

What's driving sustainability in the architecture and engineering industry?



Introduction

Climate change and the need for sustainable solutions are now playing a critical role in the decision-making of governments and companies. The UN's Sustainable Development Goals (SDGs) increasingly serve as guidance for many companies and are often reflected in country-specific rules and regulations. Recently, the Covid pandemic has highlighted the risks inherent in an interconnected global economy and the importance of resilience.

Autodesk commissioned consulting firm Frost & Sullivan to explore how firms in the Architecture and Engineering (A&E) industry in Europe are addressing the sustainability challenge, and the role technology can play. Here are some key findings from research conducted between 2020-2021. In some cases, the numbers also incorporate responses from companies in the Construction industry. These are referred to as Architecture, Engineering and Construction (AEC) companies.

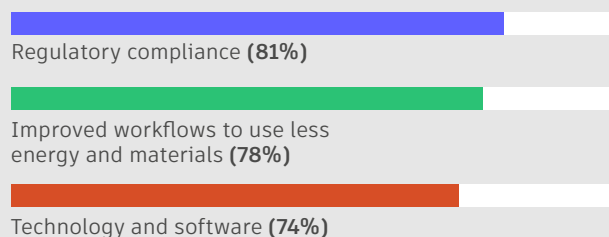
How do architecture and engineering companies see sustainability?

To qualify for survey participation, each decision-maker had to work for a company with at least some focus on sustainability (less than 10% could not participate because of this). Among participants, 18% of firms said sustainability was the cornerstone of their corporate strategy (the highest possible ranking), while another 36% said it was an important part of consideration. The focus on sustainability was particularly strong in the Nordics, where the numbers were 30% and 34%, respectively.

61% of firms formally list sustainability as part of their company's vision

The prominence given to sustainability is also reflected in company strategy. 61% of the firms have sustainability listed formally as part of their company's vision, purpose, or company goals, and another 28% say their company considers sustainability important but does not have a formal approach to it.

Investments are focused on:





This focus on sustainability is mainly driven by customer expectations. Valerie Vergaert, Principal for Sustainable Design at VK Group, explains, “Why is sustainability a big priority for us at VK Group? Because demand for it comes from all sides. Firstly, from the market – our clients want to work on sustainable projects with us. Secondly, from our internal teams – we must practise what we preach. Thirdly, for young people entering the business, we know caring for the planet is a big focus for them. They expect to see sustainable practices run through every project they work on. So, if we’re to attract and retain the very best talent for our business, this absolutely has to be a top priority for us.”

Other survey respondents echo this sentiment. They point to customer retention (83%) and customer expectations (80%) as the main reasons for their companies to embrace sustainability. This is closely followed by the hope to gain competitive advantage (75%). Additional important considerations include regulation and market forces, employee satisfaction and recruiting, and expectations from supply chain partners.

Sustainability today

Sustainable initiatives are already being widely implemented by A&E firms in Europe. Today, 38% of the firms’ projects, on average, have sustainability or environmental impact as their core driver. This share rises to 48% for very large companies (those with over 500 employees).

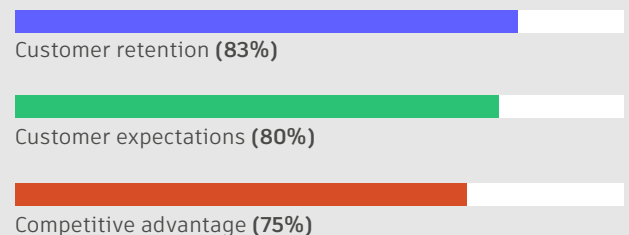
Firms say that the most important initiatives for their sustainability goals are green building, such as energy analysis and daylighting (59%), and low carbon innovation to reduce environmental footprint (55%). This is likely driven by the EU Green Deal with its focus on net-zero in buildings. Furthermore, circular design (44%) and supporting communities affected by climate change (35%) also proved important in various company initiatives.

These sustainability initiatives are bringing results. More broadly, AEC companies name better use of resources (less waste) as the biggest benefit of implementing sustainability initiatives, followed by reduced energy consumption and improved project quality.

“Our involvement with schemes such as the London Energy Transformation Initiative (LETI) network and the Design for Performance initiative has pushed us to adopt a more lean and simple design approach. This not only makes our buildings more sustainable, but also delivers better value for clients. Reducing the volume, and therefore cost, of materials we use to build, enables us to source higher quality products. To build on this, we’re trialling a Design for Manufacture and Assembly (DfMA) technique on new projects to see how it compares to traditional construction methods in reducing our embodied carbon footprint, since transporting concrete significantly raises our carbon emissions.”

Helen Hough, Sustainability Lead at Bryden Wood

Key business reasons to embrace sustainability:





To get these results, companies are investing in improving their capabilities around sustainability. Currently, these investments are focused on regulatory compliance (81%), improved workflows to use less energy and materials (78%) and technology and software (74%). This is followed by research and development, recruiting additional staff and training, and CSR activities like volunteering and giving back to the community. On the lower end of investment were carbon offsets. The research found only 35% of respondents are investing here, perhaps indicating the investments are going towards their own development and innovation to reduce their carbon impact.

