PATRICK PARSONS

CREATING PLACES FOR FUTURE GENERATIONS TO THRIVE

SUSTAINABLE BY DESIGN

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Sustainable by design

Executive summary

Patrick Parsons, the engineering consultancy, conducted research with one hundred senior executives of UK construction firms which have collectively been involved in over £26.6 billion worth of construction projects over the past year.

The survey reveals that 85% of respondents think enough is being done to reach net zero on time and a similar number believe COP26 Summit was instrumental in raising environmental, social and governance issues on the construction agenda.

Encouragingly, the survey also reveals that respondents see realistic commercial incentives for improving sustainability in future building projects. And the survey reflects the sense of urgency to make the construction industry more environmentally friendly, with 58% of respondents saying sustainable design to become even more important over the next three years.

Yet for all the positivity, there are barriers to achieving net zero targets. A lack of sustainability in the building material supply chain and outdated planning regulations continue to hamper efforts to go green.

Headline findings

- Eighty-six percent said COP26 will accelerate positive advances in sustainability in the sector during 2022.
- Eighty-five percent believing the industry is doing enough to reach net zero by 2050.
- Eighty-three percent say projects designed with green credentials have given them a competitive advantage.
- Sixty-six percent say sustainable design is adding value to current developments.
- Sixty-eight percent expect the value of developments with sustainable design to increase by between 10% and 20% over the next three years.
- Sixty-eight percent say improvements to building material supply chains to reduce carbon are critical to achieving net zero.
- Sixty-three percent say existing planning regulations need to change to support the sector.
- Sixty-two percent say a lack of alternative materials with a lower carbon footprint are a barrier to sustainability.
- Fifty-three percent say sustainable design will become even more important over the next 12 months.

Introduction

Managing carbon emissions from the built environment is critical if the UK is to meet its net zero target by 2050.

At present the building and construction sector contributes 40%[i] of the UK's total CO2 emissions and must, according to a 2021 report from the National Engineering Policy Centre and Royal Academy of Engineering, "decarbonise more urgently" and adopt "holistic and efficient building designs, combined with measures such as reusing building materials wherever possible and using non-fossil fuel powered machinery"[ii].

Looking globally, the building and construction industry is crucial in meeting the UN Sustainable Development Goals (SDGs)[iii] which aim to protect the planet and promote prosperity. These include UN SDG 6 - ensure availability and sustainable management of water and sanitation for all; SDG 9 - build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation; SDG 11 - make cities and human settlements inclusive, safe, resilient, and sustainable; and SDG 13 - take urgent action to combat climate change and its impacts.

Our research - based on a survey with one hundred senior executives of UK construction firms involved in over £26.6 billion worth of projects over the past year - shows significant awareness of the need to drive sustainability through the sector with 86% of respondents attributing advances to last November's COP26 summit.

The survey also demonstrates that leaders in the construction industry already appreciate the commercial, social and environmental benefits of engineering and constructing cleaner, greener buildings.

However, the survey also highlights several obstacles that must be overcome. Importantly, building material supply chains must improve and planning regulations need to change if the industry is to demonstrate authentic green credentials and achieve carbon neutrality by the deadline.

Commercial value

Survey respondents identified significant commercial benefits from using sustainable design and engineering to build developments with lower carbon footprint and water use, reduce waste and materials used.

Eighty-three percent say projects designed with green credentials have given them a competitive advantage while two thirds (66%) claim sustainable design is adding value to current developments.

More than two thirds (68%) of respondents expect the added value from enhanced sustainability in construction design to increase by between 10% and 20% over the next three years. A further 18% say values will increase by between 20% and 50% over the same period.

It is no surprise then that more than three quarters (77%) think that sustainability planning in the early-stage design is important.

Returning to the ability of construction companies to meet the UN Sustainable Development Goals, almost half (48%) of respondents say the most important aspect of sustainable projects is to improve the quality of life for the people living in/using the buildings, creating healthier environments that promote well-being, and prevent negative social issues arising.

Meanwhile, 44% say the most important element is to maximise the use of sustainable resources to lower environmental impact and increase energy efficiency.

Appreciating the importance of flexibility in sustainable developments, 70% of respondents say projects must be built with the flexibility to accommodate future changes, taking into consideration the lifetime of a building from draft to demolition, not just the initial construction.

