Intelligent Investment

The Value of Sustainable Building Features

REPORT

CONTINENTAL EUROPE

CBRE RESEARCH
MAY 2023

Foreword

CBRE aims to be a market leader in understanding, pricing and reflecting the value of sustainable building features.

In this report we explore the 'state of play' on the case for investment in sustainable building features and the value this potentially creates.

Welcome to the CBRE Continental Europe research report exploring the relationship between sustainable building features and value.

There is an ever increasing amount of "green premium" literature which aims to demonstrate that sustainable features add financial value to buildings. Such features include those which:

- Tackle climate change and/or allow a building to adapt to its effects
- Improve energy performance
- Reduce fuel consumption and carbon emissions
- Reduce water and waste usage
- Promote biodiversity and awareness of the impact of a building on its surroundings

There is a good case that sustainable features do add value – not least by protecting against the risk of future obsolescence.

But there is an urgent need to improve the quality of the evidence and underlying data. We also need to acknowledge that the recent and rapid repricing in real estate markets has both accelerated and complicated valuation and decision-making challenges for our clients.

This report aims to move the debate forward and exemplify CBRE's active engagement in this important subject across our business.

We hope you find it stimulating.

Get in touch with us to discuss how we can help you further with the challenges it outlines.

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Executive Summary

There is clear evidence of a "green premium"

1. CBRE's European analysis suggests that **office buildings with sustainability certifications earn a 6% rental premium over their non-certified peers.**
2. **Logistics properties with BREEAM certification achieve a 25bps five-year median valuation premium** compared to market Prime Net Yield.
3. A survey of the international academic evidence indicates an **average gross premium for green building certificates of 6–8% (rents) and 14–16% (capital values).**
4. **Measured premiums are likely to decline over time** as the supply of green building features increases.

However, further work is needed to improve the evidence base

1. **Evidence from the office sector predominates**. In other real estate sectors such as residential, retail and logistics, the evidence base is much thinner; more data and research is needed.
2. There is **very little literature on the premium associated with a 'net zero' building,** or the costs of achieving it.
3. **The evidence is very focused on the value of green building certifications,** and says much less about the value of high underlying environmental performance (such as actual energy consumption).
4. **Findings must be interpreted with caution**. The heterogeneity of real estate makes general conclusions difficult to apply to individual circumstances.

Focusing on discounts as a driver, and the *absence* of sustainable features

1. Thinking about discounts for the absence of a green building feature, rather than premiums for their presence, can be helpful. But **research-based quantification of discounts will be of limited use.**
2. The concepts of premiums and discounts assume that changes in attitude become embedded in market behaviour. **For a brown discount to exist, sustainable features need to become a standard expectation in the market.**
3. **Case-by-case modelling of discounts for the absence of sustainable features may be better** at illustrating the costs of not taking action.
4. Evidence suggests **that investors are implementing sustainable improvements to their real estate defensively to avoid discounts** and protect value, rather than aiming to achieve premiums through market-leading stock.

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01

Attitudes and Willingness to Pay

Attitudes and Willingness to Pay

‘Sustainable’ demands on real estate seem likely to grow, but they may not always be expressed in price.

Rising living costs combined with an increasing awareness of environmental and social issues, suggest that pressures upon real estate decision makers to reflect ethical preferences will continue to grow – and become more complex.

As we show in this report, these pressures may likely result in a modest uplift in financial value for real estate, which reflects society’s preferences. Conversely, a failure to take action to respond to consumer, occupier and financier pressure could see the financial value of obsolete real estate fall.

But, even if real estate financial value does not increase by responding to societal pressures, this does not mean that such buildings deliver no additional value at all. While this research report aims to contribute to the debate surrounding the financial value of sustainable building features, there is also a growing debate about whether value should always be measured in financial terms.

So, when considering motivations and rewards for investing in sustainable building features, we should take account of the possibility that real estate decision makers might simply be advancing human values in a desire to ‘do the right thing’, rather than advancing financial value.

Occupier and investor attitude can help quantify the demand for sustainable building features.

It is beyond CBRE’s remit to investigate how end-users choose to transact (or not) with brands and firms with a proven track record of ethical decision making and a strong sustainability profile. However, we can look at whether occupiers and investors say they will pay more for real estate which is consistent with those sustainable credentials.

