Creating Resilience

Climate Change: Implications for Offices

CONTINENTAL EUROPE

CBRE RESEARCH
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Foreword

The real estate sector is facing increasing climate-related risks, with intensified weather events impacting previously resilient regions. In response, investors and asset managers are adopting proactive strategies to mitigate these risks. Physical risks such as extreme weather, flooding, drought, and storms are driving up capital expenditure, insurance and operational costs, and affecting occupier appeal, liquidity, and value.

This report examines the relationship between climate risks and office rental value, using Denmark as a Case Study. The results presented are based on a comprehensive analysis encompassing 3,600 lease agreements, signed in office buildings across Denmark during the 2020–2024 period. The study employs the Climate X platform's Surface Flood Risk Score, with projections for 2050 based on the RCP8.5 scenario (see page 13 for definitions).

Our findings offer valuable insights about the intersection of sustainability and value creation for investors and asset managers. Contact us to discuss how we can help you navigate the opportunities and challenges presented by climate-related risks.

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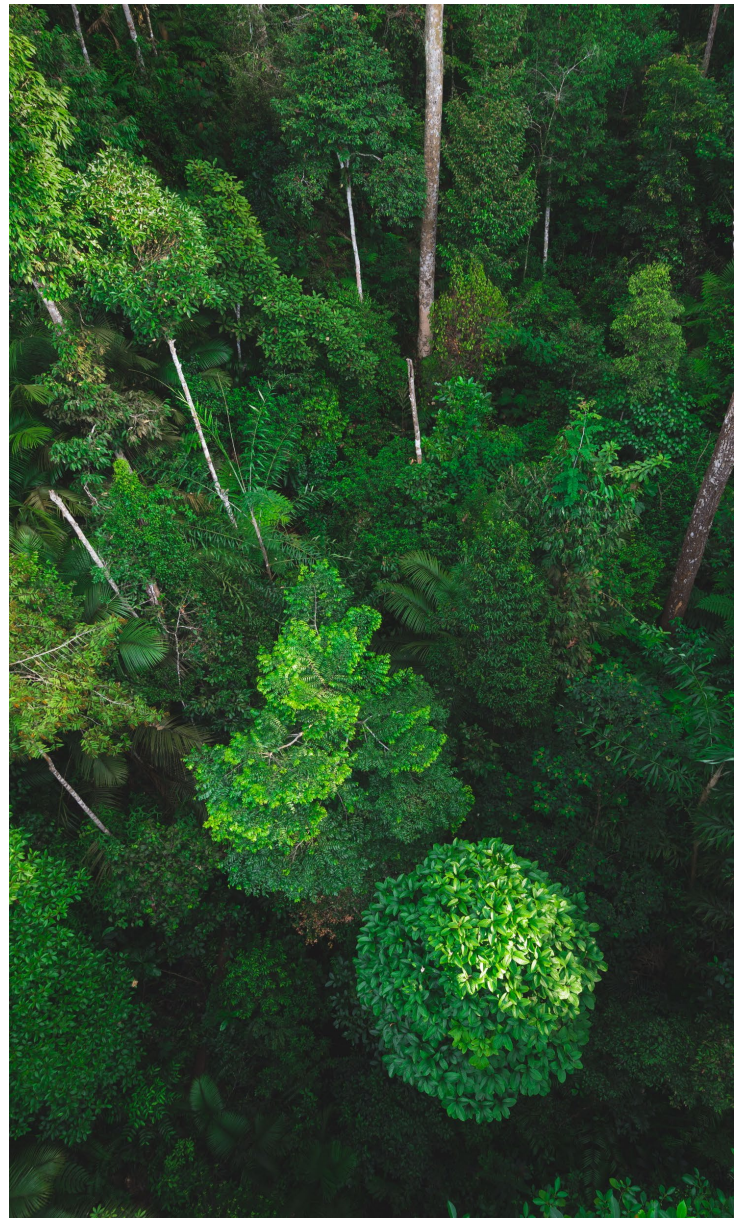


