

## Research Briefing | Europe

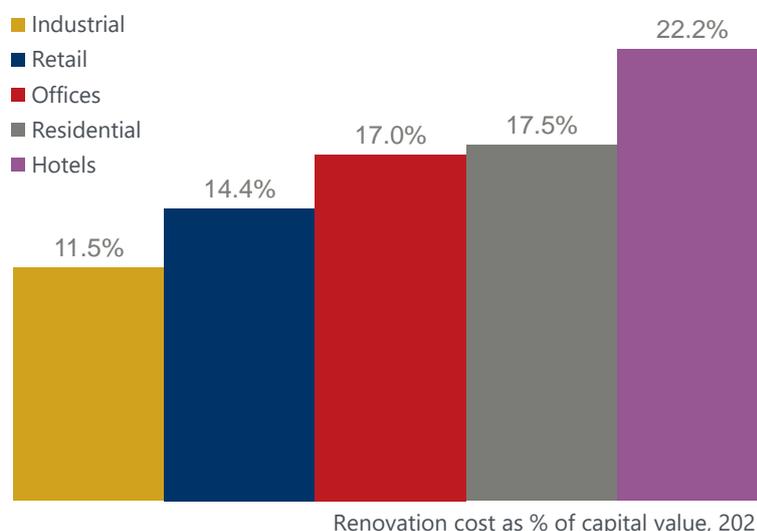
# The renovation race to net-zero

- Decarbonising Europe's building stock will require a huge programme of renovations to reduce emissions of greenhouse gases by 2050. This will lead to higher costs in the majority of European real estate markets. According to our analysis, the cost to extend the economic life of a commercial real estate asset by 10–15 years range from 7% to 30% of an asset's capital value, depending on the country and sector.
- Portfolio's that are overweight hotels could face higher costs to align to the required decarbonisation pathway and ensure compliance with more stringent energy performance standards. Conversely, a tilt toward industrial and retail assets could have the opposite effect.
- In terms of ongoing expenditure, we think the UK, Nordic, and CEE economies will need a smaller adjustment, after accounting for differences in typical improvement costs and spreading these over the additional years of economic life. In the Nordics, obsolescence risk is lower, while all three economies have a higher share of capital expenditure allocated to improvements.
- Meanwhile, we expect southern European economies plus Germany and France will need to spend more on office renovations relative to existing improvement expenditure to accomplish the transition and comply with new regulations.
- Renovating existing real estate assets is now a strategic priority to reduce climate transition risk and cut emissions to net-zero. Investors will need to define initial budgeting and reassess portfolio strategy as regulations tighten, valuation guidance modernises, and obsolescence risk rises.

Chart 1: Hotels face the highest renovation costs to extend their economic life

### Europe: Renovation cost by sector

Estimated cost to extend economic life by 10-15 years



Source: Oxford Economics/AECOM/Arcadis/Costmodelling/EU-DEEP/MSCI

# The renovation race to net-zero

## Renovation is now a strategic priority

Tighter regulations aimed at decarbonising the EU's building stock by 2050 mean the real estate industry needs to focus on cutting operational emissions of greenhouse gases, making renovation of the existing property stock a [strategic priority](#). This will lead to a prolonged period of higher renovation rates, with a far greater emphasis being placed on ESG and transition risks, as demonstrated by the latest [RICS guidance](#) (see InfoBox).

To understand the implications, we have supplemented our [European Real Estate Obsolescence Risk Index](#) with analysis of the estimated costs of renovation across Europe. This will help owners and investors shape portfolio strategy and define the initial budgeting needed to address the climate transition and align assets with an appropriate [decarbonisation pathway](#).

Our analysis estimates the costs of renovating a typical building for each of the five key property sectors (offices, retail, industrial, residential, and hotels) across 17 European countries, to extend its economic life by 5, 12.5, or 25 years.

The purpose of this study is to provide a high-level quantification of the potential costs and relativities between countries and sectors. Each renovation project is very different with a wide variation in building conditions, specifications, and ease of access, all of which significantly affect costs.

## What budget is needed to cover higher costs?

Based on our analysis of renovation costs across Europe, we estimate that extending the economic life of a building by 10-15 years costs from 7% to 30% of capital value, depending on the country and sector. The annual cost spread over the years of additional economic life and compared to typical improvement expenditures ranges from -1.2% to 1.7% of capital value per annum. A negative figure implies that spending on improvements each year is already higher than we estimate for renovation, allowing decarbonisation to be carried out within the existing budget.