Conor Murphy, Senior Partner, Structural Engineering at Patrick Parsons says: "Reducing the impact of our built environment is no longer an option but an imperative, and sustainable design and engineering has a crucial role in protecting the environment and our communities."

Sustainable design priorities

The importance of meeting the UN Sustainable Development goals was again reflected in respondents' views on the priorities for sustainable building projects.

Just over half (51%) say energy-efficient systems and design utilising natural light, smart windows, and heating, ventilation, and air conditioning (HVAC) was very important. This was followed by 47% who believe reducing water and sewerage waste is a priority, and 35% who say that sourcing materials with lower embodies carbon such as timber, clay and stone was very important.

Looking ahead, the focus on minimising the impact of developments in terms of carbon footprint, waste and resources used continues. More than half (53%) say the importance of energy efficient design will increase significantly over the next three years. Just under a third (32%) believe waste reduction and lean design (26%,) which minimises the use of materials, will also increase significantly.

Water neutrality - where the total demand for water within a planning area after development has taken place is the same, or less, than before it was built - was also a major consideration.

More than one-third say between 5% and 15% of their organisations' developments are water neutral. More than two-fifths (43%) say between 15% and 20% are water neutral, and a further 17% reveal that a fifth to a half of current developments are water neutral.

In future, water neutrality gains even more importance. Forty-four percent expect between 20% and 50% to be water neutral by 2025. When asked about the role of sustainable drainage systems when it comes to flood prevention, promoting biodiversity or natural habitats and preventing pollution, 46% said that they expect them to become even more important over the next three years. Only 12% expect them to decrease in importance.

Andy Johnson, Associate, Patrick Parsons: "Water neutrality is rising up the sustainability agenda as the construction industry focuses on using scarce natural resources more responsibly and placing even greater importance on protecting natural habitats, and pollution and flood prevention."

Overcoming obstacles to sustainability

While commercial imperative and increased awareness of the importance of sustainability are two critical steps towards helping the construction industry 'go green', respondents identified notable challenges they must yet overcome.

Over two-thirds (68%) of respondents say building material supply chains to reduce carbon must improve if they are to achieve net zero.

Sixty-two percent of respondents cite the lack of alternative materials which have a lower carbon footprint as a significant barrier to overcome, followed by decarbonising existing buildings (59%) and the ability to collect data to measure carbon in buildings (48%).

A further 63% of respondents say existing planning regulations need to change to support the sector if it is to hit this target. However, given the positive response to the progress made at COP26, it may yet be that policy makers are able to make requisite change in this area.

Conor Murphy, Senior Partner, Structural Engineering at Patrick Parsons: "The UK construction industry's ambition to achieve net zero is not without its challenges. There must be a development in the materials used and planning rules must change if we are to decarbonise legacy buildings and improve their performance."

Conclusion

The industry must collaborate to overcome the obstacles to improving sustainability in construction, and the Government needs to lead the industry on the issue, with planning regulations which encourage carbon neutrality.

Spaces need to be created that are flexible to allow for the ever-changing requirements of buildings and the people that occupy them, so that they really are fit for the future.

There should also be a greater focus on the repurposing of existing buildings. There are many approaching their end of life which can be transformed into attractive, modern building and can be completed faster, more economically and far more sustainably than by demolishing and re-building. Starting from scratch is not always the best answer.

It is vital that the focus on sustainability begins well before the first foundation is laid to ensure it is in the DNA of each and every development. For example, there should be embodied carbon reporting from the earliest stages of a project to assess environmental impact and provide opportunities to make reductions before the project has gone too far gone in the life cycle.

Similarly, greater use of modern methods of construction such as modular, dramatically reduces the amount of waste that ends up in landfill and has an inherent focus on eco – friendly materials. There should also be a greater focus on using local and natural materials to improve the carbon footprint of the supply chain.

Finally, as an industry, there needs to be a fundamental shift in mindset and aspirations, with a greater focus on building better for our future generations, not just for profit.

[i] https://www.ukgbc.org/climate-change-2/
[ii] https://www.raeng.org.uk/news/news-releases/2021/september/construction-sector-must-move-further-and-faster-t
[iii] https://sdgs.un.org/goals

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UK Locations

Ash Vale
Birmingham
London
Wakefield

+44 (0) 121 592 0000
info@patrickparsons.co.uk
www.patrickparsons.co.uk