01

The economic impact of climate change

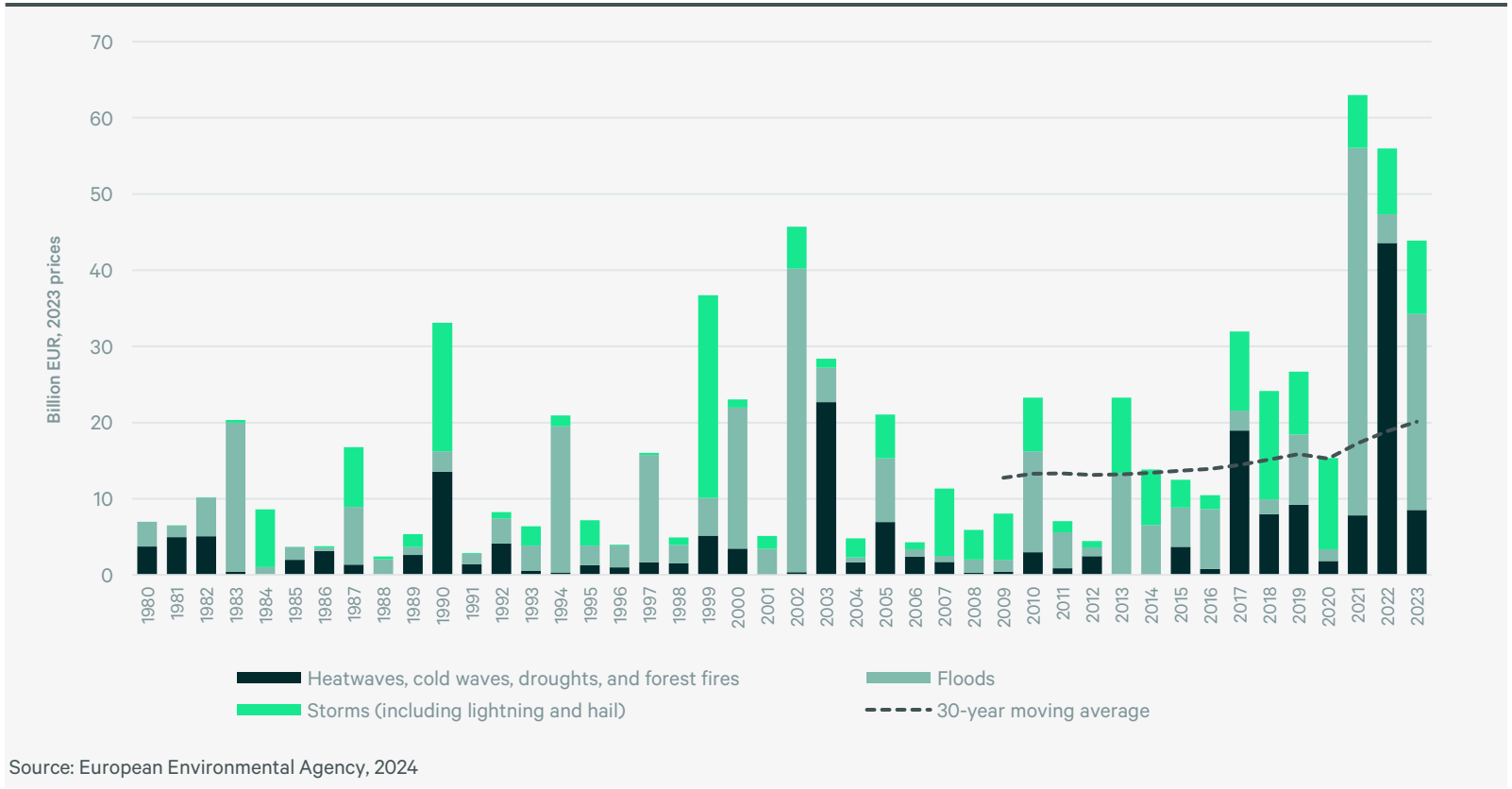
The growing risk for CRE assets

Economic losses associated with natural events have increased dramatically in just the past three years. During this time, we have seen damages of 2.5-4x historical averages. According to the European Environmental Agency (EEA, 2024), weather and climate-related extreme events caused economic losses of assets estimated at EUR 738 billion during 1980–2023 in the European Union (EU), with over EUR 162 billion (22%) between 2021–2023.

Exposure mapping reveals that flooding represents a considerable and widespread risk throughout the EU. Flooding can directly impact assets, leading to operational interruptions and equipment damage. Furthermore, these events may have indirect repercussions by jeopardising transportation systems, power supply, and communication networks. Consequently, flooding can lead to increased costs associated with the maintenance and repair of facilities, higher insurance premiums, and reduced revenue due to disruptions in business activities.

The Intergovernmental Panel on Climate Change predicts that climate-related extreme events will become more frequent and severe in the future. Investment decision-making will consequently be contingent on the capacity of individual properties to satisfy the evolving demands of occupiers, insurers, and financial institutions in the context of climate change.

