1.5°C Pathways for Real Estate Decarbonization: A CRREM and SBTi Collaboration and Pathway Application

In a recent technical collaboration, the Carbon Risk Real Estate Monitor (CRREM) and the Science Based Targets initiative (SBTi) delivered 1.5°C in-use emissions decarbonization pathways for the real estate sector. Ayla Dinçay, Buildings Lead for the SBTi Buildings Project and Julia Wein, Operational Lead for CRREM, explain the intricacies and nuances of the use of these pathways by each organization.

The buildings sector has one of the highest carbon footprints in any sector, accounting for over one third of global energy consumption and emissions. In 2022, the SBTi launched its Buildings Project to provide companies with the tools to accelerate their decarbonization. As part of this project, the SBTi joined forces with CRREM, a global initiative focused on decarbonizing real estate operations, to develop 1.5°C pathways for in-use operational emissions for the real estate sector. This collaboration signified a pivotal moment in the industry's decarbonization efforts, leveraging CRREM's expertise in carbon risk assessment and SBTi's rigorous science-based methodologies for corporate climate action.

While the SBTi enables businesses to set ambitious emissions reductions targets in line with climate science at the organization-level, the CRREM translates the ambition of limiting global warming to 1.5°C into region- and property-type-specific trajectories, against which real estate assets and portfolios can benchmark themselves and assess transition risks associated with their climate performance.

The CRREM-SBTi 1.5°C decarbonization pathways include a regional focus for several different building typologies such as residential, offices, hotels, industrial distribution warehouses and retail. Companies using these pathways will be able to apply consistent emissions scenarios for limiting warming to 1.5°C, and reaching net-zero by 2050.

Understanding the interaction between CRREM and the SBTi is crucial to facilitate the implementation of coherent and effective strategies to address climate-related risks and set ambitious decarbonization goals. The CRREM SBTi-aligned 1.5°C decarbonization pathways were released by CRREM in January 2023 to be used for transition risk assessments in the CRREM Risk Assessment Tool and by CRREM's licensed partners, while the SBTi integrated them into its Buildings Target-Setting Criteria and Tool to be used together with the Sectoral Decarbonization Approach (SDA) methodology for target-setting, released in August 2024.

How do these initiatives complement each other?

The SBTi Buildings Project and CRREM have specific and complementary characteristics, as shown in the table below.

Convergence of SBTi's Buildings Project and CRREM		
	SBTi Buildings Project	**CRREM**
The focus	Enable companies and financial institutions in the buildings sector worldwide to set greenhouse gas (GHG) emissions reduction targets in line with what is needed to reach net-zero by 2050 at latest.	Allow investors and owners to assess the exposure of their assets to transition risks based on energy and emissions data, and analysis of potential regulatory requirements.
Scope of environmental impacts	Cover the whole-building carbon intensity from the operational phase of buildings portfolios and embodied emissions of newly constructed buildings.	Cover the whole-building energy and carbon intensity from the in-use phase of individual properties or property portfolios.
Intended users	• Developers • Owner-occupiers • Owner-lessors • Property managers • Financial institutions • Companies with new and existing buildings within the commercial and residential real estate sectors	• Developers • Owner-occupiers • Owner-lessors • Property managers • Financial institutions • Governments • All users with new and existing buildings within the commercial and residential real estate sectors
Use of CRREM-SBTi pathways	To calculate GHG emissions reduction targets taking into account company-specific factors such as base year performance and projected growth.	Integrates transition risk considerations into general risk management at both property and portfolio level.
Expected impacts when following the pathways	Understand how much and by when companies should reduce GHG emissions to keep global heating below catastrophic levels and reach net-zero by 2050 at latest.	Foster investment in measures aimed at reducing energy use and carbon emissions, while also minimizing exposure to transition risks.

To summarize, although the SBTi Buildings Project and the CRREM have a common objective, i.e. the decarbonization of the buildings industry, each organization applies the CRREM-SBTi