32%

of European investors are willing to pay premiums for “ESG-friendly” assets. More than half of them are willing to pay in excess of 20%.

Source: European Investor Intentions Survey (CBRE, 2023d)

63%

of European logistics occupiers say they would be willing to pay a rental premium for sustainable building certification.

Source: CBRE and Analytiqa European Logistics Occupier Survey (CBRE, 2022a)

67%

of Continental European investors and occupiers are willing to pay a premium for building features that improve the physical and mental health of employees and for buildings that have health and well-being certifications.

Source: Strengthening Value Through ESG, Continental Europe Executive Summary (CBRE, 2023e)

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Attitudes and Willingness to Pay

Focus – Valuation Advisory

The challenge now for Continental Europe's valuation industry is interpreting the increasing ESG evidence and reflecting it in Market Value. A green premium or a brown discount, depending on a building's sustainable features, should be based on actual transactional evidence; and a concrete analysis of market sentiment. For valuer and client this brings a range of practical issues to resolve.

01

It requires the valuer to identify the 'sustainability profile' of each property. Data here is key. Some of the data needed to do this will be in the public domain, but much will be available only from the owner. What information is genuinely required by valuers; and how far does the valuer go in validating and adopting the information?

02

Obviously, the 'sustainability profile' of each building used as evidence must also be identified. In some cases the profile will be known or obvious, but not always. How can transparency be increased?

03

Across the many markets of Continental Europe there is a growing need for a consistent (reporting) approach on sustainability in valuations, most especially for the larger institutions holding portfolios over multiple countries. In Europe this is made more complex by differing Government legislation across the countries.

04

And of course there is a technical valuation discussion and the need for consensus agreement on how sustainability factors should be reflected within cashflows and models. Global valuation standards do require valuers to identify clearly how valuations are arrived at. Findings must be logically explained.

The positive news is that many valuation industry bodies across Continental Europe are heavily engaged in finding solutions to these questions. The pace of change is accelerating, with many investors, financiers and other market players now actively working together across all aspects of real estate, not just valuations, to handle the fundamental challenge of ESG.

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Attitudes and Willingness to Pay

Sector Focus – Hotels

The value of a hotel property is directly linked to its operating cash flows. Hotels which are perceived as "sustainable" will be able to command premium rates compared to competitors without the same features. Additionally, there is the potential to decrease operating costs during the ownership period. However, with hotels, there are features that need deeper consideration and understanding.

Who pays for investments in sustainability?

In many European markets, hotel leases are prevalent. Rents tend to comprise a fixed element to which turnover-based, variable rent may be added.

- For the **property owner**, there is no direct incentive to invest in sustainable features that do not affect turnover but may increase the operator's profitability
- For the **hotel operator**, the payback for investing in sustainable features may take too long and the ultimate benefit in building value may not accrue to them

Therefore, sustainability initiatives may suffer unless the parties find new and better ways to work together.

For other operating models, such as Hotel Management Agreements, the owner's responsibility for bearing the cost may be clearer, but simply following the management company's strategy may not be right in all markets.

Guest behaviour

Technology has made it possible to reduce energy consumption in hotels with measures such as heating rooms on demand and key card operated lights.

Guests have been asked to contribute by reusing towels and switching off air-conditioning when they leave the room. However, for many guests, staying in a hotel is synonymous with a higher level of creature comforts, and they take longer showers or deeper baths than they would at home. Guests at spa hotels and resorts do not want to compromise too much and expect a certain quality of service.

Hotels can work to change guest behaviour as well as invest in technology and clean energy sources that mitigate the effect of the behaviour that cannot be changed.

Measuring and certifying

Many hotel operators focus on sustainability and have been certified according to various schemes, such as Green Key, Ecolabel or Nordic Swan.

One of the most important parts of the sustainability process is to start measuring outputs and inputs and pursuing a course of improvements. The various ecolabels provide a framework for such endeavours.

However, there are huge discrepancies between the various certification schemes, and few of them focus on the physical infrastructure of buildings, circularity etc. It may be necessary for building owners to certify their hotels according to BREEAM or LEED or DGNB, in addition to the efforts of the operator.