Figure 1: Annual economic losses of assets caused by weather and climate-related extreme events in the EU Member States



Source: European Environmental Agency, 2024

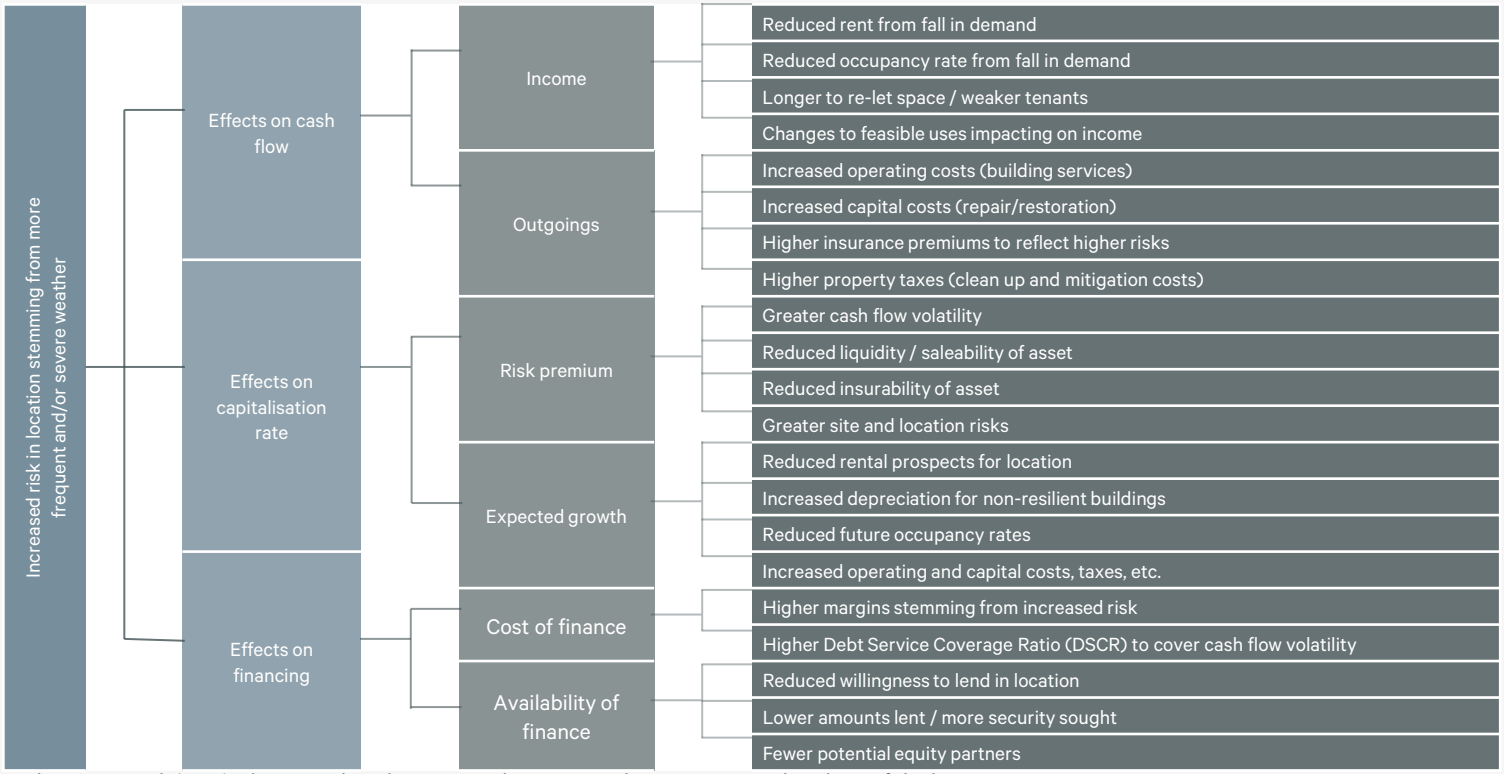
The impact on valuations

Commercial property owners and investors are increasingly experiencing a heightened risk premium on properties susceptible to climate-related events, irrespective of individual property exposure.

