

Towards Regenerative

Climate Action End of Year Report 2023



Forewords



2023 was an outstanding year for our work to address the climate emergency. I thank our members and staff for their enthusiasm, dedication and expertise which has enabled us to achieve everything that is presented in this report.

Since 2019, the Institution has committed to treat sustainability with equal importance to life safety. This commitment guides and enables us to take an innovative and proactive approach to tackle one of the biggest challenges facing us today.

At the time of writing this foreword, the [Copernicus Climate Change Service](#) had declared 2023 as virtually certain to be the hottest year on record. In a recent speech, Professor Jim Skea, chair of the Intergovernmental Panel on Climate Change (IPCC) said that "Climate change is affecting every inhabited region across the globe" - this is a global problem.

Such evidence matters to the whole engineering community – whether working in a small to medium sized practice or in a large corporate firm. The Institution plays a critical role in both inspiring and supporting our members to deliver the necessary change.

For me, standout activities over 2023 included two new important sustainability publications: *Circular economy and reuse: guidance for designers*, and *The regenerative structural engineer*. We have also increased our focus on carbon, resource use and broader sustainability by introducing membership requirements for each.

We conclude the year with our Institution receiving the accolade of being named 2023 Sustainability Champion at the UK's Association Excellence Awards.

I hope you enjoy reading this inspiring end of year report and our aspirations for the next year. We know we have plenty more to do in 2024 and we look forward to supporting you to play a part in changing the way our buildings and infrastructure are commissioned, designed, and constructed.

Yasmin Becker

Chief Executive, The Institution of Structural Engineers



Our 2023 end of year report is bursting with all the activities our Institution and hard-working members have been engaged in, which places us at the forefront of climate change action. The energy levels have never been higher. It is impressive and we thank everyone for their passion to drive change.

At the start of the year, we ran a sustainability skills survey across the Institution's membership. The feedback showed us an overall improvement in skills and interest in sustainability, but it also told us that we need to do a lot more to get the message to the whole membership. So, we will continue to help the whole community to be part of a gradual redefinition of what good structural engineering means.

But, because time is short and we have a climate and biodiversity emergency to address head-on, we must accelerate the pace of change. Our responsibility is to serve society, applying our skills as engineers and discharging our responsibilities as professionals. Society looks to us to make sure we do the right thing by them – we are the experts. So, we cannot just follow orders – we need to let our clients and society know what is right even if it isn't what they want to hear. Failing to do this is worse than unprofessional; it is unethical. This means influencing our briefs to reduce harm and improve outcomes for the wider community.

I believe, from experience, that showing clients and collaborators ways to achieve better outcomes than they sought, builds the best relationships, and leads to more and better work. It is good for your business and theirs.

So, I recommend that in 2024 you take a look at the Institution's latest publication, *The regenerative structural engineer*, and see how you could start applying more regenerative approaches in your projects. Take the client with you by taking them further than they thought to ask. They will thank you in the end.

Dr Mike Cook

Chair, The Climate Emergency Task Group

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Introduction

Welcome to the Institution's report on the climate action it has led during 2023. This report seeks to bring together work that has been driven across our membership and staff activities during the year. This includes that of our Climate Emergency Task Group (CETG) and Sustainability Panel, our wider member panel and committee structure, and the broader work of our Institution staff.