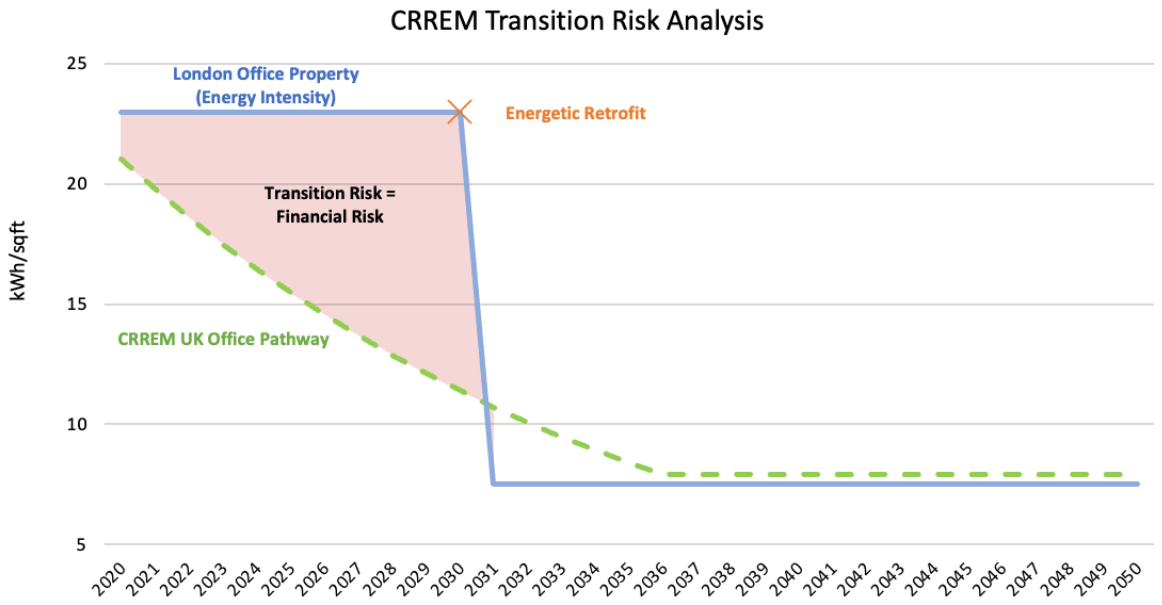
pathways differently since each organization has a different focus. While CRREM uses the pathways to assess transition risks, the SBTi will use it for businesses to set decarbonization targets for building portfolios. Continue reading to gain deeper insights into the different uses of the pathways by each organization.

Assessing climate transition risks

CRREM provides real estate investors and other stakeholders with decarbonization and energy intensity pathways covering operational emissions of buildings, and with financial risk assessment tools to cost-effectively manage carbon mitigation strategies.. It translates the ambition of limiting global warming to 1.5°C into regional- and property-type-specific trajectories, against which real estate assets and portfolios can benchmark themselves.

Most market participants in the buildings' value chain use the CRREM-SBTi pathways included in the CRREM Risk Assessment Tools to directly input their asset-level data and benchmark their individual alignment against a 1.5°C pathway. Assets failing to align with the designated pathways face transition risks. Transition risks in the real estate context refer to potential financial impacts and vulnerabilities resulting from the industry's response to the global economy's net-zero transformation. These risks can result from regulatory changes, technological shifts, and market dynamics affecting the valuation and performance of properties (see Figure 1).

Figure 1. CRREM Transition Risk Analysis



Based on CRREM's pathways, falling short of a transition risk benchmark does not signify an immediate depreciation of a property's value. It enables investors to evaluate transition risks relative to other risks associated with a real estate investment. CRREM therefore facilitates the assessment of potential financial implications resulting from the discrepancy between a property's performance and a 1.5°C ambition level. These insights can then be integrated into investment strategies at both the property and portfolio levels, enabling more informed investment decisions. Given that the CRREM pathways start with the average market intensity, not every property can achieve the same level of ambition in the near-term. A property that exceeds the CRREM pathways in terms of carbon and energy performance should not be dismissed as worthless or automatically excluded from potential acquisitions. Instead, the transition risks should be given appropriate consideration, similar to other risks identified during standard due diligence, such as tax, legal, or building technology assessments.

Other further possible applications of the CRREM pathways beyond transition risk assessment at the asset level are:

- Prioritization of assets requiring upgrades in energy efficiency and decarbonization of buildings operations.
- Quantifying the financial impact of emissions through the application of carbon pricing.
- Aggregating asset level results to portfolio level.
- Using the pathways for company target setting.

