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ESG Considerations For Construction: Sustainable Design and Use of Sustainable Materials



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Construction

Environmental, Social and Governance (ESG) issues are becoming crucial drivers of operational and investment decisions in both the public and private spheres, and the construction industry is no exception. One area in particular where ESG and construction intersect is the use of sustainable design concepts and sustainable materials in construction projects.

Reasons to Consider Using Sustainable Design and Construction

Before highlighting some examples of the use of sustainable design and construction, it is necessary to first ask why it makes sense to integrate this approach in construction and development. There are several good reasons for considering the use of sustainable design and materials in construction projects, including:

Government Regulation

A growing number of government regulations and proposed regulations seek to mandate that project development, design and construction incorporate the concept of sustainability.

Currently, our neighbors across the pond are taking the lead on ESG legislation. The United Kingdom has set in law the world's most ambitious climate change target, with a goal of cutting carbon emissions by 78% by 2035 as compared to 1990 levels. The UK also will require all greenhouse gas emissions to net zero by 2050. Already the UK has reduced emissions by 42% while growing the economy by 72%, which the government expects will bring new "green-collar" jobs to its citizens. The European Union has followed suit and announced a goal of 55% reduction of admissions by 2035. The EU has adopted a series of legislative initiatives to move toward that goal.

While not taking as direct a legislative path, the United States has also pledged a goal of a 50-52% reduction from 2005 levels in economy-wide net greenhouse gas pollution in 2030 and to reach 100% carbon-pollution-free electricity by 2035. Additionally, on his first day in office, President Biden rejoined the Paris Agreement and set course for the United States to reach net zero emissions economy-wide by no later than 2050. Even more recently, the White House announced a "Buy Clean" task force to focus on the production and purchase of low-carbon materials made in America for use in federal construction projects.

Across the United States, state and local governments are also targeting reductions in emissions. While legislative mandates are not the key driver in incorporating sustainable construction practices at this point, it is likely they will be a key factor, depending on the course of future elections.

Demand for Businesses to Be More Sustainable

These legislative goals are aggressive, but politicians aren't alone in pushing businesses to engage in more sustainable business practices. Consumers and job-seekers are now pressuring leaders and businesses to follow sustainable practices. By 2025, Millennials and members of Generation Z will compose more than 75% of the workforce. These groups cited "seeking out employment at companies that demonstrate a commitment to responsibility" as a top priority, according to a recent study by marketing firm Cone Communications. The study found that 94% of Gen Zers and 87% of Millennials believe companies should address urgent social and environmental issues. Not surprisingly, based on those results, many businesses are finding it difficult to attract top talent without adopting aggressive ESG policies, including a plan to reduce its carbon footprint.

Making sustainability a priority will not only attract employees and customers, it will also attract investors. Investors are increasingly considering ESG factors before investing money and resources in a particular company. Furthermore, ESG funds and investments can perform just as well, or better, as non-ESG funds. In 2020, 14 of 17 ESG-focused exchange-traded funds (ETFs) outperformed the S&P 500 as a whole, from January to May.

Tax Credits and Reduced Operating Costs

Significant financial incentives also warrant a more sustainable approach to construction. For instance, several tax credits and deductions are available for energy-efficient installations. The Renewable Electricity Production Tax Credit and the Investment Tax Credit, which provide substantial tax credits for owners of renewable energy facilities and properties, are two examples. [As we discussed in a previous article](#), owners of renewable energy facilities and energy properties need to meet specific requirements to receive tax credits. To be eligible, the construction has to be continuous. However, due to supply chain problems and other delays caused by the COVID-19 pandemic, the IRS has extended the continuity safe harbor for such projects, allowing for nonlinear construction for energy facilities.

Similarly, the 2009 American Recovery and Reinvestment Act (Stimulus Act) includes approximately \$20 billion in tax incentives for renewable energy and more than \$41 billion for energy-related programs, including tax credits and deductions, rebates, low interest loans, grants, bond programs, sales and property tax exemptions, and green building incentives. Additionally, the Business Energy Investment Tax Credit allows a federal tax credit for businesses that build or purchase new renewable energy producing equipment.

City and state governments are also offering their own tax incentives and rebate programs for energy efficiency and alternative energy products, including at least one public utility offering dedicated lines at reduced electric rates for electric-vehicle-charging infrastructure.