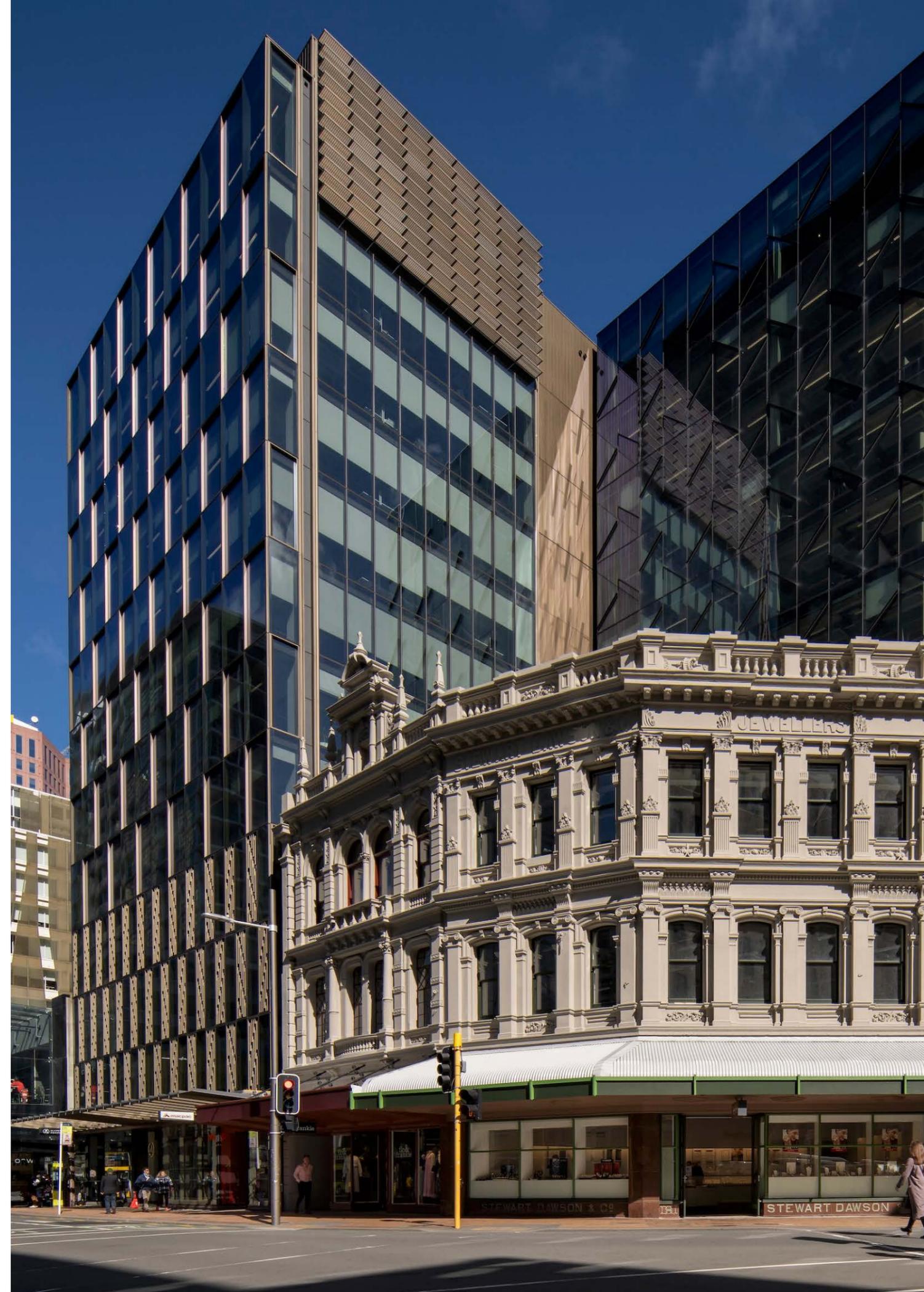
We are proud that this year saw key changes made to the Standards to which we hold our members. It is important that, as an industry, we avoid treating sustainability as an optional area where we can add value, but rather that it becomes a fundamental aspect of everything we do. For that reason, we now have an increased focus on embodied carbon and sustainability within our requirements for both initial membership and Continued Professional Development for existing members.

We continue to support this shift towards an industry that balances safety and sustainability through the provision of extensive guidance and training for members. This includes the launch of a new guide this year on circular economy and reuse, which brings together expertise from specialists across building reuse, reclaimed materials, and general structural design.

We hope this report will bring a touch of optimism to your own climate action, and that it provides a useful wayfinding tool for our collective accomplishments to date. As always, we extend a huge thank you to all members who have volunteered so much time to help generate guidance and assist with increasing standards and collaboration across industry. Without your help, none of this would be possible.

Sustainability Champions

The Institution was delighted to be named 2023 Sustainability Champion at the UK's prestigious **Association Excellence Awards**. The accolade is given to organisations who develop initiatives to minimise environmental impacts and promote long-term sustainability. Judges described the Institution's submission as "outstanding" and congratulated the Institution for "having had the foresight back in 2019 to choose this as your topic for discussion and develop plans and policy change to be a leader in your sector."



Institution climate action this year

Standards

We are proud to have introduced several changes across key aspects of our membership requirements this year. These changes align with the commitments that the Institution has made through the signing of the **Construction Industry Council climate action plan**, as well as with the requirements set for undergraduate degree courses accredited through the **Joint Board of Moderators**.