Setting science-based targets

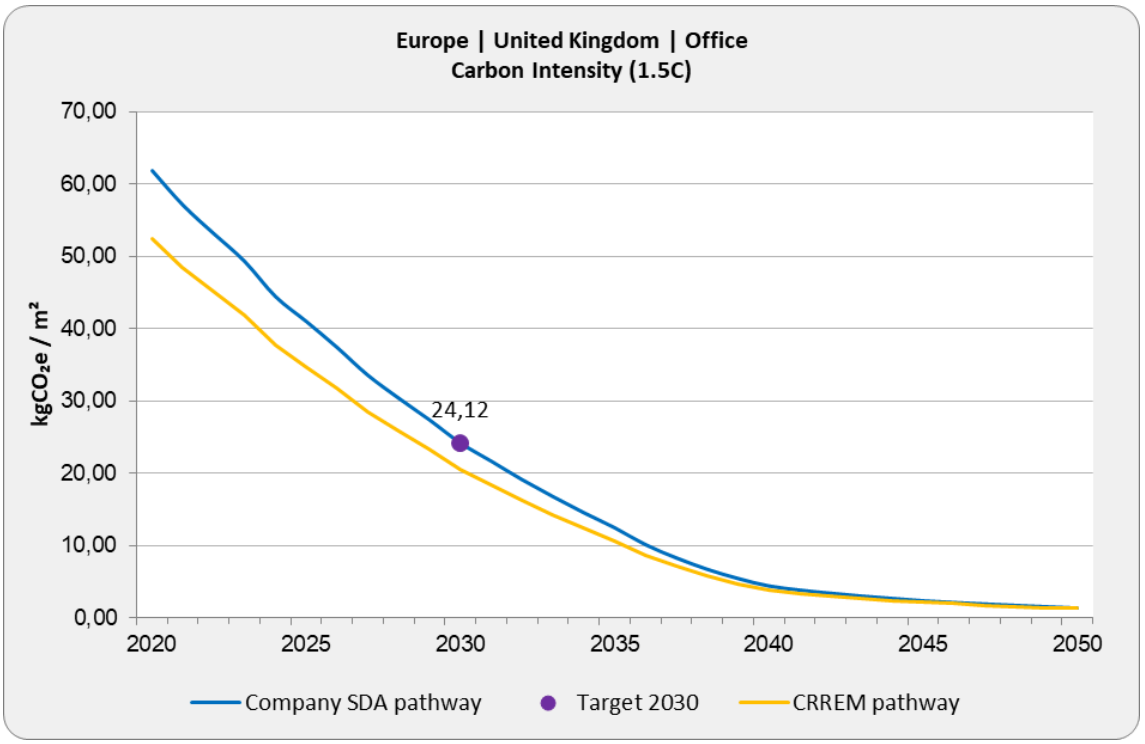
In line with SBTi's mission to enable companies and financial institutions worldwide to play their part in combating the climate crisis, and as part of its Buildings Project, the SBTi has developed the Sectoral Decarbonization Approach (SDA) for the buildings sector. This is a target-setting method that enables companies to set GHG emissions reduction targets in line with a 1.5°C sector-specific pathway. The SDA method is based on carbon intensity convergence, i.e. different companies within the sector are expected to move towards a uniform emissions intensity at a certain time, no later than 2050. The SDA takes into account the company's starting point. This means that if a company's emissions intensity is higher than the sector average, its decarbonization pathway will be steeper, but eventually it will converge with the sector's emissions intensity.

The SBTi Buildings Target-Setting Tool that is used to calculate SDA targets for companies in the building sector includes regional CRREM-SBTi pathways for different building typologies, allowing the GHG emissions reduction targets to reflect the location and type of buildings that a company's emissions stem from, covering the appropriate buildings' operational emissions. In addition to the operational pathways, the tool also includes upfront embodied emissions pathways for new construction.

Examples

The CRREM-SBTi pathways represent a key tool for the real estate sector development and investment to align with ambitious climate targets. Let's delve into a couple of examples that illustrate the application of these pathways in company target setting.