We expect that climate risk will continue to be reflected in office property valuations through three principal components:

1) **Cash Flow:** Encompassing leasing dynamics such as rent levels, rental growth, and vacancy rates, adjusted for operating expenses and capital expenditures;
2) **Capitalisation Rate:** Reflecting both capital market conditions and the required return, with a risk premium that considers anticipated future cash flows and liquidity concerns; and
3) **Financing:** The cost and accessibility of funds from equity partners and mortgage debt are directly linked to return expectations and property liquidity. Property liquidity is influenced by factors such as the asset's (re)letting potential, and CapEx for climate change mitigation and adaptation measures.

Figure 2: Anticipated effect of climate risk on Commercial Real Estate performance



Source: Clayton, J. et al. (2021) Climate Risk and Commercial Property Values: a review and analysis of the literature.

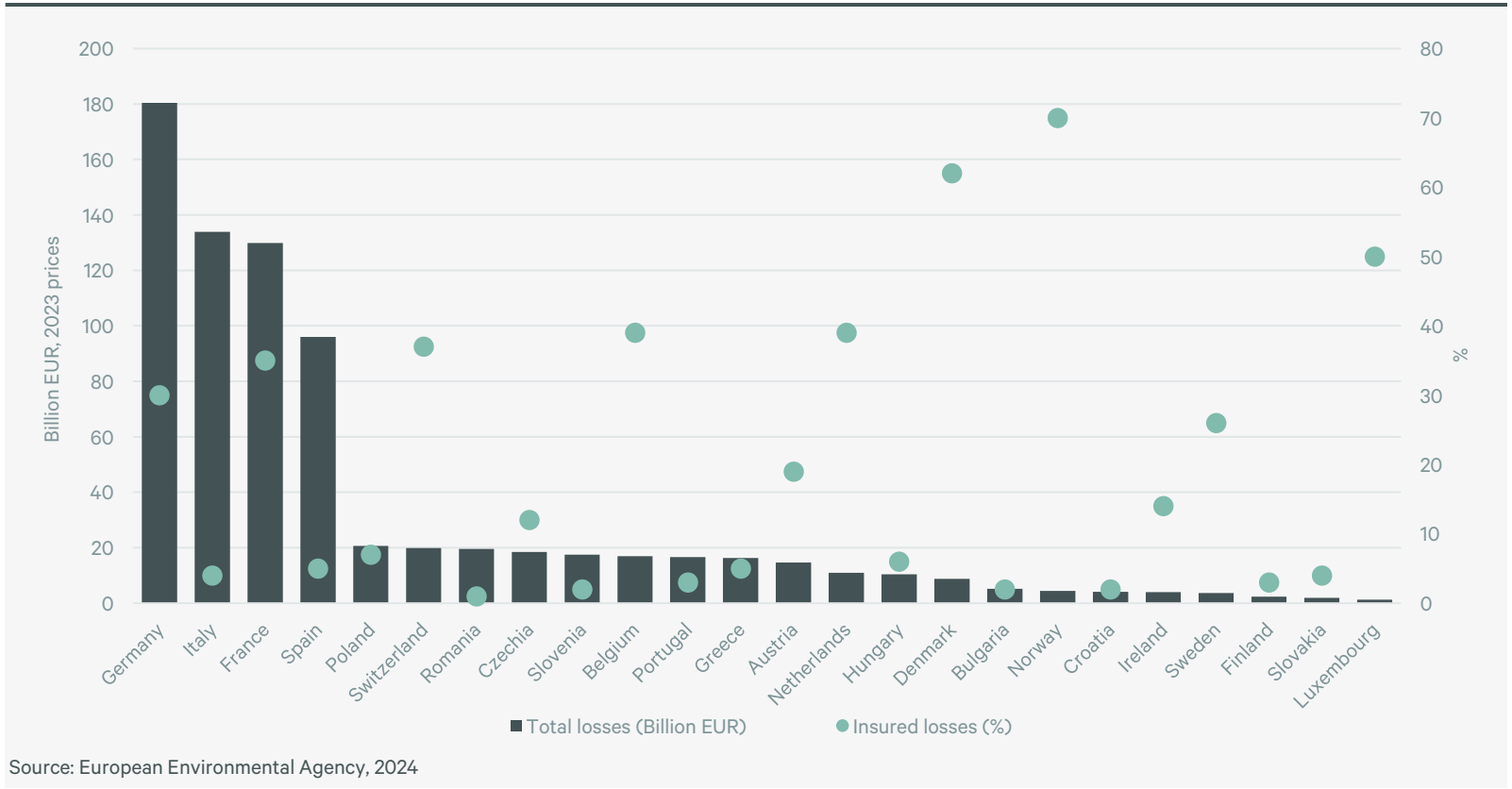
Insurance gaps and collateral value

When providing financing for real estate acquisitions (both commercial and residential), financial institutions often mitigate potential losses from credit exposure by using a physical collateral (asset). However, if the asset itself is not fully covered by insurance, the loss-mitigating ability of the asset is compromised. This increases the potential loss for the financial institution providing financing.

