified their built environments to mitigate that threat.

All to play for

When the index takes all factors into account, Berlin comes out on top, followed by Toronto, Paris and Madrid. All face serious climate threats, but a mix of geographical good fortune (they are all inland with no risk from coastal flooding) and planning mean they are at the lowest risk overall.

But there are no winners and losers here, and the index shouldn't be used as a league table. If anything, we hope it's a call to action. All cities face real challenges and most policymakers have acknowledged the threat and begun to address it.

Real estate resilience and carbon

There is an elephant in the room. While cities should prepare for the consequences of climate change, they can't ignore their

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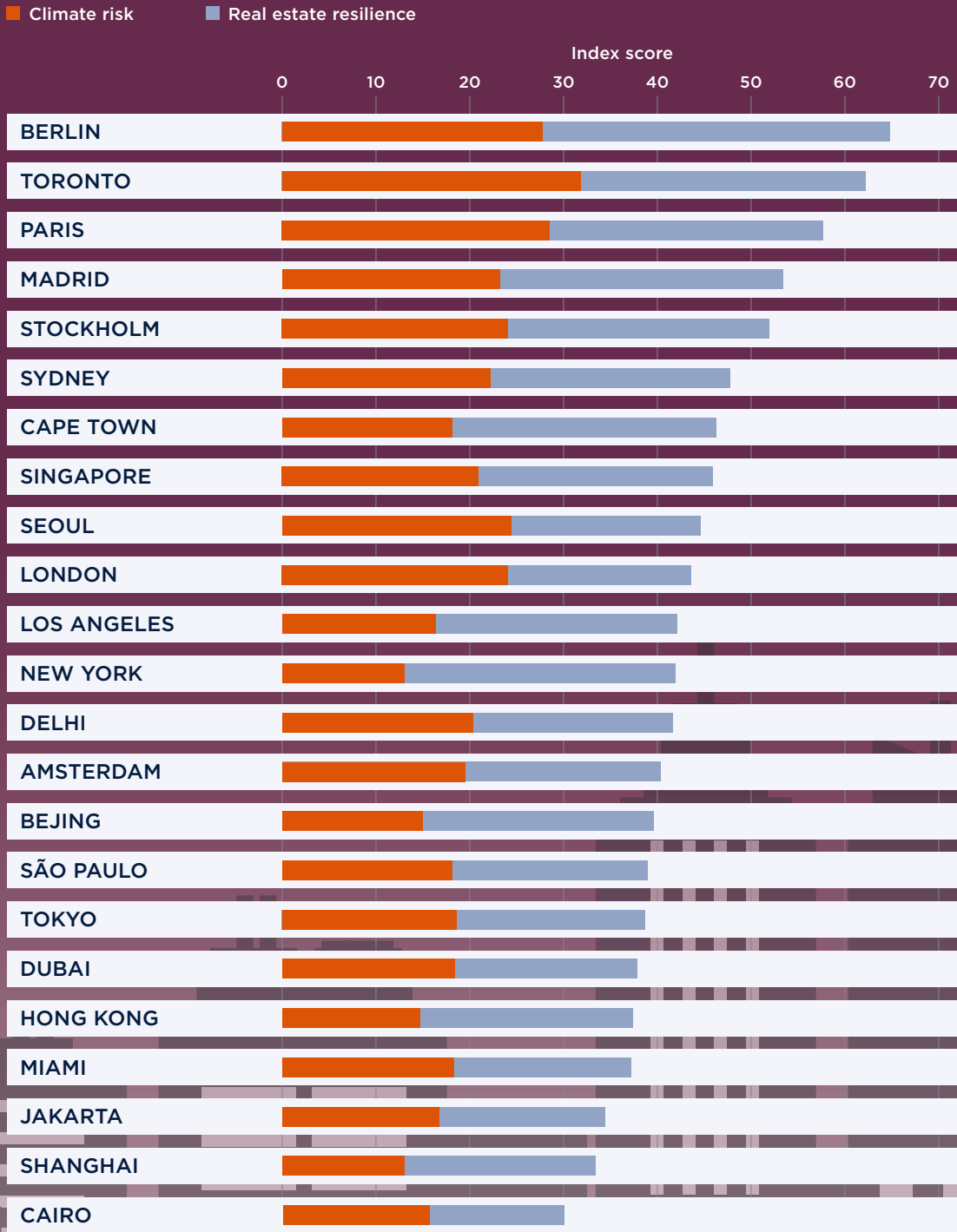
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The increasing occurrences of wildfires, floods and other climate-related events demonstrate the dire consequences of inaction. These escalating threats emphasise the need for investment not only in the decarbonisation and resilience of the built environment but also in the natural capital that sustains life. As we strive to create cities capable of withstanding climate change, we must remember that the health and robustness of thriving human communities are reliant on ecosystem services. These services, such as the provision of clean air, water purification and climate regulation, are fundamental to the vitality of our urban environments. Climate change, biodiversity loss and the resilience of cities are intrinsically interconnected; we cannot address one without considering the others. Our approach to addressing these challenges must therefore be holistic, integrating both.

