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NEWS & ANALYSIS

How the real estate industry can build a greener tomorrow

Progress to reduce carbon emissions globally has been slow, but change is possible. PERE speaks with property players to learn what they are doing to improve sustainability.

Sustainability has been in the spotlight for a few years now, with European investors in particular recognizing the value of investing in green real estate and demanding clear decarbonization pathways.

Despite the momentum, buildings and construction still represent around 37 percent of global operational energy and process-related CO₂ emissions, according to the United Nations Environment Programme. The study, which uses data from the International Energy Agency, shows that operational energy-related CO₂ emissions from buildings grew by around 5 percent in 2021 to almost 10 GtCO₂, compared to the previous year. In 2022, CO₂ emissions from buildings operations remained unchanged, according to the IEA. “Market conditions have been a big factor to that. Capital has become a lot more expensive, so we are having to really look at our priorities from a capex perspective,” says Ailey Roberts, head of sustainable investing at Miami-based manager BGO.

While in Europe, where the regulatory environment is further developed, there is “strong quantifiable data” to support what investors are willing to pay for a greener asset, in North America the industry is still discussing what is the risk of not prioritizing these initiatives, she notes. “It is still a work in progress with positive signs that North America is catching up, but we are slowly seeing what discount



that the next buyer will take on assets if we don't prioritize [decarbonization].”

So, how can real estate managers improve sustainability?

“Carbon emissions will only be significantly reduced when real estate players invest in sustainability by taking a holistic approach that considers not only the construction phase but also the ongoing management and maintenance of properties. Major refurbishments will be a key requirement to make buildings more energy efficient, which is essential to a low-carbon future,” says Paul Stepan, head of sustainability consulting, EMEA, at Chicago-based services firm JLL.

“Decarbonization is a massive value-add play. It is a need to transform the stock,” he notes. “The current rate of retrofitting is much too slow.

“What we see right now, for instance, is that 50 percent of European real estate strands within the next two years, which tells you there needs to be a complete repositioning of all of that stock to be resilient against sustainability risks going forward.”

Green makeovers

Through refurbishments, property managers have already been able to improve energy performance and reduce carbon emissions generated as a result of building operations. Major upgrades to existing stock include the electrification of operations and the adoption of renewable energy sources to reduce reliance on conventional energy grids.

“In Los Angeles, we own one of the largest industrial parks in the US. Across

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four buildings, we have created the world's largest rooftop solar installation, spanning over 40 acres of land and producing annually over 16MW of power," claims Thomas Mueller-Borja, New York-based manager BlackRock's global chief investment officer for value-add real estate. "According to a case study compiled by the solar developer for the project, over the 20-year lease, the system would mitigate about 530,300 tons of carbon – the equivalent emissions to power 5,000 homes or take 6,000 cars off the road."

Beyond complex refurbishments, simpler and less costly solutions – including LED lighting, smart metering systems or building management technology – are allowing real estate managers to optimize energy usage and improve overall sustainability.

"We are prioritizing energy efficiency and demand reduction, looking at things like BAS [building automation systems] optimization programs," Roberts says. "We implemented a building automation optimization program at a few of our office buildings in New York contributing to energy and greenhouse gas reductions, simply by improving the operations of the building with low or no-cost measures."

Maximilian Kufer, head of ESG, EMEA and global private markets at Atlanta-based manager Invesco, also notes that smart technology has been particularly helpful in managing assets' energy efficiency, to optimize consumption and directly reduce carbon emissions.

Invesco has recently equipped various student accommodation assets in the US with technology solutions distributed through a cloud-based system to bring intelligence to hardware. "This solution provides big data for analytical and AI use with an interface to monitor live data readings from properties to identify energy inefficiencies, program alerts and more detailed monitoring of the building," Kufer says.

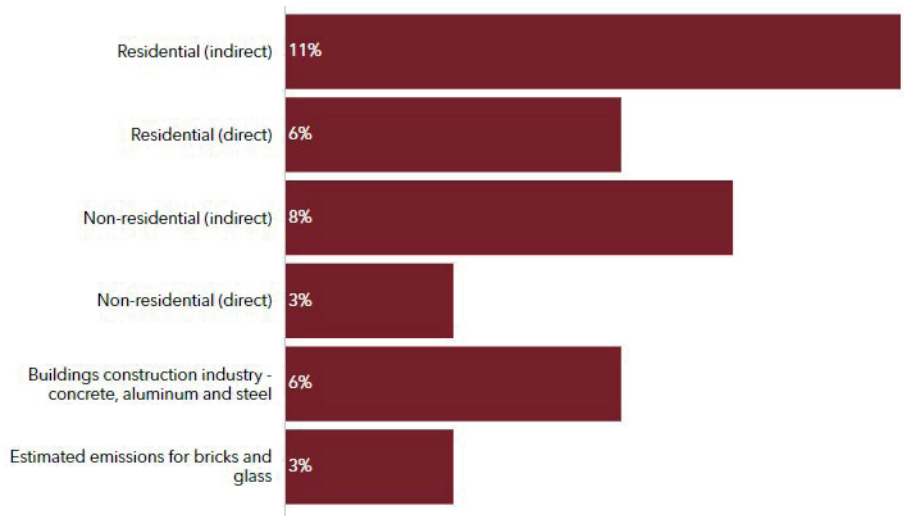
For assets where this solution has been installed, annual energy reductions have

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Real estate is responsible for a large chunk, or 37%, of annual global carbon emissions (%)



Real estate emissions breakdown (% of all emissions)



The numbers in the pie chart are rounded values and therefore do not necessarily sum to the total value for a given sector

Source: UNEP's 2022 Buildings Global Status Report

been in the range of 20-25 percent, which will be reflected upon reviewing asset carbon emissions in 2024, he notes.