Increased climate risks might lead financial institutions to set stricter rules for the types of assets that are eligible for acceptance as collateral. Furthermore, mandatory climate insurance could become widespread in Europe, as seen in Italy's upcoming 2025 requirement for all businesses to insure their assets against natural hazards, supported by a state-run reinsurance fund.

As illustrated in Figure 3, notable disparities exist at the national level regarding the proportion of insured losses. At the EU level, merely 19% of climate-related economic losses were insured from 1980 to 2023, highlighting a considerable protection gap. Given the increasing severity and frequency of climate change events, closing the protection gap is important to minimise losses for both investors and financial institutions, in case assets are destroyed or damaged.

Figure 3: Agregated economic losses of assets caused by weather and climate-related extreme events (1980–2023)



Source: European Environmental Agency, 2024

Occupier considerations

At the European level, more than 40% of organisations reported that their office occupancy decisions are increasingly informed by a site's susceptibility to climate-related risks and plans for its transition towards a low-carbon, environmentally sustainable future (CBRE 2024 European Office Occupier Sentiment Survey).

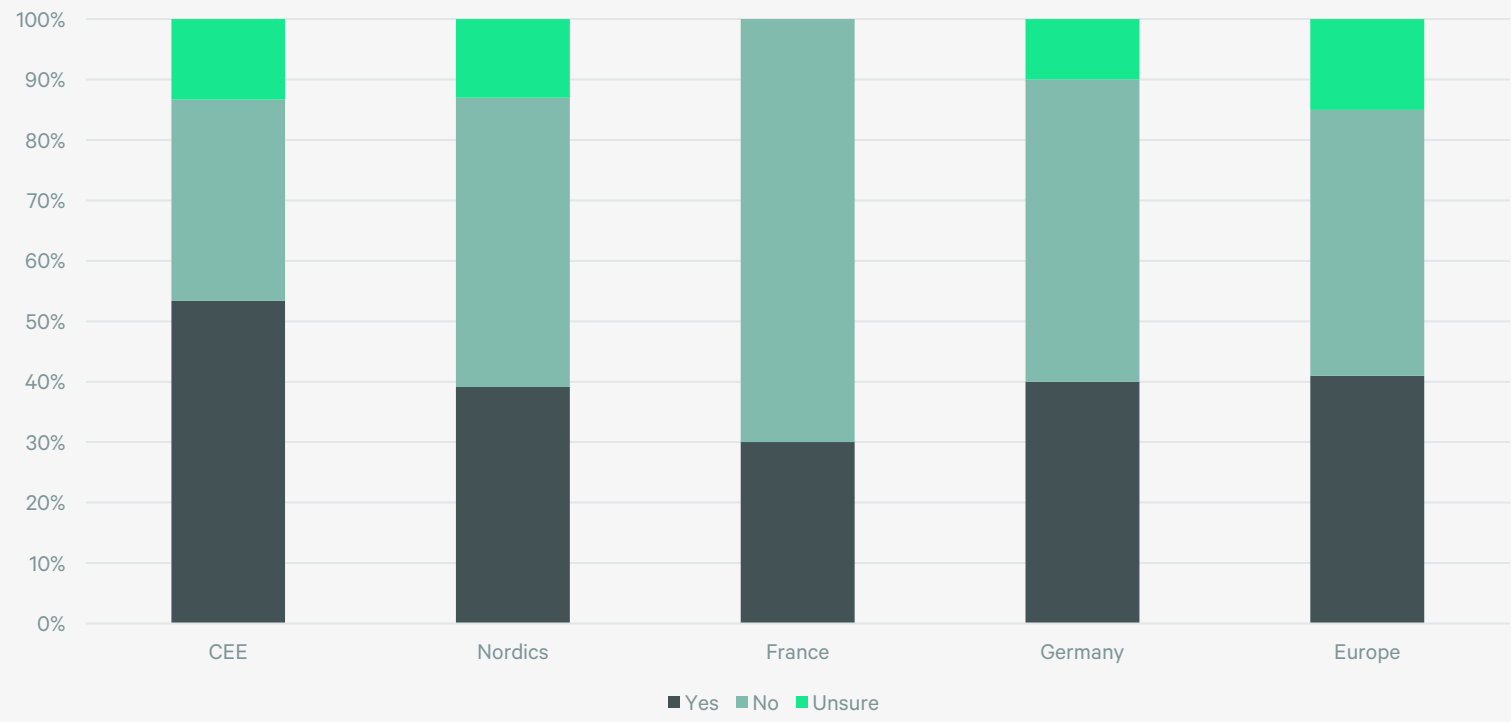
Property owners will seek to mitigate climate risks through investing in resilience measures.