Erik Myklebust
Head of Hotels, Nordics

So far, there is little evidence of a link between higher levels of sustainability certification and increased hotel values. There is also little evidence of a 'brown discount' for buildings that are not presented as "green".

Encouragingly, though, research by Booking.com, Expedia and Skift has found that travellers increasingly seek out sustainable options when planning their travel (78-90%) and that about half of travellers would be willing to pay more for sustainable options. Expedia found that consumers are willing, on average, to pay 38% more to make their travel more sustainable.

We know investors are focusing their efforts on buildings that meet sustainability requirements and find it difficult navigating the jungle of different certification schemes. For hotels, where there may be separate certificates for the operation and the buildings, the issue is even more muddled.

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03

The Quantified Evidence on Premiums

The Quantified Evidence on Premiums - Offices

CBRE's 2022 European analysis suggests that office buildings with sustainability certification earn a 6% rental premium over their non-certified peers.

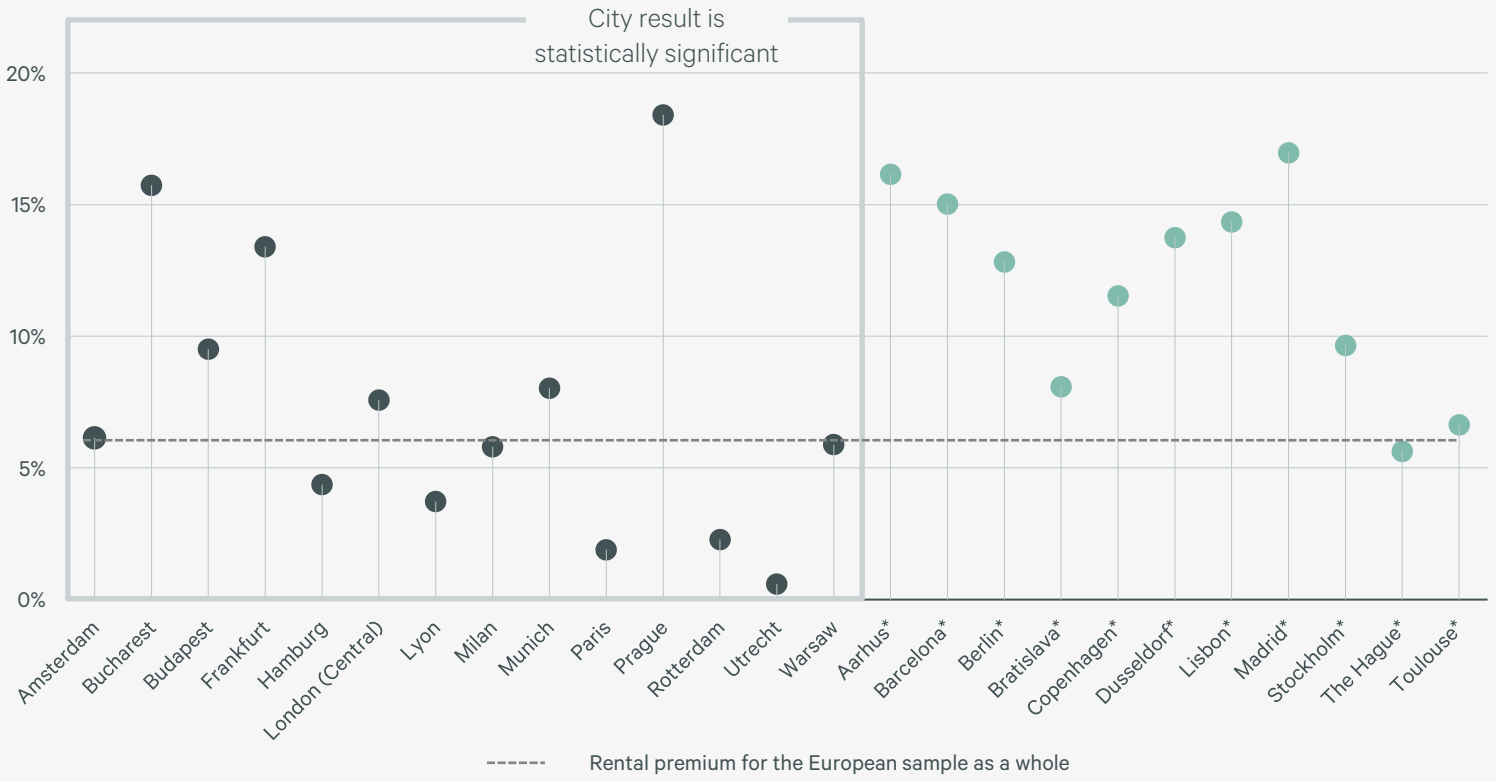
The sample included 7,500 leases in office buildings with sustainability certification, and 37,000 leases in non-certified stock, creating one of the largest and most robust European studies of this data.

