

The Impact of Climate Change on Construction Practices: Building Resilience for the Future

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Global warming has been changing the climate – and the construction industry. Scientists consider mainstream building practices detrimental. They emit mammoth amounts of greenhouse gases, generate mountains of landfill waste, and adversely damage ecological systems. Traditional construction methods also threaten people’s health and safety because they cause air, water, soil, and noise pollution.

The world unavoidably depends on the construction industry. Still, clients, regulators, and the general public are pressuring construction stakeholders to shape up and adapt to the times to remain compliant, sustainable, and profitable. The industry isn’t immune to climate change either, so it’s crucial for construction companies to build resilience to stay relevant and in business. Explore how climate change impacts various stages of construction projects and how the industry copes.

Pre-Design – Project Initiation

The prospect of adverse weather events due to global warming compels the construction industry to conceptualize climate-resilient and energy-efficient designs. If things go from bad to worse, towns in cold areas will experience more brutal winters. Coastal cities may have to build higher to coexist with the encroaching sea. Properties in regions where precipitation becomes scarcer over time must concentrate on water conservation and renewable energy generation.

Urban environments must have more green space to neutralize worsening heat waves. Homes and buildings in storm-prone



areas require more reinforcements to withstand violent winds and the impact of flying debris.

The brightest construction minds can think of numerous solutions to specific environmental challenges, but only some are feasible. Researching the apt combination of materials and technologies to ensure the structure is solid enough to achieve the project’s climate resilience and sustainability goals needs considerable work, especially when considering novel solutions.

Miscommunication is a common pain point during this phase. It’s a bigger headache when planning a green development project that comes with its own set of unique challenges.

Thankfully, construction teams have gone digital. Cloud technology helps ensure all project stakeholders are on the same page, collaborate more closely to establish clear

objectives, and resolve misunderstandings. These tools support transparency and synchronization, enabling everyone to review revision and conversation histories.

Furthermore, integrating environmental, social, and government principles into construction designs matters to secure financing. Investors and creditors want to [bet on climate-resilient developments](#), so they're more keen on funding sustainable projects.

Pre-Construction — Design

More and more project owners are waking up to the seriousness of climate change, so they want to embrace green building practices as much as possible. Gone are the days when construction contracts go to the most affordable bidders. Eco-friendly development projects require distinct competencies only some contractors have. The construction skills gap is wide in general, but the talent pool of building professionals adept at working with emerging sustainable materials and practices could be more significant.

Finalizing the budget can be tricky, too. Sustainable products usually cost more because many don't yet benefit from economies of scale. For example, sheep's wool is gaining steam [as a renewable insulation material](#) but can be cost-prohibitive since fleece harvesting [happens only once a year](#).

Climate change has made the public and policymakers more sensitive to the ecological effects of construction projects. Environmental concerns and stringent compliance requirements make paperwork processes more taxing.

Some of the above challenges have no shortcuts. The best your legal team can do is follow the procedures closely to expedite the process as fast as the law permits. Luckily, technology can alleviate the construction industry's labor shortage.

Various robotic solutions are coming of age. LiDAR drones have democratized laser scanning, allowing you to measure physical environments precisely with fewer professionals and without crude tools.

Construction vehicle automation allows controlling an entire fleet with one central operator. In other words, you only need to train one or two team members to operate semi-autonomous earthmovers remotely and accomplish more work with less time. Switching to construction equipment autonomy

only requires a retrofit, not an upgrade, so it can be a minimal expense.

3D printers and semi-automated masonry systems can accelerate construction, reduce material waste, and minimize labor costs. These innovations have downsides but minimize budget overruns.

Procurement

Built environments account for [39% of gross worldwide carbon emissions](#), including embodied carbon. This represents the amount of carbon emitted during the production of construction materials.

The above figure reminds you why forming an eco-friendly supply chain and buying materials from ethical sources are vital. Doing business with suppliers with spotty environmental track records indirectly inflates your greenhouse gas emissions.

However, finding partners in the circular economy can be a pain. Between the Paris Agreement in 2015 and the 26th United Nations Climate Change Conference in 2021, the world [extracted half a trillion virgin materials](#) – 70% more than the planet can safely replenish. Circular businesses are still in the minority, making sustainable material and equipment procurement initiatives challenging.

You can only make your supply chain fully sustainable once the circular economy matures. Until then, import only what you can't locally source to minimize your carbon footprint. Savvy construction managers diversify and avoid over-relying on vendors operating in areas most prone to the effects of climate change.

Regarding equipment procurement, the construction industry is slowly [switching to electric and hydrogen power](#) to reduce pollution and greenhouse gas emissions. Electrified machines emit no exhaust, while clean green hydrogen has helped the energy sector reduce its global emissions by 30%. Diesel remains the [primary power source of most](#) construction equipment, but climate change is persuading the industry to rethink its use of fossil fuels.

Equipment rentals are more palatable to green-minded construction leaders. Renting reconciles cost and sustainability because buying construction assets you only need in the short term unnecessarily increases manufacturing demands. On the

other hand, renting allows you to use the machines only when you need them.

Adapting to Climate Change One Step at a Time

Going eco-friendly requires significant adjustments for any industry that has been a notable driver of global warming for decades. Construction still has a long way to go before becoming the sustainability movement's poster child. It may get there eventually, as long as its stakeholders commit to making amends for the sector's environmentally damaging ways and being instrumental in promoting climate resilience from here on out.



About the Author

Rose Morrison is a freelance writer with a passion for sustainable building and innovative construction technologies. She has interviewed numerous industry professionals to gain insight into the current challenges facing the built industry and developing strategies for overcoming them.

Rose has over five years' experience writing in the industry and is the current managing editor of [Renovated.com](https://www.renovated.com). She also regularly contributes to other publications, such as NCCER, The Safety Mag, and Geospatial World. Follow Rose on [Twitter](#).

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