Building better, emitting less

Property managers carrying out new construction projects and redevelopments can make a substantial impact on carbon emissions reduction through sustainable building practices.

In-house building standards at San Francisco-based logistics REIT Prologis, for instance, require all new developments to have solar-ready rooftops, EV-ready infrastructure, lifecycle assessments and sustainability certification commitments.

Prologis's Moissy 2 DC1 facility, completely rebuilt on a former industrial brownfield in France, illustrates the

significant opportunity to reduce carbon emissions by incorporating sustainable and energy-efficient design elements at the construction phase.

"This 1-million-square-foot logistics facility in Paris was built with no gas connection," says Suzanne Fallender, vice-president of global ESG at Prologis. "The building relies on design efficiencies, rooftop solar, purchased renewable energy and borehole geothermal energy storage for heating, cooling and power." She notes that innovations at this facility avoid 115,000 mtCO₂e of greenhouse gas emissions and may reduce operating expenses by an estimated \$215,000 each year, depending on energy prices.

Managers can not only ensure energy-efficient systems and technologies are

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integrated into the building's design and construction, they can also choose construction materials with lower embodied carbon, contributing to emissions reduction from the beginning of the project.

Houston-headquartered manager Hines, for instance, has demonstrated significant interest in mass-timber buildings. In 2017, the real estate giant built its first 220,000-square-foot mass-timber building in Minneapolis and it now has 26 buildings of this type either completed, in design or under construction.

"We have the largest global portfolio of mass-timber construction – buildings that are built with engineered large timber pieces," says Doug Holte, responsible for the strategy and implementation of EXP by Hines, a business unit focused on venture-based innovations and commercially viable ESG solutions.

"We have used that as a new product type for office buildings. People enjoy the interior experience of exposed natural wood, but it is also very carbon efficient," he says, noting that mass-timber projects generate over 30 percent less CO₂ emissions than standard concrete and steel construction. "A typical mass-timber project can be the equivalent of taking 1,000 cars off the road a year. So, each mass timber building is a significant contribution."

Facing the hurdles

Alternative construction materials can bring opportunities to reduce carbon footprint but, still, raw resource use is predicted to double by 2060 – with construction materials such as concrete and steel already major contributors to greenhouse gas emissions.

The answer is in the data

In their quest to reduce carbon emissions, real estate managers rely on data to make informed decisions, track progress and prove to stakeholders their sustainability initiatives are making an impact

"It all starts with monitoring. If you can't measure your data, you can't reduce [carbon emissions]," says New York-based manager BlackRock's global chief investment officer for value-add real estate, Thomas Mueller-Borja, adding that data analysis allows the identification of opportunities to reduce carbon.

Indeed, data plays a crucial role for effective carbon emissions reduction strategies in real estate. It helps establish a baseline measurement of current carbon emissions from buildings and operations, which is essential for understanding the starting point and setting realistic reduction targets. Then, through monitoring and data analysis, real estate managers can identify specific areas or aspects of a property that contribute significantly to carbon emissions and intervene.

"Managers need investment-grade, robust data to prove that their reductions are honest and not just greenwashed," says Marylis Ramos, director at energy and sustainability consultants Savills Earth.

"This movement towards ESG-related metrics means that you can't just rely on qualitative labels, like 'green,' 'eco' or 'sustainable' buildings; you have to quantify it with numbers that have been calculated using established methodologies. A lot of these funds are getting those hard numbers because otherwise it is a reputational risk. That integrity, that transparency, that reporting is something that they have to deal with."

"Lower-carbon concrete and steel will be critical to achieving net zero. Innovation is needed," Fallender says. Prologis actively looks for new partnerships where it can foster innovation in construction methods and materials – such as self-healing concrete, a solution it has already piloted, she notes.

Advances to reduce embodied and operational carbon are key to achieving the Paris Agreement goal of net-zero CO₂ emissions by 2050. To meet this target, emissions from the buildings sector will need to halve from 10 GtCO₂ to 5 GtCO₂ by 2030, according to the UNEP's 2022

Buildings Global Status Report.

"2030 is fast approaching, but there is a lot of work that can be done in the short term to make significant progress," Roberts says. "We are going to see more onsite renewable energy strategies leading up to 2030 and beyond."

"We have to also look at the timing of what our capital plans look like and make sure that we are taking advantage of every opportunity to improve the carbon footprint of our buildings. It all comes down to execution, and we are very optimistic about the direction we are headed in."