While not as widely used, financing programs such as C-PACE financing, a public-private partnership enabled by state law and county/ municipal ordinances, offers developers and owners access to low-interest, long-term, fixed-rate loans for energy efficiency projects, renewable energy projects and water conservation projects.

In addition to these tax credits, incentives, rebates and financing alternatives, sustainable projects can achieve financial savings through their design and operation. Green buildings are designed to consume less resources and energy in construction and operation, meaning lower costs to build and a better option for buyers to save money in the long run. A study done by the U.S. Green Building Council found that the initial cost of a green building is only 2-3% higher than its non-green counterpart; however, they consume 25-35% less energy and their operation and maintenance cost is 14% lower than their traditional counterparts. These buildings also sell at a higher price. For example, a McGraw Hill study found that the price premium for the sale of Energy Star-certified buildings to be 12% higher than conventional buildings. The result is that the slight increase in initial construction costs is typically offset by tax incentives and the lower costs of operation and maintenance, and the higher costs are paid for relatively quickly. Contracts for the installation of alternative energy projects typically contain performance guarantees that contractually assure lower utility costs.

The Moral Imperative

The growing worldwide consensus that all businesses in all industries should do their part to limit global emissions shows little sign of abating. By taking steps like using locally sourced materials, refitting existing buildings and engaging in proper waste management, construction projects can help conserve natural resources, minimize carbon output and help keep water and air clean.

Not only that, these sustainable practices can reduce building costs and increase profitability, all while creating a more efficient and easily maintained end product.

Using Sustainable Design

The use of sustainable design should always be a consideration since an extremely important factor in sustainable building and construction starts in the planning and design stage. For instance, according to the World Building Design Guide Sustainable Committee, the site of a sustainable building should reduce, control and/or treat stormwater runoff to support native flora and fauna in the region. Additionally, the design can provide for a roof that uses reflective light or colors to reduce cooling needs, or provide for solar panels to be attached. The building can also be designed to allow significant natural light, thereby reducing the energy consumption of the building for artificial lighting. Other sustainable techniques would be to utilize ultra-low flush toilets and low-flow shower heads to conserve water, or using efficient wall and ceiling insulation to minimize heat exchange.

Given that about half of a building's energy demands are devoted to heating, ventilation and air conditioning, a centrally placed HVAC system is one of the most convenient ways to cool the building. HVAC systems comprising water-cooled screw chillers with a high coefficient of performance and eco-friendly refrigerant are popular ways to reduce electricity consumption of the building from the electricity grid. Using alternative and clean energy sources will also reduce the cost of heating and cooling.

Using Sustainable Materials

Some sustainable methods and materials currently being used in the industry include biodegradable or eco-friendly materials. For example, bamboo is considered one of the best eco-friendly materials due to its incredibly high growth rate and its high strength-to-weight ratio, lasting a long time and having a greater comprehensive strength than concrete and brick.

Manufacturers are also increasingly trying to use recycled plastic and other ground-up trash to produce concrete, and contractors are using more reclaimed wood for structural framing, cabinetry and flooring. Other eco-friendly materials include plant-based polyurethane rigid foam, "hempcrete," a concrete-like material created from the woody inner fibers of the hemp plant, and reclaimed or recycled steel, to name a few.

Materials that are long-lasting also contribute to sustainability, as the cost and effort to repair, manage and replace building materials is a major drain on resources. Therefore, using materials such as composite roofing shingles or insulated concrete framing will not only require less maintenance, but they will also provide better insulation, with less energy spent on heating and cooling.

Similarly, a major trend is to use "smart glass" as the window material of choice. Smart glass is an innovative material that changes its heating properties based on how heat and air conditioning is applied in the house. During the summer months, the glass turns translucent to block any heating wavelengths that may be requiring air conditioning to work overtime, whereas in the winter, the glass becomes transparent to allow in the sunlight to aid in heating efforts.

The list of sustainable building materials and sustainable building design alternatives is long, and those discussed above are only a handful of the options available.

Building for the Future

Unlike previous movements focusing mostly on energy efficiency and cost-saving measures, the push for designing, constructing and outfitting buildings that are environmentally friendly, as well as sustainable and long-lasting, is quickly becoming the new standard for every industry. We will continue to follow these developments and provide useful updates.

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