However, the criteria defining a building's resilience today may prove inadequate in the future, particularly in locations facing escalating impacts from climate change. This complicates the assessment of what measures are essential to future-proof a building against climate-related risks.

Currently, a climate risk assessment is mandated for occupiers and investors in scope under the Corporate Sustainability Reporting Directive (CSRD), as well as the EU Taxonomy Regulation.

Businesses must also report on their adaptation plans, targets, and strategies in accordance with the EU's European Sustainability Reporting Standards (ESRS).

Figure 4: Making location decisions based on a location's vulnerability to climate change and/or its shift toward a low-carbon, climate-friendly future



Source: CBRE European Office Occupier Sentiment Survey 2024

02

Case Study: Denmark

Surface flood risk is substantial

Fooding is one of the main physical risks in Denmark and in other Nordic countries.

To understand the correlation between climate risk associated with buildings and their rental values, CBRE conducted a comprehensive analysis encompassing 3,600 lease agreements, signed in office buildings across Denmark during the 2020–2024 period.

To ensure comparability among the structures examined, we employed regression analysis to control for various factors, including lease size, time of the agreement, and geographical location (city and sub-market).

Given the low variability of the sample when using the overall Climate Risk Score, we have shifted focus to the Surface Flood Score. The Surface Flood Score was obtained from the Climate X platform, utilising projections for the year 2050 under the RCP8.5 scenario (see page 13 for definitions).

Given that every building possesses a Surface Flood Score, we established a baseline constant (intercept) corresponding to a building classified with a Surface Flood Score of A, indicative of the lowest possible risk. Subsequently, we assessed how rental values deviate from this constant in relation to varying Surface Flood Scores. Surface Flood Scores of B and C were not represented in the sample, as none of the office buildings within the sample was assigned with the Surface Flood Score of B or C by the Climate X platform.

It is important to note that these deviations should not be interpreted as absolute figures, as the constant does not represent an average rental value for buildings with a Surface Flood Score of A.