A comparison analysis found that the average rent for office buildings with sustainability certification, which denotes a high degree of energy efficiency and environmental responsiveness, is 13.3% higher than that of non-certified buildings.

When the effects of building location, size, age and renovation history are accounted for, **our model suggests that office buildings with sustainability certification earn a 6% rental premium over their non-certified peers** (Figure 1).

The premium we found is consistent with other CBRE studies over a long period of time, which suggests an enduring benefit to office rents from verifiable measures to reduce carbon emissions.

Figure 1: Sustainability certified rent (premium) compared to uncertified rent



Source: Is Sustainability Certification in Real Estate Worth it?, CBRE Research (CBRE, 2022f); *City result is not statistically significant

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The Quantified Evidence on Premiums - Logistics

CBRE's 2022 European analysis suggests that logistics buildings with sustainability certification command a 25bps five-year median valuation premium compared to market Prime Net Yield for European Logistics (including the UK).

Since 2018, the analysis showed a visible trend in market reported yields for BREEAM certified properties being lower than the market Prime Net Yield at the time of transaction.

This is a very significant observation, since market reported yield reflects lower perceived risk, and positive investor expectations about market movements and future market position within the local context. This is also being reflected in the lower risk of asset value depreciation and relatively higher rental growth potential compared to market average.

The analysis further implied that there are two elements that are important: certified stock and liquidity. Investors are increasingly targeting properties with strong sustainability credentials. As this stock is still limited in several markets, we can expect pricing to become stronger.

Figure 2: Key highlights from the report

8.1%

Five-year average share of BREEAM certified stock in the total I&L investment volume

25bps

Five-year median valuation premium compared to market Prime Net Yield for European Logistics (incl. UK)

30bps

Five-year median valuation premium compared to market Prime Net Yield for UK logistics with BREEAM Excellent rating

Rental

Premium not necessarily visible but applicable through lower void periods, higher liquidity and easier (re)letting

Source: Capturing the Value of Sustainability in European Logistics, CBRE Research (CBRE, 2022g)

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The Quantified Evidence on Premiums

Academic research typically looks at premiums for “green” certified buildings compared with the rest of the market.

CBRE has examined five recent major international literature reviews:

- Dalton & Fuerst (2018)
- Zhang et al (2017)
- Mangialardo et al (2018)
- Leskinen et al (2020)
- Monnier (2021)

Typically these studies look at the difference in prices or rents between buildings in a market with an environmental certification (such as BREEAM or LEED) and those without (or the market average).

Most studies also control for the possibility that other factors than the certificate might be driving the value, but they also focus predominantly on the US and UK housing markets with a limited evidence base for other asset classes or countries.

A common theme is that the increasing supply of buildings with sustainability certifications is believed to be reducing the green premium (due to market competition). We hypothesise that in the long-term, premiums will tend to fall. As certification becomes an average characteristic, rents should also tend to the average. However, more detailed certification frameworks may result in “green” pricing.

> Going forward, certification standards are likely to evolve further, which can potentially result in the development of differential green pricing.

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The Quantified Evidence on Premiums

Value may also show up in faster leasing, or lower vacancy – not just in rents.

A number of studies also examine the potential for value to show up in metrics other than rent or capital value. International evidence suggests that **office buildings with green features lease faster than the rest of the market**, and enjoy lower medium-term vacancy rates. Figure 3 provides some sample findings.

Other value-related benefits anecdotally reported to CBRE researchers include:

- Lower lending costs for development or refurbishment of "green" buildings
- Less need to offer tenant incentives
- Tenant agreement to co-invest in green features with landlord
- Lower operating costs

However these benefits should not simply be assumed. For example, Newsham (2009) found that around a third of LEED buildings used more energy than their conventional counterparts; while BSRIA (2012) found that only 44% of BREEAM clients felt BREEAM delivered operational cost savings.