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CLIMATE RESILIENT CITIES INDEX



Source: Savills Research using climate data, UNESCO, UCCRN, ThinkHazard, CDP, 2023 XDI Gross Domestic Climate Risk

Methodology: Climate Resilient Cities Index

Our index compares 23 of the world's largest, wealthiest and most populous cities that are particularly important for global real estate investment. It measures each city's climate risk and the resilience of its real estate to those risks. There are two pillars:

Climate risk considers a city's current and future climate risk. Current risk measures changes in rainfall and temperature over the past decade, average elevation above sea level and availability of groundwater. Current risk is also assessed by physical disasters that are exacerbated by climate change; future risks are predicted exposure to extreme heat, sea level rise, coastal flooding and freshwater availability by 2050.

Real estate resilience looks at whether the city, and the country it's in, has assessed its climate risk, whether it has a plan in place to combat it, and the extent to which the city's real estate is vulnerable to climate risk. It also measures the city's share of green certified building stock.

part in causing it. Cities account for 70 per cent of global carbon emissions.

Put another way, the best way for cities to protect people from a warming world is to play a leading role in stopping it from warming too much.

A huge challenge – but there are solutions

That's much easier said than done, of course: restricting global warming while maintaining familiar comforts is a difficult circle to square. Governments can lead by example. They could retrofit their buildings to reduce carbon emissions and establish carbon-zero rules for new developments.

Sustainable building and planning

While these measures are a start, they're clearly not enough. So what more should cities be doing to reduce carbon emissions? It depends first on where they're starting from.

Industrial cities are more polluting than those with service-based economies. Older cities tend to host more carbon-intensive infrastructure. More populous cities simply produce more carbon. These factors may help prioritise initiatives, but there are things that all cities can do to lower their carbon footprints.

For example, many of the cities in our index have plans to reduce operational carbon. New York's Local Law 97 aims to reduce the emissions from large properties (over 25,000 sq ft) to 40 per cent below 2005 levels by 2030.

Significant inroads into carbon emissions can also be made with more sustainable city planning. That includes prioritising renewable energy sources for heating and lighting, and encouraging a shift towards public transport. Many cities are expanding rail and light rail services and discouraging car use through emissions penalties.

The era of carbon pricing

One interesting development in the real estate world is carbon pricing, which offers financial incentives for building users to reduce their carbon emissions.

Singapore is a leader in this, introducing Southeast Asia's first carbon pricing scheme in 2019. South Africa also introduced a carbon tax in 2019, while the EU is establishing a "polluter pays" principle.

In Singapore, carbon taxes apply to commercial establishments that emit at least 25,000/t CO₂ annually. To avoid shocking the economy, the rates will progressively increase over time. The objective is to reach a range of S\$50 to S\$80/t CO₂ by 2030.

"The additional cost to a premium office space, though significant, is not too burdensome," says Alan Cheong, Executive Director of Research and Consultancy at Savills Singapore.

"The positive impact will outweigh the additional cost because green-compliant tenants will increasingly find

‘LONGER PERIODS OF DROUGHT, AS WELL AS MORE FREQUENT AND MORE SEVERE STORMS AND HEAVY RAIN EVENTS, ALREADY POSE CHALLENGES FOR THE CITY’

◀ themselves with fewer options when relocating, creating a demand that could offset the drag caused by the tax.”

Carbon pricing could significantly impact both residential and commercial real estate markets. The pandemic accelerated a flight to quality, with grade-A buildings commanding premium rents and lower-tier properties seeing lower demand.