Rental premium for assets at lower risk

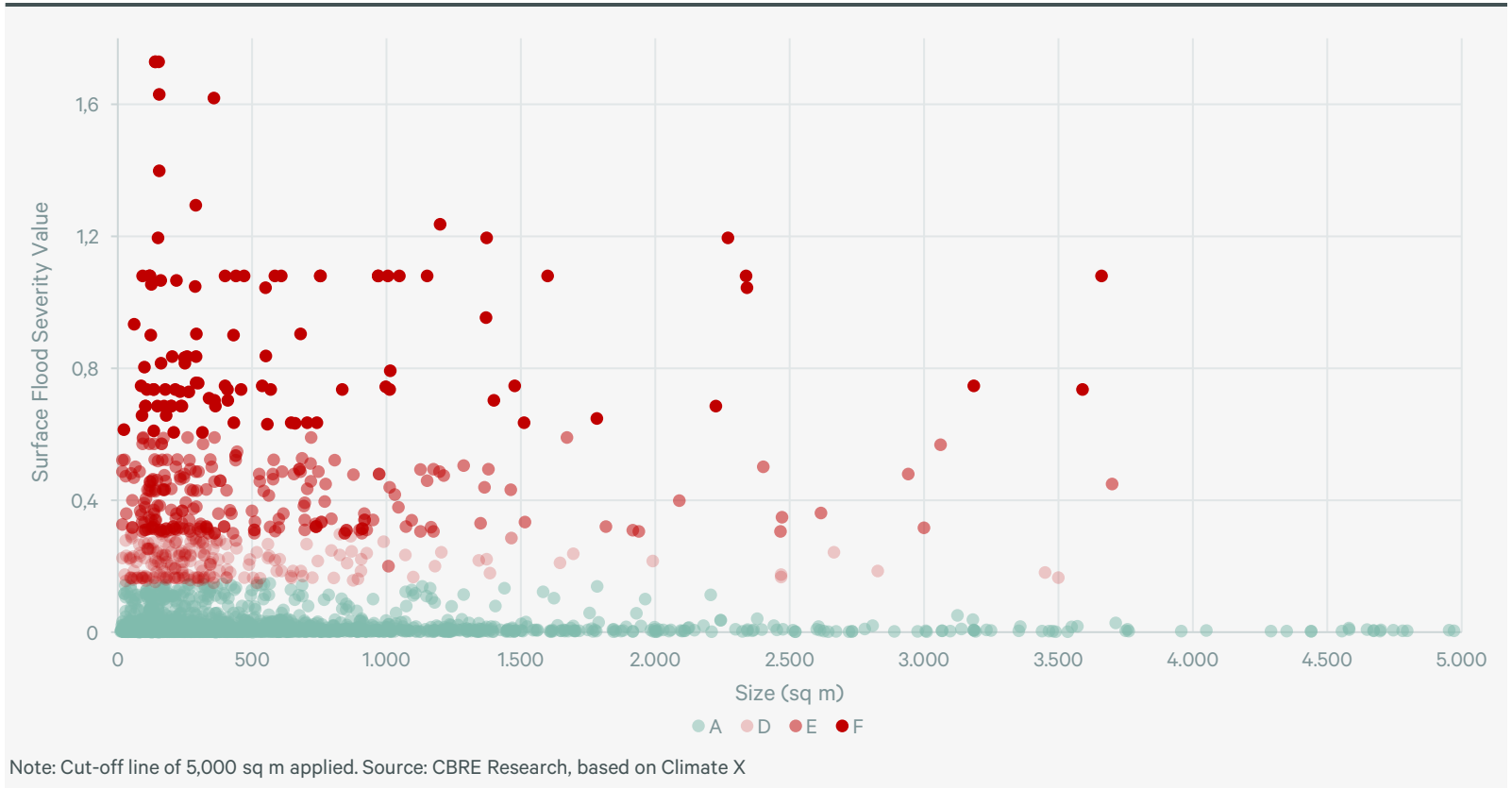
Our findings indicate that leasing activity is widespread across the sample, irrespective of the Surface Flood Score, as evident in Figure 5. Detailed analysis of office rental values in Denmark indicates that an office asset with Surface Flood Scores of D, E, and F suffer in rental discounts compared with those that command a Surface Flood Score of A.

1. Surface Flood Score A has a constant value of 638.9615 points
2. Surface Flood Score D is associated with a decrease of 18.8258 points
3. Surface Flood Score E is associated with a decrease of 3.8936 points
4. Surface Flood Score F is associated with a decrease of 68.7261 points

These findings suggest that increased Surface Flood Scores correspond to a decline in rental values.

Notably, within our sample, Surface Flood Score F caused the most pronounced negative effect, followed by scores of D and E, respectively. It is essential to interpret these results while considering the limitations associated with sample size and the distribution of risk scores.

Figure 5: Office lease agreements (2020–2024) based on their Size and Surface Flood Score (A to F)