Figure 3: Sample findings relating to non-rent "green" value

Author	Market(s) studied	Non-rent factor studied	Finding
CBRE (2021f)	11 European city office markets	Vacancy rate	Vacancy rates in offices with sustainability certifications were universally lower than in non-certified buildings (as at H1 2021).
CBRE (2022h)	38 European city office markets	Vacancy rate	Certification can be a significant factor in lowering vacancy risk. In the majority of cities analysed, certified buildings command lower vacancy rates compared to non-certified stock.
CBRE (2022c)	3 Australian city office markets	Vacancy rate	NABERS 5.5 and 6 Star offices have a 4% higher occupancy rate compared to NABERS 4.5 Star peers, and 11% compared to offices with 4 Star or lower ratings.
Mangialardo et al (2018)	Milan offices	Leasing velocity, vacancy rate	Green certified buildings leased up four times as fast as the non-certified equivalents after six months, and had half the vacancy rate after 30 months.
Devine and Kok (2015)	Canada offices	Vacancy rate, likelihood of lease renewal	Offices with LEED certification had an 8.5% higher occupancy than comparable buildings. Offices with BOMA BEST certification were 3.4% more likely to experience lease renewal than a comparable uncertified building.

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Four Important Caveats to the "Green Premium" Literature

Specifically identifying the value of sustainable building features is difficult, so findings in this field should be interpreted with some caution. Four main caveats to the "green premium" literature need to be considered.

1 **Timing**

Most studies are snapshots of the market under study at a point in time, but premiums are likely to erode over time as sustainable building features become more common. It is therefore important to identify the supply of a given sustainable building feature at the time the study was conducted, making it possible to establish how 'mature' the market was for that sustainable feature (as per CBRE's own research).

2 **Quality of evidence**

Many studies recognise that sustainable building features may be present alongside other features which also add value to a building, and that it is difficult to attribute value specifically to the sustainability elements. Statistical techniques are available to remove the influence of these other factors, but not all studies use them. This may be as a result of a lack of appropriate data. The evidence is also limited outside the office and residential sectors, and in some markets there is not an adequate body of research to draw meaningful conclusions.

3 **Certification as a proxy**

The widespread availability of green building certification schemes in some markets, and the lack of any other comparable data, explains why certifications are heavily used as an indicator of a sustainable building. However, there are risks with this approach. Certifications are typically weighted scores combining a wide range of environmental performance metrics, but end users may only want to pay a premium for a subset of these features. Studies looking at specific metrics such as actual energy consumption seem increasingly likely to be needed.

4 **Every building is different**

The heterogeneous nature of property, especially commercial property, means that the outcomes for individual buildings could vary wildly from researched averages.

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04

The Quantified Evidence on Discounts and Costs

The Quantified Evidence on Discounts and Costs

Is it easier to identify the discount for the absence of a green feature than it is to identify the premium for its presence?

The difficulties in establishing the value of a net green premium have in recent years led some commentators to prefer instead the related concept of the 'brown discount'.

This concept may be defined as **the discount in price sought when a building lacks green features which have come to be expected in the market**. These could include:

- **Physical risks of climate change** such as wildfires, flooding or water scarcity
- **Transition risks of climate change** such as inefficient building design leading to unmanageable energy costs
- **Legal risk** of failure to comply with existing or forthcoming regulations
- **Other environmental or social risks** such as poor support for biodiversity, or the presence of controversial tenants

Discounts for the absence of a green feature ought, in due course, to be observable in the market through research. However, there are in practice very few studies which attempt discount-based analysis. Even attempting to quantify general real estate depreciation has proved difficult, with widely varying estimates.

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The Quantified Evidence on Discounts and Costs

Regulation in the UK and the Netherlands has led to observed discounts for lower EPC ratings.

An example of research on discounts for 'obsolete' property is CBRE IM's (2022) work on Energy Performance Certificate (EPC) ratings. Legislation imposing minimum energy performance ratings based on EPCs was implemented in the UK in 2015 and the Netherlands in 2016.