## New guidance will help to shape market behaviour

Since February 1, 2022, valuers have been following new global RICS guidance on sustainability and ESG in commercial real estate (non-domestic). In our view, this is a significant shift for the industry, as sustainability and transition risk considerations will now become more embedded in valuations. This will increase the incentive for owners to improve the energy intensity and carbon emissions of their buildings or risk a quantifiable "brown" discount being progressively applied over time, hurting valuations. In other words, the green premium or brown discount should now be incorporated in the price.

Valuers will now make judgements on various sustainability and ESG factors as part of their estimation of market value or worth. This will include the consideration of physical risk, transition risk (policy and regulation to achieve net-zero targets), and the views and needs of market participants. Valuers will also consider issues such as long-term obsolescence risk, including the capital expenditure required to maintain the utility of an asset.

## Renovation cost analysis by sector

We think portfolio's that are overweight in the hotels sector could find themselves facing higher costs to bring their assets into line with the required decarbonisation pathway and ensure compliance with more stringent energy performance standards. Conversely, a tilt toward industrial assets and, to a certain extent, retail could have the opposite effect.

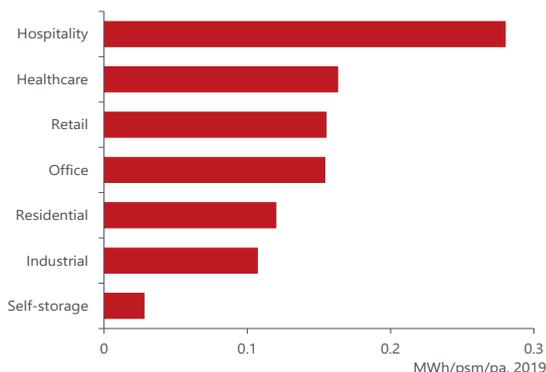
At the European aggregate level, we estimate the renovation costs of extending an asset's economic life by 10-15 years ranges from 11.5% of capital value for industrial to 22.2% for hotels. Differences between sectors are determined by building costs (Costmodelling), the average cost of energy saved by retrofitting (EU's DEEP database), and improvement and development expenditure (MSCI). Hotels typically cost more per sq. meter to build than other sectors and have higher improvement and development expenditure as a proportion of capital value.

# The renovation race to net-zero

Conversely, industrial buildings typically cost less to build, have lower ongoing improvement and development expenditure as a proportion of capital value, and have a lower relative cost per kWh of energy saved. This finding also corroborates energy intensity by property sector, which are significantly higher for hotels while industrial is lower on a relative basis (**Chart 2**).

**Chart 2: Hospitality has higher energy intensity**

EPRA members energy intensity by sector



Source: Oxford Economics/KPMG/EPRA

## Renovation cost analysis by country

The major real estate markets of Germany, the UK, Netherlands, France, and Spain all face higher office renovation costs to keep pace with a net-zero pathway, according to our estimates (**Chart 3**).

**Chart 3: Renovation cost as a share of capital value, medium scale, 2021**

Country	Code	Office	Retail	Industrial	Residential	Hotel
Czech Rep.	CZ	21.7%	18.4%	14.8%	22.3%	29.0%
Germany	DE	20.3%	17.2%	13.9%	20.8%	27.1%
UK	UK	19.1%	16.2%	13.1%	19.6%	25.5%
Ireland	IE	18.7%	15.9%	12.8%	19.2%	25.0%
Netherlands	NL	18.3%	15.6%	12.5%	18.8%	24.5%
France	FR	18.3%	15.5%	12.5%	18.8%	24.4%
Spain	ES	17.8%	15.1%	12.2%	18.3%	23.8%
Italy	IT	17.2%	14.6%	11.8%	17.7%	23.1%
Poland	PL	17.2%	14.6%	11.8%	17.7%	23.0%
Belgium	BE	17.0%	14.4%	11.6%	17.4%	22.7%
Hungary	HU	16.1%	13.7%	11.0%	16.5%	21.5%
Denmark	DK	15.8%	13.5%	10.8%	16.3%	21.2%
Portugal	PT	14.8%	12.6%	10.2%	15.3%	19.9%
Austria	AT	14.8%	12.6%	10.2%	15.2%	19.9%
Norway	NO	14.0%	11.9%	9.6%	14.4%	18.8%
Finland	FI	13.4%	11.4%	9.2%	13.8%	17.9%
Sweden	SE	11.1%	9.4%	7.6%	11.4%	14.9%

Source: Oxford Economics/AECOM/Arcadis/  
Costmodelling/EU-DEEP/MSCI

We looked at the cost to extend the economic life of a typical office asset by 10-15 years via a medium-scale refurbishment to achieve a BREEAM rating of excellent or equivalent. We then used our European real estate obsolescence

risk index combined with international construction costs from Arcadis, and capital expenditure data from MSCI to estimate the relative renovation costs across our sample of 17 countries in Europe. Perhaps unsurprisingly, the Nordic region comes out in pole position with lower obsolescence risk and lower capex ratio's despite above-average construction costs. This results in office renovation cost estimates that are less than most other parts of Europe.