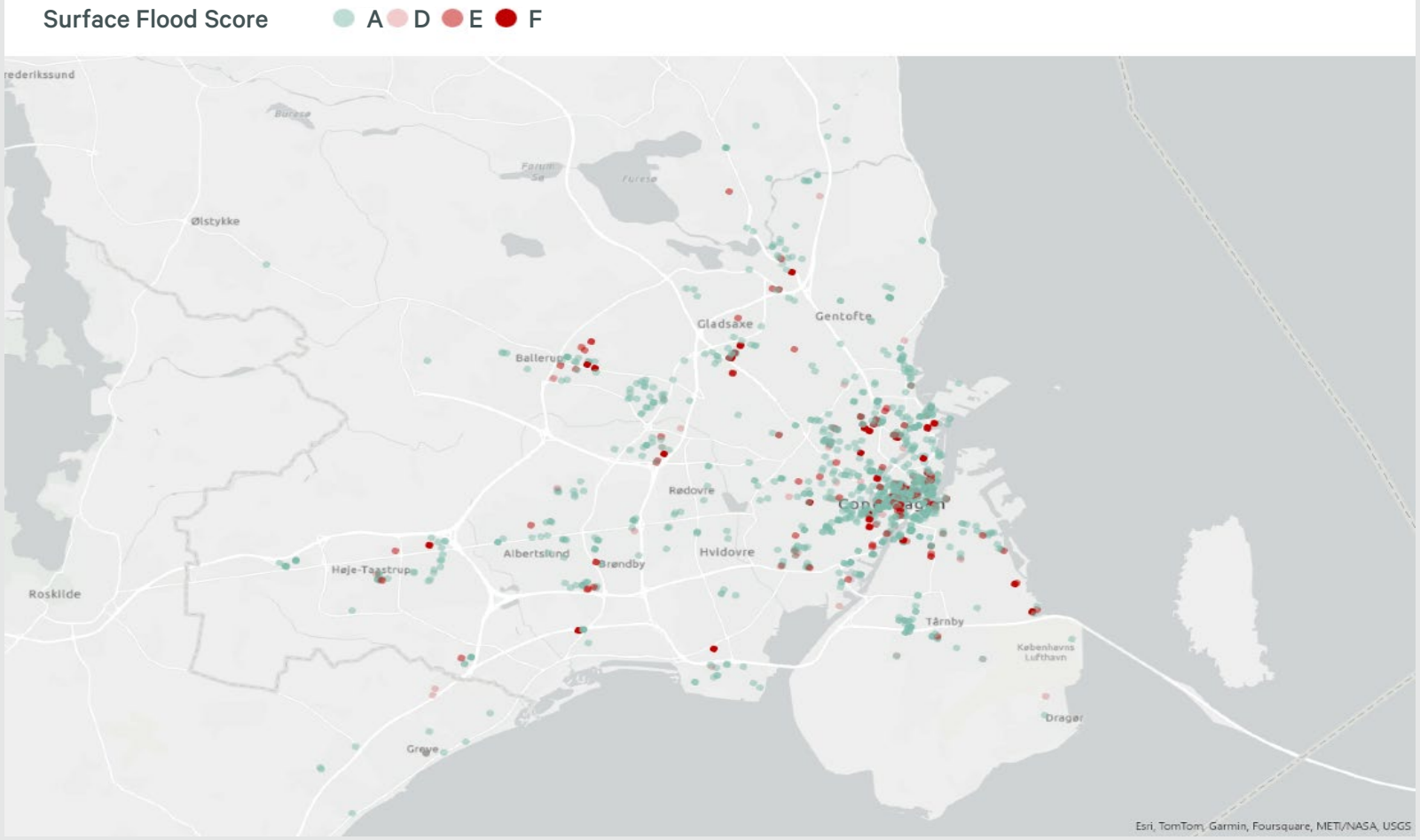
Note: Cut-off line of 5,000 sq m applied. Source: CBRE Research, based on Climate X

Important considerations

Several limitations of the sample warrant consideration:

1. **Selection bias:** The sample exhibited a pronounced overrepresentation of buildings with a Surface Flood Score of A (83% of the sample), which may have skewed the results. A more diverse sample with a more even distribution of Flood Score groups could yield different findings.
2. **Lack of granularity:** There were no buildings in the sample with a Surface Flood Score of B or C. This may have reduced the analysis's sensitivity and nuance. Allowing for more Flood Score categories in the sample could reveal a more complex relationship between rental values and surface flood risk.
3. **Temporal consideration:** We hypothesise that an even stronger correlation between office rents and surface flood risk may emerge in the future, as the impact of flood risk on property values becomes more apparent. Additionally, the way occupiers factor in these considerations in their decision-making is only expected to increase in the future.

Figure 6: Copenhagen – office buildings in the sample per surface flood score



Source: CBRE Research, based on Climate X

> Climate risk is an increasing focus, driven by regulatory requirements and our growing understanding of the associated risks, especially for sensitive assets where hazards could compromise long-term functionality and value.

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Definitions

Metrics	Description
Hazard Ratings	Hazard ratings are a measure of the severity or criticality of a specific risk. They are typically based on factors such as the potential severity of the risk, the likelihood of its occurrence, and the effectiveness of any controls in place. Hazards are rated from A (low risk) to F (high risk).
RCP (scenarios)	Representative Concentration Pathways are projections of greenhouse gases (and aerosols) which reach specific radiative forcings by the year 2100. Radiative Forcing represents the how much excess energy is trapped in the Earth's climate system due climate change factors such as greenhouse gases. RCPs are used as inputs to climate models to simulate potential future climate conditions. There are 4 different RCPs representing various scenarios from best case (RCP2.6), worst case (RCP8.5) and intermediate cases (RCP4.5 and RCP6.0).
Surface Flooding	Pluvial or surface flooding is flooding that occurs due to intense rainfall that can't drain away. Pluvial flooding can occur anywhere, it does not need to be near to a body of water like a river.

Source: Climate X

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