CBRE IM found **discounted investment returns for assets with lower EPC ratings.** This effect was most notable for F/G rated UK buildings from 2019, when it had become illegal to re-let such buildings.

Figure 4 shows that the discount on total return for assets with an EPC of F/G was -18% (UK) and -14% (Netherlands) compared to A/A+ rated assets in 2020. The lower total return for poorly performing assets was driven primarily by capital growth, not by income return.

The discount was not observed elsewhere in Europe, where legal minimum EPC requirements have not yet been introduced. This suggests that it is the presence of regulation, rather than customer demand (or other recent Europe-wide influences, such as the COVID-19 pandemic) that has created the discount.

Figure 4: Difference in total return of EPC B/C and EPC D/E compared to EPC A/A+ rated properties (percentage points)

Source: CBRE Investment Management, 2022. To ease comparisons, findings shown here are simple averages; however, they are 'highly similar' to regression analyses undertaken by the same authors, which controlled for location and construction date. Covers industrial, office, retail and residential assets.

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The Quantified Evidence on Discounts and Costs

Rather than seeking a premium, modelling when and how to avoid a future discount might provide the best assistance to decision-making.

In the absence of timely research about the scale of discounts, investment choices can be assisted by constructing and comparing scenarios in which a sustainable building feature is present, or not.

Figure 5 illustrates the factors which a typical cash flow analysis could consider. This approach does require the analyst to make a range of assumptions, but those assumptions are at least transparent and informed by research.

Such analysis might include estimates of the additional rental premium that occupiers might pay for sustainable building features.

But it does not have to do so: instead, modelling can make a judgment about whether demand for the green feature will be so sustained that not having that feature is likely to be discounted in future.

If it will, then preserving value and preventing depreciation through defensive investment becomes essential.

Figure 5: Reflecting green feature choices in cashflow analysis

Cashflow item	Do nothing: Do not implement sustainable building features	Take action: Implement sustainable features
Capital expenditure	Costs of managing risks arising from absence of the feature (e.g. flood defences)	Construction costs needed to create the feature
Operating expenditure	Higher running costs (e.g. gas prices, carbon pricing or offsetting) Higher lending costs	Lower running costs Lower borrowing costs
Revenue	Rental depreciation or actual rental discount due to loss of tenant demand because the feature is not present (severe loss if demand is regulated away)	Protection of existing rental stream; potential for premium for scarce best-in-class features
Discount rate	Higher rate reflecting risks remaining	Lower rate reflecting risks now managed

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The Quantified Evidence on Discounts and Costs

European real estate investors are indeed most driven by protecting value in their sustainability strategies.