We have now introduced new requirements to attain Chartered Membership status of the Institution. Candidates sitting their Professional Review Interview from September 2023 now need to demonstrate sustainability and carbon literacy where relevant to all core objectives. From 2024, the Chartered Membership Exam also includes the requirement to design sustainably, identify material reduction opportunities in the brief, and calculate the embodied carbon impact of the design. Similar updates to other membership grades will follow later in 2024. For more information, visit our standalone pages on the **new IPD regulations** and **changes to the exam**.

For existing professionally qualified members of all grades, updated requirements for **Continuing Professional Development** (CPD) have also been introduced from late 2023. As part of their annual reporting of CPD, professionally registered members will now be asked to report details of relevant sustainability CPD activities that they have undertaken through the course of the year. This should total around six hours, the same requirement as the Institution holds for health and safety CPD activities.

The Institution is pleased to have become a Licensed Member of the **Society for the Environment** during 2023. This licences us to award the Chartered Environmentalist (CEnv) registration to those members of the Institution with the ability to demonstrate sustainability leadership in their work. A pilot scheme of members is underway to award the first licences, and we aim to open our new accreditation route up to all eligible members during the next year.

Policy

We continue to advocate for the uptake of **Part Z**, an industry proposal to regulate whole life carbon and embodied carbon emissions in the UK construction sector. During the past year, we have supported parliamentarians in both the House of Commons and House of Lords to try to introduce Part Z into legislation through various means. We also presented on the proposals to the relevant government Minister in a roundtable session alongside supportive representatives from the homebuilding sector. The Department for Levelling Up, Housing and Communities (DLUHC) has now commissioned in-depth research into the impact of embodied carbon regulation, and has committed to running a public consultation on its approach by the end of the year. Part Z was shortlisted for Collaboration of the Year at the **AJ100 Awards**, and for the Collaborative Partnership Award at the **BE-ST Accelerate to Zero Awards**.

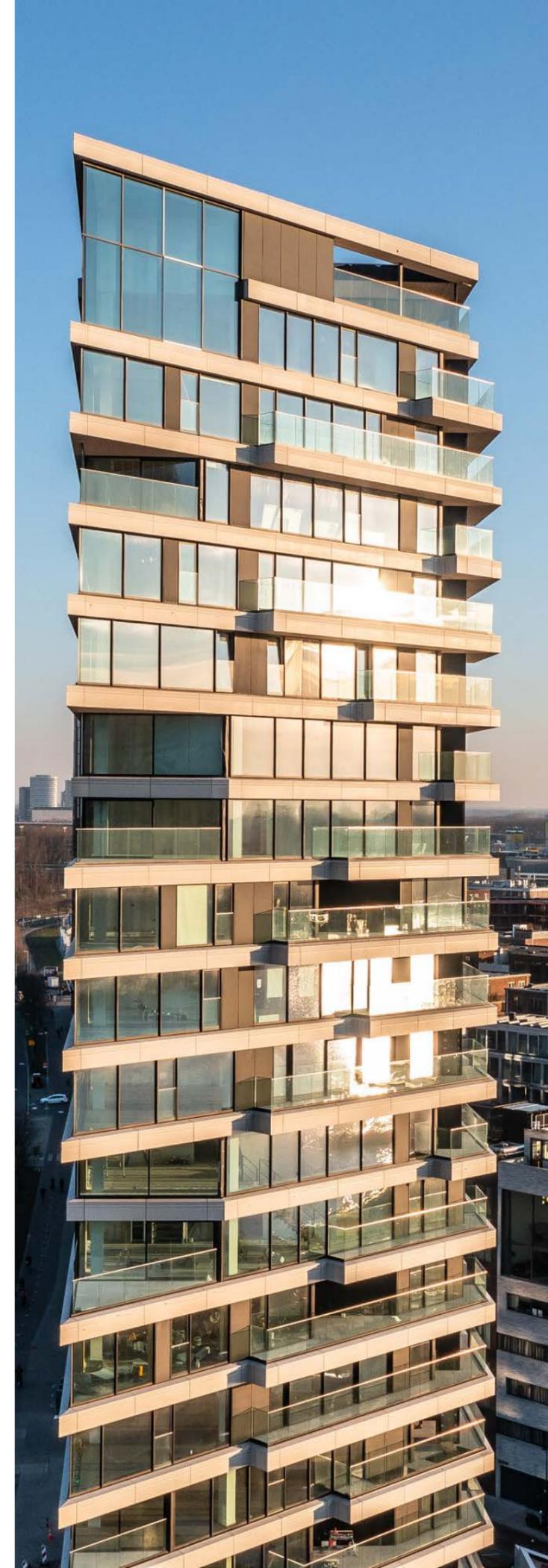
Our staff and membership have continued to help lead and develop the **UK Net Zero Carbon Buildings Standard** – the country's first free cross-industry standard to bring together net zero carbon requirements for all major building types, based on a 1.5°C trajectory. Institution representatives continue to actively participate at both Governance Board and Technical Steering Group levels, along with several of the Task Groups and Sector Groups. The Standard is set to launch for consultation in 2024, alongside a fundraising campaign to complete its drafting, and we look forward to our continued engagement.