Firms plan to continue investing in sustainability initiatives, with an average spend of 1.4 million euros over the next 5 years. Unsurprisingly, the larger the company, the more it plans on spending, with very large AEC companies earmarking 3.9 million euros for sustainability investment.

Challenges, including COVID

Firms inevitably encounter challenges on their path to becoming more sustainable. Companies say that key roadblocks include a lack of financial resources (39%), lack of a strong business case (32%), access to software and technology (30%), and access to skills and training (29%). For AEC companies in the Benelux and UK and Ireland, access to skills and training is the second-biggest challenge after lack of financial resources.

Investing in sustainability initiatives provides benefits in the short and long term, and they extend beyond financial savings. It is important for companies to have the right tools to track the longer-term and non-financial benefits. Across AEC firms in the region, 50% consider sustainability initiatives a cost driver. 32% see them as cost-neutral, and 18% think they drive cost reduction. Sirpa Kumpulainen, Senior Expert in Civil Engineering at A-insinöörit of Finland, explains, “The biggest challenge we face in adopting environmental initiatives is shifting perceptions around cost. Some stakeholders are concerned about how much they

will cost to implement, but the focus should instead be on the potential of sustainability and even its monetary benefits. We need to show our engineers that their work won’t change entirely, and their jobs won’t become more complex. Knowledge building is key here – sustainable solutions can actually make their jobs easier and less costly.”

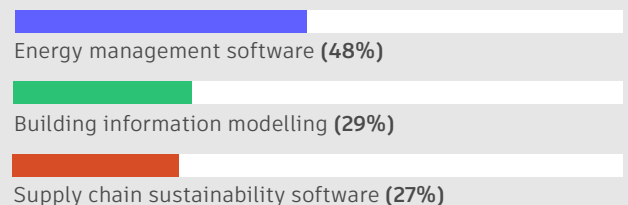
The Coronavirus pandemic has also been a major challenge for the industry. Architecture and engineering firms, like many others, have had to switch to remote work. This drove the rapid adoption of digital tools and wider acceptance of remote work, both of which are set to continue and shift the way the industry collaborates. Additionally, during the qualitative interviews, respondents acknowledged that the pandemic had made them and their clients more aware of systemic risks like climate change and the need to prepare for them.

The role of technology

The pandemic accelerated the ongoing transition towards a more digital way of working in the A&E industry. This supports sustainability initiatives, too.

Among digital tools, firms say that energy management software has the most impact on their sustainability initiatives (48%). This is followed by BIM (29%) and supply chain sustainability software (27%).

Digital tools with the most impact on sustainability initiatives:



“ We can work with sustainability in three ways. One is to do what we are doing in a more environmentally efficient way. Secondly, it is about doing it in a socially fair, inclusive and secure way. But we can also do things in a more financially efficient way – working better and smarter. For this, we often look to digital solutions. They are a driver for innovation in general and help us to work better and more sustainably.”

Asvor Brynnel, Head of Communications and Sustainability, Assemblin

across the area, but the emphasis differs among the regions. In the Nordics, material alternatives are expected to have the strongest impact (60%), while Benelux sees a slightly higher impact from smart cities (59%), and in the UK and Ireland, net-zero is the largest trend (53%).

Sustainability in A&E: a win-win

Architecture and engineering companies in Europe are already implementing sustainability initiatives and expect to do more in the coming years. They are also beginning to see the benefits of this approach both in their operations and in the projects they deliver for clients.

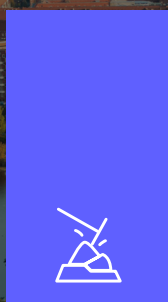
Technology can support this transition to more sustainable and net-zero buildings by helping companies gather and analyse data, enabling better collaboration. The result is clear impact today, from lower energy usage and carbon footprint reduction, to get the industry closer to its critical sustainability goals.

Future opportunities

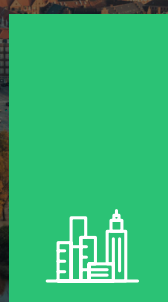
Looking to the future, companies see renewable energy as the most promising approach to lowering carbon emissions (76%). They also see great potential in energy modelling (45%) and materials innovation (45%).

As A&E firms work on advancing sustainability, they expect some current trends to increase in importance in the next two years. These include the demand for net-zero energy buildings (or high-performance buildings), material alternatives and smart infrastructure (or smart cities). This applies

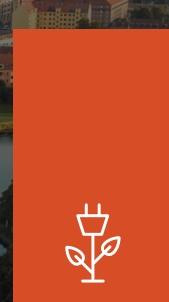
Top trends in sustainability in the next two years:



Nordics:
material alternatives
(60%)



Benelux:
smart cities
(59%)



UK and Ireland:
net zero
(53%)

Research setup

- Quantitative survey of 202 Architecture & Engineering (A&E) companies, all with some focus on sustainability. Participating companies are from Benelux (Belgium, the Netherlands and Luxembourg), Nordics (Denmark, Finland, Norway and Sweden), the UK and Ireland. Companies of various sizes are represented.

- Qualitative one-on-one interviews with nine heads of sustainability representing A&E firms across the region