

Reshaping Buildings: Opportunity in Plain Sight



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As with many of the secular growth trends our team has invested behind, the source of a problem often represents an opportunity. Nearly 40% of global carbon emissions are related to the construction and operations of buildings. We believe investing to improve the energy efficiency of buildings is a cost-effective solution to reducing carbon emissions.

We are finding opportunities across multiple sectors in companies with the technology and solutions to benefit from the secular trend of decarbonizing buildings.

“We Shape our Buildings, and Afterwards Our Buildings Shape US”—Winston Churchill

While Churchill was referring to rebuilding the Commons Chambers after being bombed in WWII, his adage stands today. In addition to shaping how we live and work, buildings are also reshaping our environment as a major contributor to climate change. A paper sponsored by the United Nations estimates that in 2021 the operation and construction of buildings accounted for 34% of global energy consumption and 37% of global CO₂ emissions.¹

Contributing Factors to Building Related Emissions

The energy intensity of the existing stock is a major challenge in reducing building related emissions. It is estimated that 68% of Europe’s buildings were constructed before energy efficiency regulations were introduced in the 1980s and 76% of buildings in the United States were constructed before similar regulations were introduced in 1989. Despite decades of energy efficiency improvements in new construction, building operations continue to account for 28% of global carbon emissions.¹

UNDERSTANDING CARBON



Embodied and operational carbon are both types of carbon dioxide released into the air. The main difference is when it is released.

Source: Used with permission. <https://www.usa.skanska.com/who-we-are/media/constructive-thinking/carbon-reduction-in-construction/>

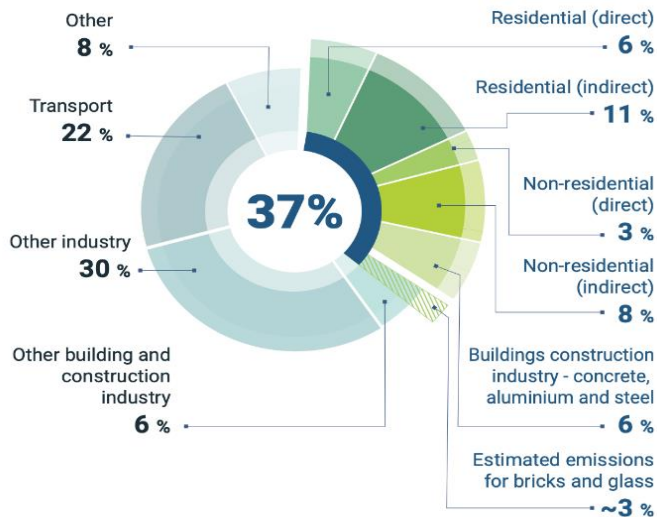
In addition to the existing stock, construction is also a major contributor to building related emissions. Skanska, a global project management company, estimates that embedded carbon, the carbon produced during the construction process, will account for 50% of the total carbon generated by a new building over a 30-year lifecycle². The reliance on energy intensive materials, particularly concrete and steel, combined with highly inefficient workflows result in building materials

1. United Nations Environment Programme (2020). 2020 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector. Nairobi

2. <https://www.usa.skanska.com/who-we-are/media/constructive-thinking/carbon-reduction-in-construction/>

and construction accounting for an additional 10% of global carbon emissions.¹

FIGURE 1: GLOBAL CO₂ EMISSIONS BY SECTOR



Source: United Nations Environment Programme (2020). 2020 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector. Nairobi

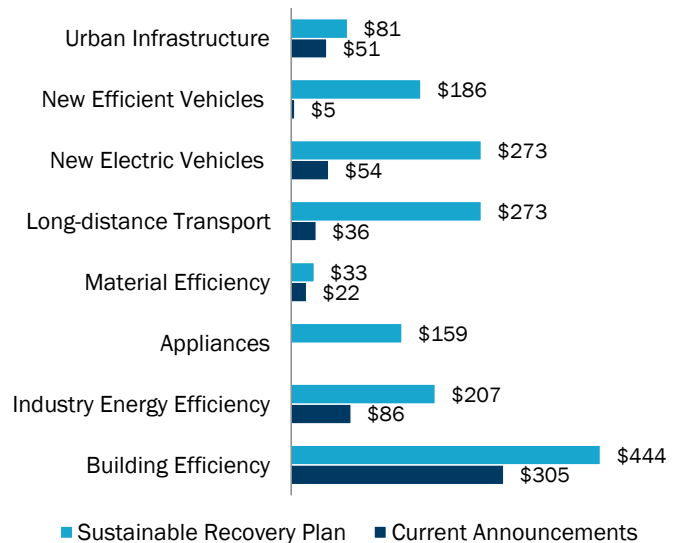
Buildings Are Critical to Achieving Climate Goals

Many experts agree that achieving the targets in the Paris Agreement is not feasible without a major reduction in building related emissions. While renewable energy and the electrification of the transport sector are likely to continue attracting the public's attention, a more concerted effort to channel investment into decarbonizing buildings will be required for most developed countries to meet their climate commitments. The IEA (The International Energy Agency) estimates that a 50% reduction in direct CO₂ emissions from buildings will be required by 2030 in order to be on track for achieving a net-zero carbon building stock by 2050.²

As the challenge of meeting climate goals becomes more acute, governments are starting to focus more attention on buildings. The initial framework for the European Green Deal, released in December 2019, advocates for improving energy efficiency in existing buildings by doubling the rate of renovation. In May of 2020, the EU reinforced its commitment to the environment by dedicating 25% of its €750bn COVID-19 stimulus package to combating climate change with building

renovation specifically identified as an area for increased investment.³ In the US, cities and states continue to pass more

FIGURE 2: ESTIMATED PUBLIC AND PRIVATE INVESTMENTS FROM STIMULUS ANNOUNCEMENTS TO DATE FOR CLEAN ENERGY BY EFFICIENCY MEASURE COMPARED WITH THE IEA SUSTAINABLE RECOVERY SCENARIO TO END OF OCTOBER 2020 | \$USBN



As of November 30, 2020.