Research

We led the research and publication of a **cross-industry white paper on the use of ground granulated blast furnace slag (GGBS)** as a replacement for cement in concrete production, outlining how best to use the material in order to effectively tackle global emissions. The paper has been endorsed by ConcreteZero, the UK's Low Carbon Concrete Group, and The Concrete Centre (part of the Mineral Products Association). We have now also commenced work on a similar white paper on the use of scrap steel in Electric Arc Furnaces, which is expected to present a similar argument.

We began work with experts from within our membership to develop an Institution position around the use of concrete, steel and timber with respect to reducing global carbon emissions. With this research, we hope to understand more fully the global carbon impact of using biogenic and globally constrained materials, with the aim of making recommendations to designers and policymakers next year.

Several members of the CETG and Sustainability Panel continue to undertake research into how Regenerative Design principles could be applied to structural engineering. Their work was represented in **the August issue of The Structural Engineer** which sought to demonstrate what a regenerative approach might look like in practice, by examining the principles and sharing tangible real-life case studies. Refer also 'Guidance' on page 10 of this report.



Collaboration

Our recognised leadership in the field and renewed interest in cross-industry collaboration on climate change over the last few years has led to the opportunity to strengthen our long-standing relationships with our partners across the industry. We continue to liaise with other Professional Institutions both directly, and through cross-industry bodies such as the Royal Academy of Engineering (RAEng) and the Construction Industry Council (CIC). At the RAEng, Institution representatives are currently active with climate-based initiatives such as “Engineer 2030” and the Materials for Net Zero Working Group. We also continue to lead the CIC Climate Change Committee’s workstream on resource use and embodied carbon.

Institution representatives also continue to be invited to speak on the topic of sustainability and embodied carbon at external forums. During 2023, these have included presentations at several leading universities and other institutions, participation in cross-industry workshops and panel discussions, and several international conferences. Members are reminded that the Institution has several presentation decks available for use if they wish to present on such topics.

Internally, the CETG collaborated with the Engineering Leadership Group and senior members of Institution staff to develop an approach towards writing an Engineering Vision that can provide guidance and direction for future activities across the wider work of the Institution. This work is set to continue through next year, and we look forward to reporting back on progress.

Further collaboration opportunities are always welcomed: we recognise that the industry cannot transform to enable a regenerative future if disciplines work in silos from each other. To get in touch regarding potential opportunities, please contact climateemergency@istructe.org.

Guidance

As part of a realignment of our guidance to start addressing the skills needed to better reuse our existing built environment, we released our latest climate-facing publication, **Circular economy & reuse: guidance for designers**. The guide sets out practical ways in which members can act to reuse whole buildings, or individual materials and components, as part of a circular economy. It also explains best practice towards designing for future reuse and adaptability, and how to balance this with the enduring need to ensure lean design.

Our *Net Zero Structural Design* course continues to repeatedly sell out. Four cohorts were run during the year, with cohort members deepening their knowledge around climate context, material use, low-carbon designs and advocating for change. Several more cohorts are planned for the next year, visit our website to sign up to those beginning in **February** and **April**.

The Institution’s monthly flagship publication, *The Structural Engineer*, continues to present best-practice guidance and examples of engineers embedding sustainability within their work. Over the course of the year, more than 25 articles featured aspects of sustainability or embodied carbon reduction, covering a diverse range of topics including reclaimed steel design, low carbon concrete specification, biodiversity and structural timber, regenerative design in education, and sustainable geotechnical engineering.

We were also pleased to publish a new book entitled **The regenerative structural engineer**, arguing the case for moving beyond ‘sustainability’ as is currently understood by most of the profession. The authors lay out a bold vision, supported by examples, towards a design approach that shifts the paradigm within which we practise, enabling humans and other living systems to survive, thrive, and co-evolve into the future.