Rewards for sustainability (or penalties for its absence) may accelerate this trend and nudge landlords and occupiers towards greener properties.

Collaboration in the fight against carbon

In all of these areas, education will be key. City governments need to take businesses and residents along with them, and convince them of the need for change.

To that end, many are prioritising collaboration. In Madrid, the “Green Office” is a tool to promote sustainability in residential building stock and point citizens towards sources of public funding for refurbishment projects. New York’s Retrofit Accelerator provides free and bespoke advice to building owners looking for energy-efficient solutions.

Together this represents a carrot and stick approach to real estate sustainability. When it comes to carbon reduction, city authorities can only do so much on their own. A mix of penalties, rewards and resources – encouraged by infrastructure improvements – is persuading private individuals and businesses to make a difference in their own homes and offices. ■



CITIES AT THE SHARP END

If cities can learn from each other, they can become future-proof, or at least future-prepared. So what examples should they follow right now? Which cities are leading the way in the fight to protect people and property from climate impacts?

Many cities are already taking positive, practical steps towards climate mitigation. In many cases, they are doing so in the face of a clear and present threat.

“Real estate investor awareness of climate issues has risen significantly in the last five years, and major institutional investors already factor in climate risk in their decision making,” explains David Jackson, Head of Savills Earth. “This has implications for certain locations, but also for the assets themselves – how well will they perform in extreme temperatures? Are they built to withstand future natural hazards?”

The key to future resilience will be to build upon these efforts to combat threats that are not yet so obvious.

In that, forewarned is to be forearmed. Due to quirks of geography, some cities are facing climate emergencies earlier than others. Everyone can learn from what they do.

TOKYO: AN EXAMPLE OF RESILIENCE



Tokyo faces a number of threats, most notably typhoons and earthquakes. But it is facing them head on. Its world-leading construction codes mean that 87% of the city’s buildings meet the most stringent anti-seismic criteria.

As a huge and densely populated coastal city, Tokyo is especially vulnerable to flooding. “Tokyo is forward-thinking in utilising underground reservoirs to drain excess water in the case of floods and typhoons,” says Tetsuya Kaneko, Head of Research and Consultancy at Savills Japan.

Tokyo boasts the world’s largest underground storm drain, the Metropolitan Area Outer Underground Discharge Channel. Just over 20 years ago, it cost \$2.1 billion to build, but is projected to save the city at least three times that amount in mitigated flood damage over a 50-year period.



NEW YORK GETS SERIOUS

While Tokyo has a long history of natural disasters, New York’s wake-up call came from a single event. The devastation Hurricane Sandy brought in 2012, through flooding, extended power outages and loss of life and livelihoods, was a defining moment for

resilience planning for the city. The concentration of a vast amount of capital, infrastructure and people means it has the rare combination of urgency, motivation and resources to act.

The Brooklyn Bridge-Montgomery Coastal Resilience project, which will protect Lower Manhattan from both sea-level rises and storm surges, is due to start construction this year. The construction of a further \$52 billion of flood protections will begin in 2030 if the funding is approved.

Tokyo and New York are acting retrospectively. They are reacting to threats that are already apparent. This is necessary, but is it enough? Part of the purpose of the Climate Resilient Cities Index is to help real estate investors, developers and occupiers of cities understand and prepare for climate impacts to come.



Postdamer Platz in Berlin

GETTY IMAGES

BERLIN PLANS AHEAD



As an inland city without a history of extreme climate-related events, Berlin is luckier than many.

At the moment, the city faces challenges rather than specific emergencies. Nevertheless, there is significant support for climate-mitigation action among its population.

“Longer periods of drought, as well as more frequent and more severe storms and heavy rain events, already pose challenges for the city,” explains Matti Schenk, Associate Director of Research at Savills Germany. “Berlin’s state government is trying to address these issues through urban planning instruments and guidelines, such as more green roofs.”

It is also investigating “sponge city” concepts. “The Urban Tech Republic at the former Tegel Airport is being designed as a sponge city,” says Schenk. “This will provide impetus for further projects.”

Schenk says that some climate-adaptation schemes have been delayed, but Berlin is at least being proactive. The city is at the top of our Climate Resilient Cities index, partly because of its acceptance of the need to act early. A global transition from reactive to proactive climate mitigation will be crucial as impacts increase. ■