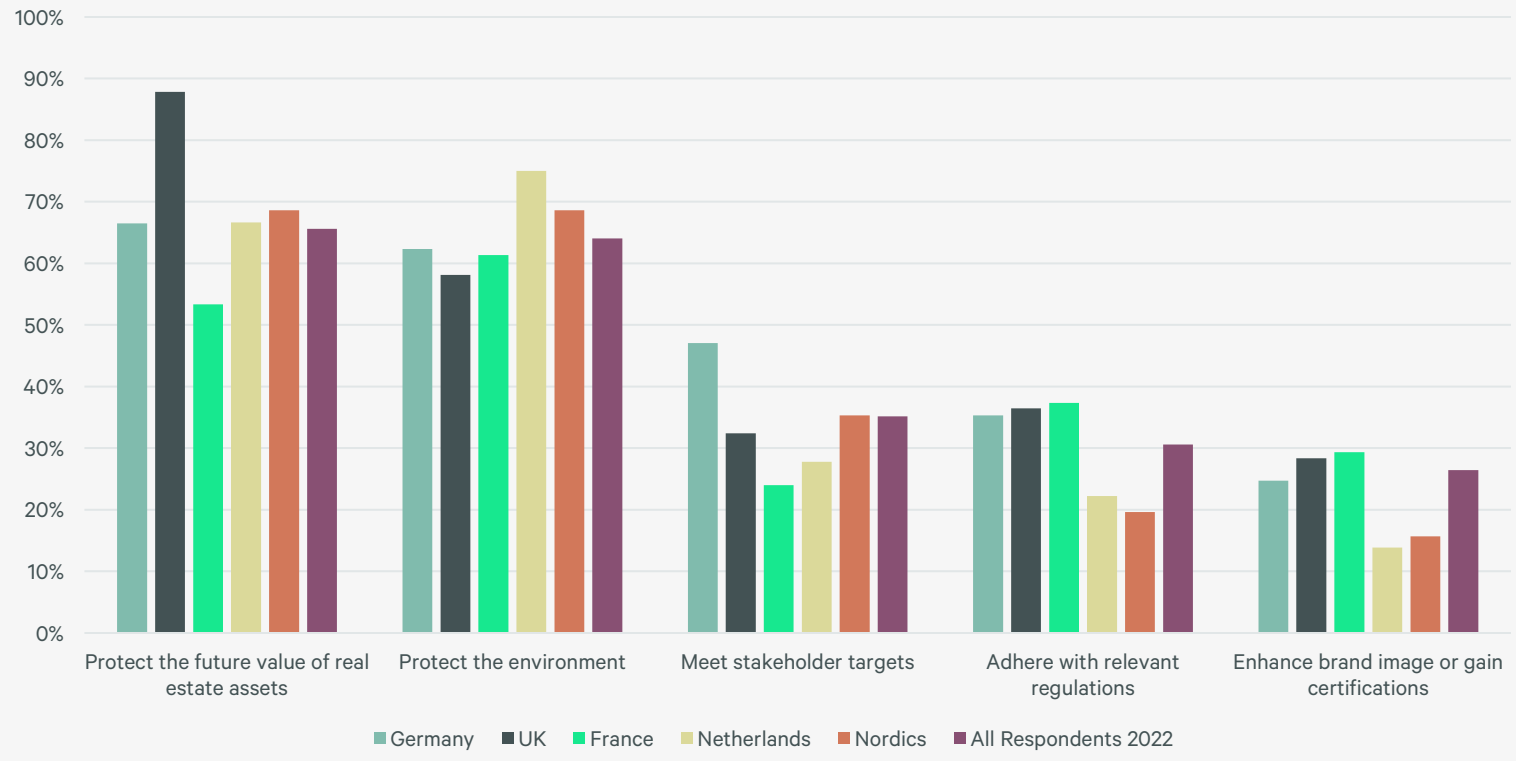
This defensive approach to protecting the value of real estate does indeed seem to be a significant driver of decision-making among European real estate investors. Figure 6 suggests that **protecting value is investors' biggest single sustainability priority.**

Enhancing brand image and adhering to relevant regulations were significantly less important as drivers of strategy.

Ultimately, therefore, the understanding that obsolete real estate suffers a value discount may be a bigger driver of action than the potential for modest value premiums.

This doesn't mean that protecting value is the only aim. For example, some real estate capital is being actively allocated purely to environmentally-friendly assets, whether there is a higher return from those assets or not.

Figure 6: Main sustainability priorities among European real estate investors



Source: EMEA Investor Intentions Survey, CBRE Research, 2022b (n=81) ('Select top three priorities' question)

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The Quantified Evidence on Discounts and Costs

Costs estimates also vary significantly, with a 'net zero' standard costing noticeably more.

Evidence on the cost of implementing sustainable building features is surprisingly scarce. Arguably, this reflects the fact that every building is different and costs to bring a building up to leading (or even average) environmental standards can vary significantly.

Figure 7 provides a range of costings studies published in the last decade. As with premiums, **cost figures vary substantially depending on the precise environmental standard being sought.**

Certification schemes which offer a scale of performance rankings not surprisingly tend to exhibit higher costs for the more demanding end of that scale.

However, it is often not clear whether the costing refers to new build or refurbishment costs. Furthermore, costings are variously expressed as a percentage of construction costs or capital value.

Two recent analyses of the theoretical cost of achieving 'net zero' unsurprisingly show a higher cost.