Conferences and events

This year’s Climate Emergency Conference was chaired by Muyiwa Oki, President of the Royal Institute of British Architects, and featured a keynote speech from Smith Mordak, Chief Executive of the UK Green Building Council. The Conference featured presentations on sustainability strategy and policy, enabling innovation, and implementing the circular economy. Presentation recordings are freely available on [our website](#).

The Institution also hosted the annual Summit for firms that have signed up to **Structural Engineers Declare**. The event featured Regenerative Design approaches at its core, with firms sharing knowledge around their approaches to thinking in systems on projects, considering the biodiversity impact of construction materials, and moving towards circular economy design. Presentation recordings will be on our website from the end of the year.

Several other Institution conferences also held sustainability at their core, despite their broader remits, exemplifying our drive over recent years to place sustainability at the heart of our work as an Institution. Our Young Researchers’ Conference concluded with a session on moving towards more joined-up sustainability research, whilst the Young Engineers Conference featured talks on reuse, circular economy, regenerative design, and encouraging early career engineers to challenge how things are done. At the Annual Academics Conference, delegates participated in a workshop to identify actions that would better incorporate carbon into their curricula, and our Reuse and Life Extension Conference featured several low-carbon reuse case studies across all scales. Plans for 2024 are equally extensive.

Throughout the year, our members have spoken on the climate emergency and embodied carbon reduction at a wide range of internal and external events. The Climate Emergency Task Group has presented to groups of members both around the UK, and at international events ranging including the USA and South Korea. Technical lectures significant key links to our sustainability work included:

- **HYLO: maximising retrofit potential of existing structures**
- **The Arc: bamboo as a low-carbon structural material**
- **The effects of the changing climate on historic structures**
- **Changing the norm: learning from sustainability successes at the Institution**
- **The efficient use of GGBS in concrete**
- **Lean design and structural innovation**

Finally, we worked with our United Arab Emirates Regional Group Committee to run a series of local CPD events to coincide with the country’s hosting of this year’s UNFCCC Conference of the Parties (COP28). This included delivering training on the calculation of embodied carbon and leading a panel discussion workshop around the reuse and life extension of existing buildings.



Sustainability Skills Survey

At the start of this year, the Institution surveyed its members to better understand the priorities held by them, their employers, and their clients – and how these had changed between 2018 and 2022. We also asked what the Institution could do to further support them in tackling the climate and biodiversity emergencies. On this page, we present some of the key findings from that survey, which we are now using to direct our efforts for coming years.

Over 200 members responded to the survey, providing a good understanding of the views of our membership. Results demonstrated a significant increase in members' sustainability skill levels across all areas investigated. This difference aligned with the increase in interest in sustainable design that's been shown by clients and employers during the same period, highlighting the capabilities of members of the Institution to respond to clients' Net Zero needs, and their ability to provide more sustainable solutions.

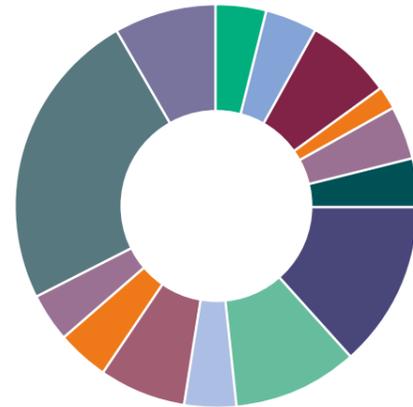
It was noted that in general, embodied carbon capabilities are thought to be most developed in large firms based in the UK. The Institution will consider their role in helping members of smaller firms and non-UK firms to upskill effectively in this area. It also noted that whilst client interest in sustainability has increased over the four-year period, project cost remains the number one priority on projects. We challenge our members and their collaborators to demonstrate to clients that the most sustainable solution can also be the cheapest, when the design team is engaged early enough and set the right brief.

Respondents

250
respondents



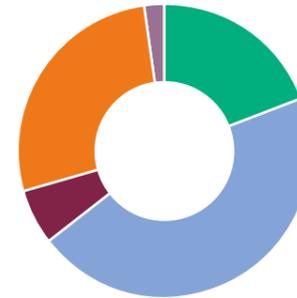
By region



Key

- Africa (4%)
- Americas (4%)
- Asia (7%)
- Australasia (2%)
- Europe (4%)
- Middle East (4%)
- UK - East of England (13%)
- UK - Midlands (10%)
- UK - North East (4%)
- UK - North West England and North Wales (7%)
- UK - Northern Ireland and Republic of Ireland (4%)
- UK - Scotland (4%)
- UK - South East England (24%)
- UK - South West & South Wales (8%)

What is your role within the organisation?