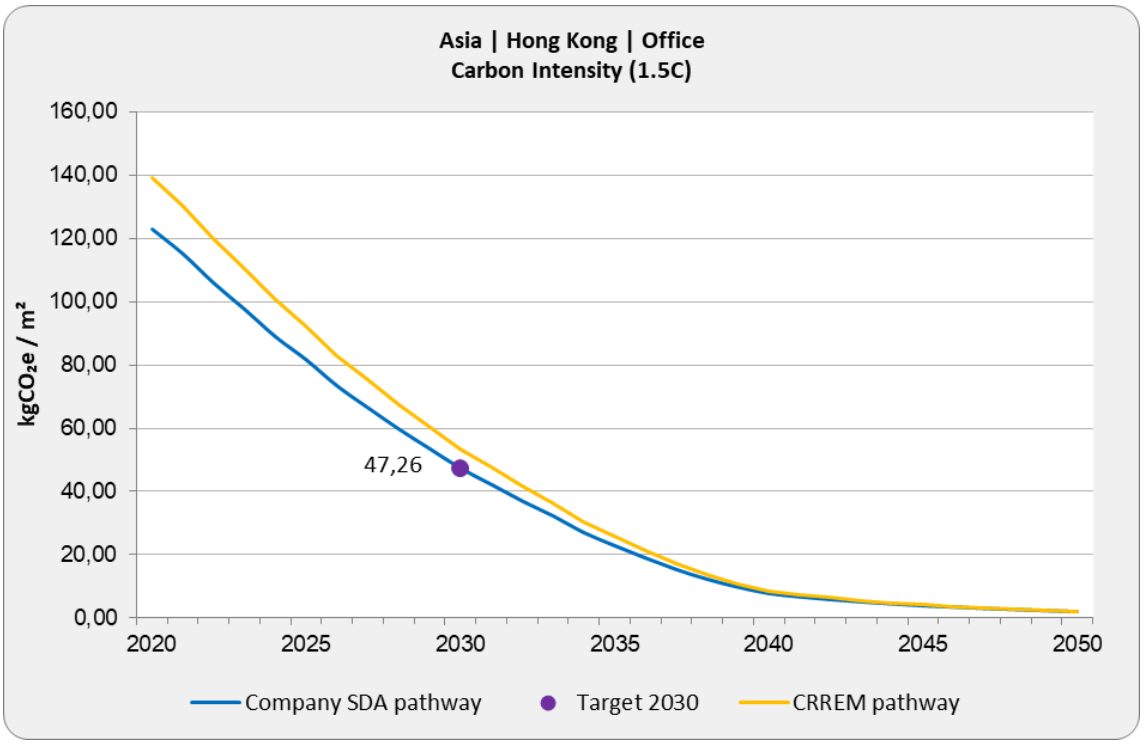
Example 1. Office buildings in the UK



Company A exclusively owns office buildings in the UK. According to the CRREM tool, each of these properties exhibits individual carbon intensities that, on average, exceed the decarbonization benchmark. These assets face heightened exposure to transition risk compared to the sector average. This means more effort is needed to decarbonize these assets, mitigate potential negative pricing effects and minimize the risk of write-downs. In this case, while individual properties in the portfolio may meet the benchmark, the aggregated portfolio or company average exceeds the specified threshold. When using SBTi's Buildings Target-Setting Tool, the company-specific SDA curve (blue) converges to the same level with the CRREM curve by 2050 (yellow), but the near-term target intensity (2030) is still slightly above the CRREM curve. If the company decides to also set a net-zero target, it would need to commit to reaching the CRREM curve's 2050 levels by 2050 or earlier. In other words, assets that exceed the CRREM pathways, resulting in higher transition risks, are translated at the company level into a steeper (more

ambitious) decarbonization requirement - the company must work harder and ensure more decarbonization efforts compared to the industry average.

Example 2. Office buildings in Hong Kong



In this other example the GHG intensity base year of office buildings in Hong Kong have an intensity below the CRREM curve (yellow). That means the company is on average performing “better” than the market. Therefore, the company-specific SDA curve (blue) converges to the same level with the CRREM curve (yellow) by 2050, but as one pathway follows the shape of the other one, the near-term target intensity (2030) remains slightly below the CRREM curve. If the company decides to also set a net-zero target, it will need to commit to reaching the CRREM curve’s 2050 levels by latest 2050 or earlier. Nevertheless, it is important to note that even with the company performing below the CRREM pathway, and thus "better" than average, the carbon or energy intensities of individual assets may still surpass the CRREM benchmark values.

All companies will be able to set emissions reduction targets through the SBTi, even if their entire portfolio maintains an average carbon intensity below the CRREM curves. However, companies with a more carbon-intensive footprint than the 1.5°C-aligned industry average must, in turn, embrace a more demanding decarbonization target. Consequently, they will be obligated to pursue faster and more ambitious decarbonization compared to peers who may have made more progress in their decarbonization efforts. Simultaneously, while the company-specific SDA curve outlined by the SBTi envisions a yearly reduction trajectory until 2050, the practical mitigation of transition risks

at the asset level, such as through retrofit measures, typically unfolds incrementally throughout the portfolio's lifecycle (see Figure 1).

To cut emissions, strengthen investors' confidence and show leadership in the transformation to a net-zero economy, the solution is clear: companies in the buildings' value chain must understand the transition risks associated within their portfolio and set science-based targets today.

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