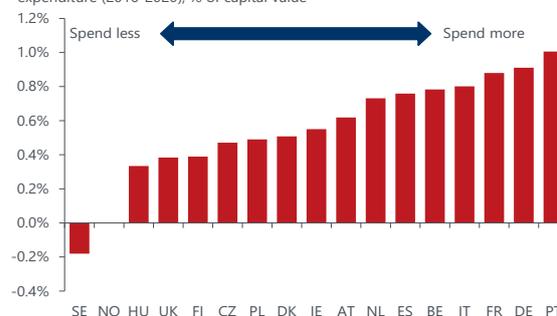
## The only absolute is everything is relative

Risk in markets is often relative rather than absolute, which is why we have spread the renovation costs over the additional years of economic life and then compared our estimate to average improvement expenditures over the past five years (**Chart 4**), as reported by MSCI annual real estate indices. This allows us to assess which countries will require the highest additional expenditure relative to existing outlays.

**Chart 4: Nordics require lower additional spending for offices**

Additional office expenditure from renovation

Estimated annual renovation cost (2021) less the average improvement expenditure (2016-2020), % of capital value



Source: Oxford Economics/AECOM/Arcadis/  
Costmodelling/EU-DEEP/MSCI

Southern European countries plus Germany and France will need to spend more on office renovation, relative to existing improvement expenditure, which we believe will have a larger impact on performance than absolute renovation costs. Southern Europe has a mixed risk profile based on our real estate obsolescence index, but these countries all tend to allocate a lower share of capital expenditure to improvements, pushing them higher on a relative basis. Conversely, the Nordic, UK, and CEE economies will need a smaller adjustment to ongoing expenditure, due to their lower obsolescence risk (Nordics) and a

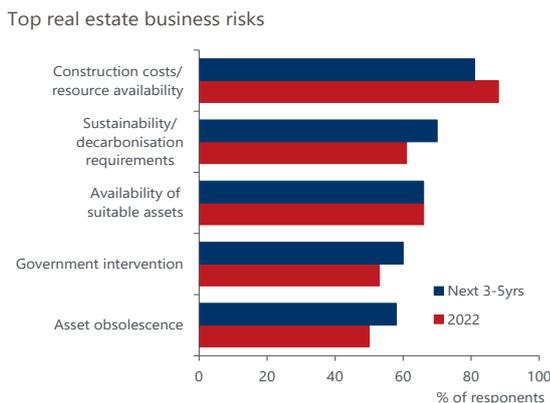
# The renovation race to net-zero

higher share of capital expenditure allocated to improvements (all three).

## Will costs come down as technology matures?

The inflationary impact of the climate transition has been cited by some, including an ECB [executive](#), as an upside risk to the inflation outlook over the medium term. We share this concern specifically for the real estate industry. As legislation compels the industry to carry out retrofitting and improvement works in a defined period of time (the EU requires a minimum energy efficiency standard for commercial property of F by 2027 and E by 2030, while the UK requires C from 2017 and B from 2030), this could pile excessive pressure on the supply of labour and materials in an already inflationary environment.

### Chart 5: Sustainability and obsolescence are growing concerns for the industry



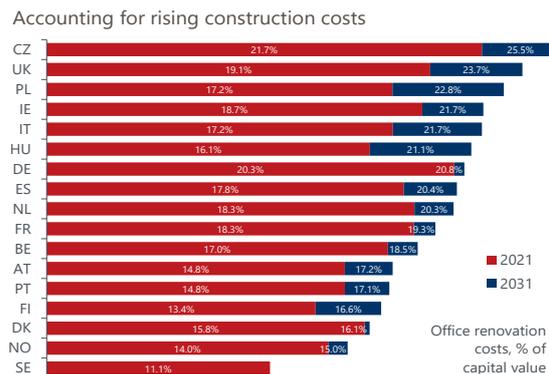
Source: Oxford Economics/PwC/ULI

Over the long-term, new environmental technology should reduce in cost as efficiencies of scale and further technological development lower the unit price. But the wider economic environment suggests that the cost of skilled labour to install energy saving, generating, or monitoring technology will remain high in the near term, as will the raw materials used in manufacturing these. So we believe that, considering inflation risks, there is a clear cost incentive to act sooner, which fits with growing concern in the industry about construction costs and resource availability (**Chart 5**).