Source: IEA (The International Energy Agency). All Rights Reserved.

stringent building emissions legislation, including New York City's Local Law 97 which targets a 40% reduction in building based emissions by 2030.⁴ Federal funding and incentives targeting building related emissions were included in both the Infrastructure Investment and Jobs Act, signed into law in 2021, and the Inflation Reduction Act of 2022.

Decarbonizing Buildings: A Secular Trend

As with many of the secular growth trends our team has invested behind, the source of a problem often represents an opportunity. Refurbishing existing building stock to improve energy efficiency, adopting green standards for new buildings, and reducing inefficiencies in the construction sector all have the potential to significantly reduce carbon emissions. With the technology and solutions required to decarbonize buildings already available, this appears to be an opportunity hidden in plain sight.

2. [Building sector emission hit record high, but low-carbon pandemic recovery can help transform sector – UN report](#)

3. [Europe Charts a Course for Sustainable Recovery from COVID-19 – World Resources Institute](#)

4. <https://www1.nyc.gov/site/sustainablebuildings/l197/local-law-97.page>

We believe increasingly stringent environmental regulations combined with direct government funding will support a sustained period of investment targeting a reduction in building related emissions. A recent McKinsey study estimates the EU's ambition to achieve a net zero building stock will require €1.5tr of investment in clean technologies over the next 30 years.⁵ Pressure from stakeholders and the anticipation of new regulations is already driving increased investment to decarbonize buildings in the private sector, often as part of a broader ESG strategy.

Finding Sustainable Growth Opportunities

While solutions and technologies from a wide range of industries will be required to decarbonize buildings, only companies that meet all of our investment selection criteria are considered for investment. Within our investment universe, we have identified companies across multiple sectors that we believe are well-positioned to deliver sustainable earnings growth, underpinned by the desire to reduce building related emissions, over our five year investment horizon. In addition to benefitting from this clear secular growth trend, in our view these companies also have established durable competitive advantages, attractive ESG profiles and are led by strong management teams. As we seek to avoid companies with high earnings volatility, they also offer a degree of economic resiliency while not being exposed to concentration risks or having excessive financial leverage.

Technology Solutions for Reducing Building Emissions

Given the energy and resource intensity of construction, technology driven efficiency gains can significantly reduce the amount of embedded carbon in new buildings. Despite available software offering efficiency gains as high as 20%, technology spend by the construction sector lags behind every other major industry at less than 2% of sales.⁶ In an effort to improve efficiency and reduce emissions in the construction process, government regulations are increasingly mandating the use of building information modeling (BIM) tools in public works projects. With BIM regulations helping to drive increased adoption rates, construction technology spend is expected to sustain high rates of growth into the foreseeable future.

In our portfolios, we have exposure to the growth in construction software spend through a French based leader in simulation software and a Swedish based company with a leading position in measurement technology. Simulation software allows for the creation of digital twins which can be used to design more energy efficient structures, reduce inefficiencies through better project management, and improve building operations. Measurement technology solutions, which combine hardware and software tools, improve efficiency and reduce waste by digitally connecting the construction site with the planning office to allow for real-time monitoring during the construction process. We have invested in a German based company which is a leading player in the architectural, engineering, and construction (AEC) software market. Its suite of software tools reduce embedded and operational emissions by digitalizing every aspect of the building lifecycle from planning through operations management.

Opportunities in Materials and Industrials

Outside of technology, we have also identified opportunities in the industrial and materials sectors. We have invested in a Swiss based engineering company which designs field devices used to optimize HVAC systems by allowing for precise control of temperature, humidity, and air pressure. With heating and cooling accounting for as much as 50% of a building's energy consumption⁷, optimizing HVAC systems results in significant energy efficiency gains. Demand from increasingly sophisticated HVAC systems in new construction combined with a massive opportunity from increased renovation activity should support attractive growth rates for this industry leader.

In the materials sector we are monitoring a Swiss based construction chemicals company with a portfolio of solutions which address both embedded and operational carbon emissions. As the global leader in admixtures used to improve the structural qualities of concrete, this company's products reduce embedded carbon in buildings by reducing the energy intensity of concrete production while allowing for less material to be used in a project. It also has a range of adhesive and sealing products which reduce operational emissions by improving the energy efficiency of existing buildings. Low emerging market penetration rates represent an additional driver to this company's long-term growth potential.

5. *How the European Union could achieve net-zero emissions at net-zero cost* – McKinsey Sustainability, December 3, 2020

6. Morgan Stanley Research, *Premium business at a premium price. Initiate at Underweight*, February 19, 2020

7. Morgan Stanley Research, *Small Devices, Big Impact*, March 12, 2021

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