Figure 7: Costs of achieving green certifications or targets

Author	Basis of cost	Cost as % of capital value
Chegut et al (2019)	BREEAM Very Good	4.9%
Mangialardo et al (2018)	LEED Gold	5%
	LEED Platinum	7%
Abdul & Quartermaine (2014)	BREEAM	2%*
WGBC (2013)	BREEAM, LEED, Energy Star, etc	0–12.5%**
BRE (2016, citing Target Zero 2012)	BREEAM Very Good/Excellent (office)	0.2–0.8%
	BREEAM Outstanding (office)	9.8%
BSRIA (2012)	BREEAM Very Good	1-4%***
	BREEAM Excellent/Outstanding	5%***
AEW (2021)	Net zero: retrofit cost estimate to avoid stranding to 2030	0.25–0.65% per year to 2030
UKGBC (2020)	Net zero: by 2030	8–17%

Source: CBRE Research and studies cited (see Bibliography). See Zhang et al (2017) for a list of earlier costing studies published prior to 2012. *Based on 3 case study buildings. **Costs stated as % of construction costs rather than capital value. ***Modal response from a survey of 17 clients using BREEAM

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05

Conclusions

Conclusions

1

There is clear evidence of a "green premium"

Overall, we conclude that there is reasonably clear evidence that a premium will be paid for sustainable building features.

CBRE's European research suggests that **office buildings with sustainability certifications earn a 6% rental premium** over their non-certified peers.

The best available international evidence suggests that **there is likely to be a gross green premium of around 6–8% of rents and around 14–16% of capital values**.

After accounting for costs, **a net capital value premium of around 6% for green certifications** is a reasonable global guideline. However, the margin of error is larger than this potential gain, suggesting that case-by-case analysis is needed.

In any case, **measured premiums are likely to decline over time** as the supply of green features increases. Indeed, continuous investment is necessary simply to avoid depreciation.

2

However, further work is needed

Even if it is a reasonable assumption that sustainable building features will add financial value, care should be taken not to overinterpret this finding. A range of caveats should be borne in mind.

Evidence from the US and UK predominates. In many European countries, and in some real estate sectors such as retail and logistics, the evidence base is much thinner; more data and research is needed.

The **evidence is very focused on the value of sustainable building certifications**, and says much less about the value of high underlying environmental performance (such as actual energy consumption).

There is also, to date, **very little literature on the premium associated with a 'net zero' building**, or the costs of achieving it.

We also find that **data is often out of date, and evidence quality is variable. The use of certificates as proxies for environmental performance can mislead.** But there are few practical alternatives until data availability improves.

The **heterogeneity of real estate** also makes general conclusions difficult to apply to individual circumstances.

3

It may be helpful to view 'avoiding a discount' as a stronger driver

It can be difficult in practice to establish the value uplift for sustainable building features. So, thinking about discounts for the absence of sustainable building features, rather than premiums for their presence, may be a helpful alternative.

Research-based quantification of discounts will be of limited use to decision makers because it will lag the market. However, such research may help indicate which of the drivers is actually bringing the discount into being.

Case-by-case modelling of discounts for the absence of sustainable features may be better at illustrating the costs of not taking action, for example using cashflow analysis of alternative scenarios. When doing such modelling, care needs to be taken to make realistic assumptions about timing and the likely magnitude of the premium (or discount) likely to be experienced for the presence or absence of green features.

There is evidence that **investors are implementing environmental improvements to their real estate defensively, to avoid discounts** and protect value, rather than aiming to achieve premiums through market-leading stock.

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06

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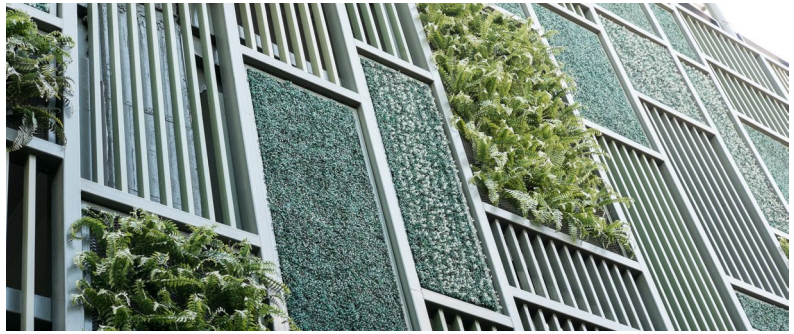
Is Sustainability Certification in Real Estate Worth it? 2022



CBRE European Sustainability Legislation Mapping Tool

Capturing the value of Sustainability in European Logistics

ESG and Real Estate: The Top 10 Things Investors Need to Know

Real Estate's Role in the Environmental, Social and Governance (ESG) Agenda

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