Our construction price forecasts do not make specific assumptions about the potential impact

of regulation, such as the European Energy Performance of Buildings Directive and UK Minimum Energy Efficiency Standards. But they do capture the demand impact from spending of EU recovery funds that targets energy efficiency, as well as structural tightness in the construction labour market, bottlenecks in the production of steel and cement, and constrained timber imports, which are all adding to the general inflationary pressure, particularly from higher energy prices. This allows us to project the impact of rising prices on our renovation cost estimates, albeit with some uncertainty from potential additional regulatory impacts. When construction prices are factored in, countries such as the UK move higher up the ranking by 2031 (**Chart 6**) due to a [tighter labour market](#), relative to other locations such as Germany and France where more limited price increases are expected.

### Chart 6: Tighter construction labour markets push up inflation in the UK



Source: Oxford Economics/AECOM/Arcadis/ Costmodelling/EU-DEEP/MSCI

Real estate is not part of the EU's Emissions Trading System at the current time, but this could change soon as the [European Commission](#) intends to extend the number of industries included. The ETS sets a cap on the total amount of greenhouse gases a company can emit each year with strict allowances issued to cover emissions. Those that emit too much must either cut their emissions or pay for additional allowances, which offers financial incentives to the industry as a whole to cut emissions. If real estate was included in the ETS, then the net-zero transformation would need to be accelerated, which would likely push the cost of renovation higher as a larger share of the market would be incentivised to act. The resulting rental uplift

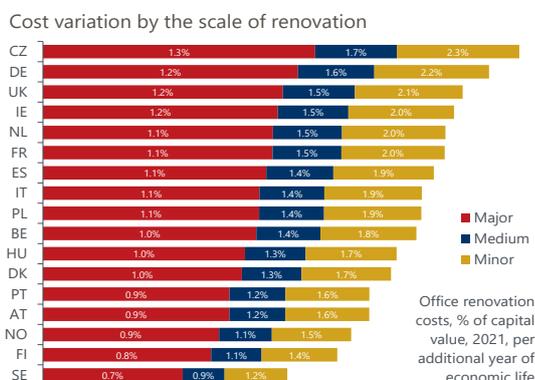
# The renovation race to net-zero

from renovation work would also be impacted, as greater renovated supply hits the market providing tenants with more choice.

## The extent of renovation is also a key

We estimated the cost of renovation according to three time-horizons (5, 12.5, and 25 years), linked to the number of years that the work would add to the economic life of the building. Major renovations lower the annual cost for each additional year of economic life (**Chart 7**); however, the life-cycle impact of embodied carbon and construction emissions (scope 3) are not considered here, which would make this scale of project much less sustainable. Major renovations would include significant structural alteration and a complete renewal of internal systems and fittings. This is likely to have a smaller carbon footprint than a new commercial property (approx. [1,000 kgCO<sub>2</sub>e/sqm](#) of embodied emissions). But a minor or medium renovation might be a better option over the full life cycle despite the higher annual cost.

**Chart 7: A major renovation lowers the annual cost for each additional year of economic life**



Source: Oxford Economics/AECOM/Arcadis/Costmodelling/EU-DEEP/MSCI

## Our approach to estimating renovation costs

Our analysis estimates the cost of renovating a typical building for each of the five key property sectors (offices, retail, industrial, residential and hotels) across 17 European countries to extend its economic life. We used three time-horizons (5, 12.5, and 25 years).

The purpose of this study is to provide a high-level quantification of the potential costs and relativities between countries and sectors, not offer specific cost guidance. Each renovation project is very different with a wide variation in building conditions, specifications, and ease of access, all of which significantly affect costs.

Our analysis starts with a cost estimate by AECOM for a London office refurbishment to extend the economic life by three time-horizons and to reach a BRREAM certification standard of excellent or equivalent. We acknowledge that there is [evidence](#) suggesting that even top-certified assets by today's standards will have to undergo large-scale renovation to decarbonise to net-zero by 2050.

The differentiation by sector is determined by building cost estimates ([Costmodelling](#)), the average cost of energy saved from retrofitting (EU's [DEEP database](#)), and improvement and development expenditure ([MSCI](#)). We then estimate the renovation costs by country by applying our European real estate obsolescence risk index, combined with international construction costs from [Arcadis](#), and capital expenditure data from MSCI. This estimates the relative renovation costs across our sample of 17 countries in Europe by sector and according to the three time-horizons.

The life-cycle impact of embodied carbon and construction emissions (scope 3) are not considered in this analysis. These would be essential considerations alongside cost for any renovation work aimed at aligning assets with their decarbonisation pathway.