Key

- Early career (e.g. senior engineer, principle engineer, associate director, etc) (19%)
- Mid career (45%)
- Other (6%)
- Senior Leadership (director, executive, partner) (27%)
- Student (2%)

How large is your organisation globally?



Key

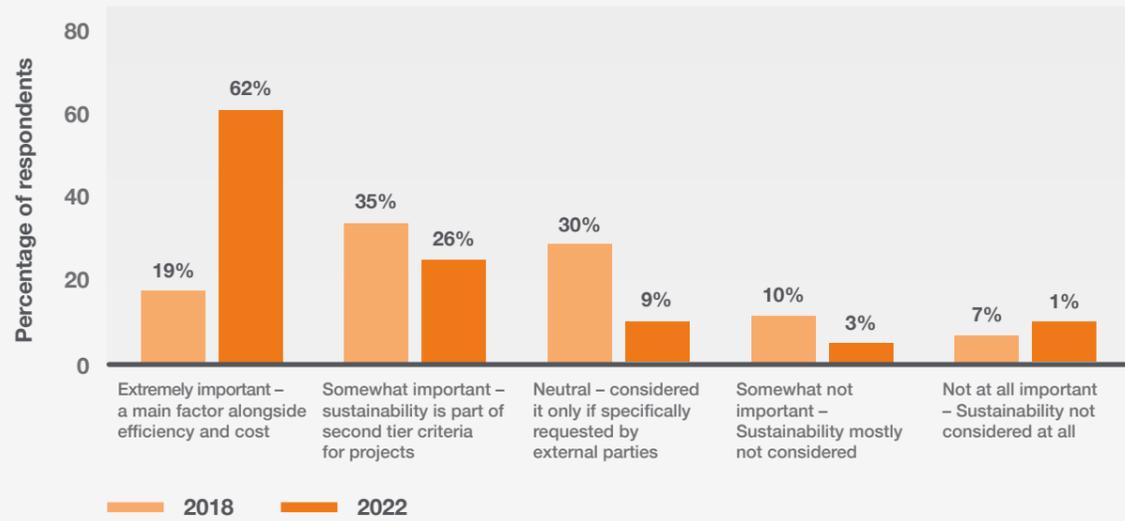
(Number of employees)

- 1-2 (9%)
- 3-20 (16%)
- 21-50 (19%)
- 51-250 (17%)
- 251-1000 (11%)
- 1001+ (29%)

