

The road to net zero



They consume half of the world's electricity, use a third of all energy, and produce 40% of the planet's total greenhouse gas emissions. Buildings are the beating heart of human civilization — but in the race to avert climate disaster, they're a cause of huge concern.

To keep the rise in global temperatures below 1.5 °C, all buildings must be net-zero carbon by the middle of the century. With only a tiny proportion currently meeting that requirement, the building sector must undergo a monumental shift towards greater sustainability. That means changes to the way in which buildings are constructed, managed, operated, and repurposed.

There's a clear desire for this overhaul to happen. According to Schneider Electric's recent Powering Change Report, more than two-thirds of businesses in the UK and Ireland believe half of existing buildings will be net-zero by 2040.

That's good to hear, but the route to fulfilling such an upbeat forecast is far from clear. The size of the task ahead is often downplayed, and there is a stubborn disconnect between timeframes and responsibility. Certification is another issue — while two thirds of respondents told us they were setting science-based carbon drawdown targets; a much smaller proportion have actually committed to having their efforts validated by the Science Based Targets Initiative (SBTi).

Here are the principal challenges facing green-minded building leaders — and the solutions that'll help them reach a cleaner future.

Refurbishing the smart way

First and foremost, we must take a closer look at buildings currently in use. To bring emissions all the way down, no less than 90% of today's structures will need to be digitally retrofitted with new, innovative technologies and smart solutions.

Advanced automation combined with intelligent heating and lighting controls are a proven way of hitting green targets (not to mention cutting energy costs). Bristling with sensors, smart buildings can also offer real-time data analytics, allowing decision makers to improve sustainability, efficiency, resiliency, and offer an overall better occupant experience.

Alongside this digital retrofit, buildings must be nudged towards electricity-based energy models, with a focus of renewably generated power. In 2021, gas central heating remains prevalent and affordable, but that can't prevent progress. Moving further into the 2020s, the merits of electrified heating systems — which are many times more efficient than fossil fuel alternatives — must be championed, with the emphasis put not only on sustainability gains, but also affordability.

Measuring energy efficiency

Redefining how electricity is used and distributed in buildings, digitalisation is fundamental to going green. Of equal importance, however, is accurately tracking and measuring energy consumption.

One-in-five British and Irish businesses polled by Schneider Electric have only recently started measuring their energy consumption, and as a result aren't fully aware of what is being wasted. With an average of 30% of building power usage going to waste, that's a worrying lack of insight. And while a promising proportion of respondents, 43%, said they had increased their use of automation, less than one fifth had installed a building management system — digital platforms that are key to monitoring and finessing energy flows.

Perhaps more worrying still is the slow uptake of smart technologies in the public sector. Out of sixteen UK county councils who responded to Freedom of Information requests we made, twelve stated that they had no plans to explore smart solutions that control aspects of lighting, temperature, and improve energy efficiency.

Sustainable construction

With global climate concerns at an all-time high, construction companies can no longer ignore their environmental obligations. Despite this, procurement decisions are often taken with little regard for sustainability, focusing instead on cost, and cost alone.

This is a serious problem. More than a tenth of all emissions associated with buildings are generated during the manufacture of steel, cement, glass, and other construction materials (a tenth of which go to waste, incidentally). This blot on the environmental scorecard is invariably due to cost-cutting considerations, with cheap, carbon intensive energy sources used instead of clean alternatives.

It's vital, therefore, that construction managers insist on their raw materials being responsibly and sustainably sourced. Likewise, projects should be designed with longevity in mind — this means using parts that'll stand the test of time, with the prospect of them being recycled and reused decades (or even centuries) later.

An equally long-term approach should be taken with the buildings themselves. All too often construction firms focus solely on getting a structure up, happy to pass environmental life-cycle responsibilities onto the future owner. This isn't good enough. Net-zero ambitions must be baked into a building's blueprint from day one, with provisions made for smart technologies and digital integration.

Get this right, and the building sector — from construction through to management — will be well placed to take a leading role in the climate fight, showing other industries how change can happen for a happier, more sustainable future.