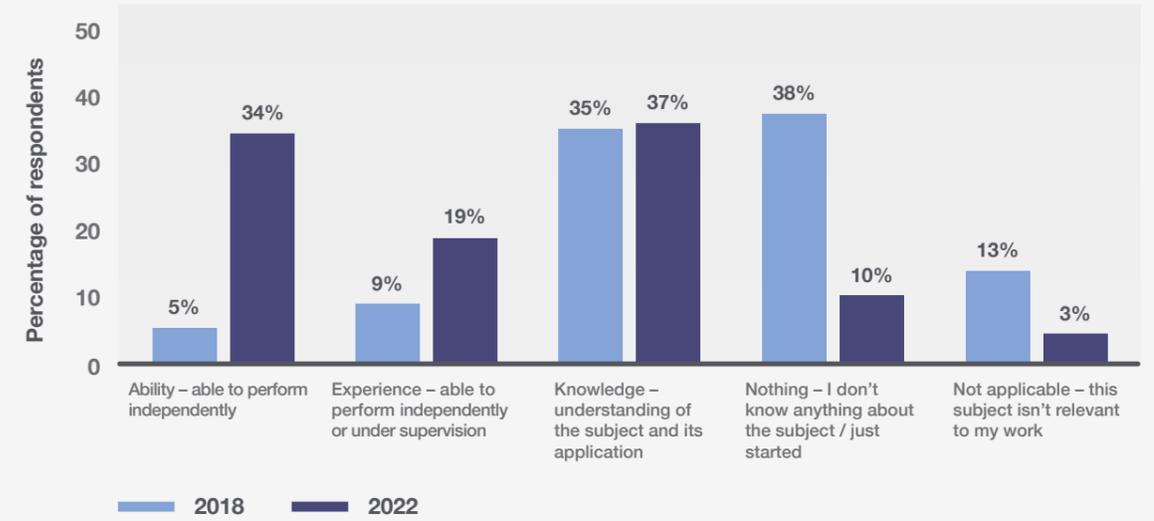


Our members

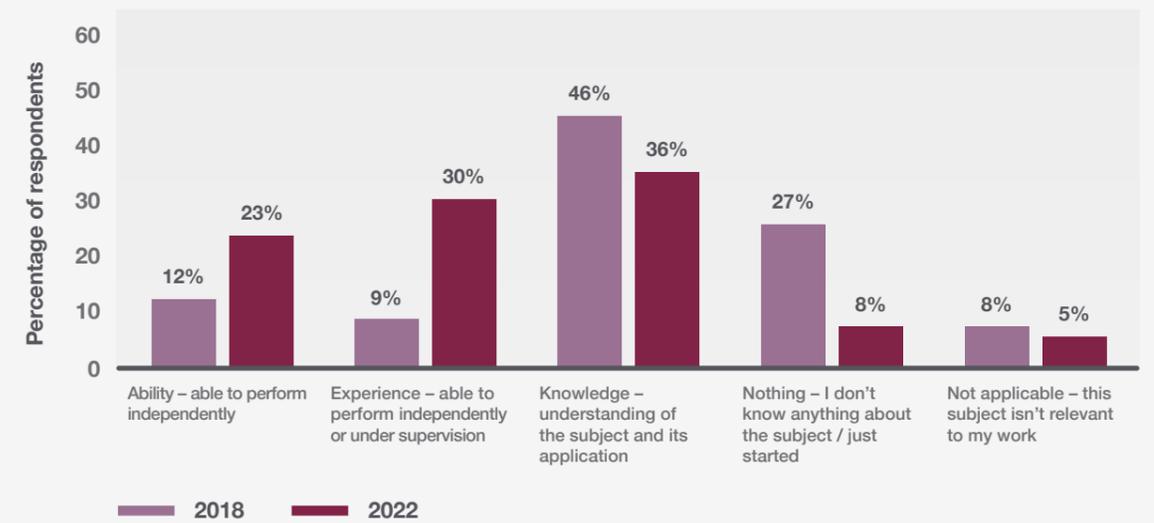
Importance of sustainability



Embodied carbon competence

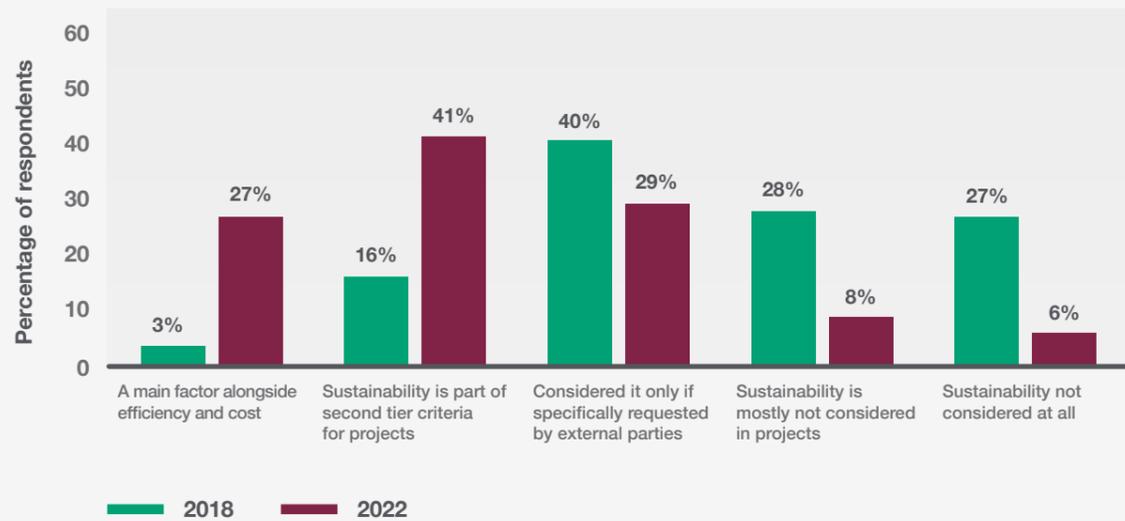


Circular economy competence



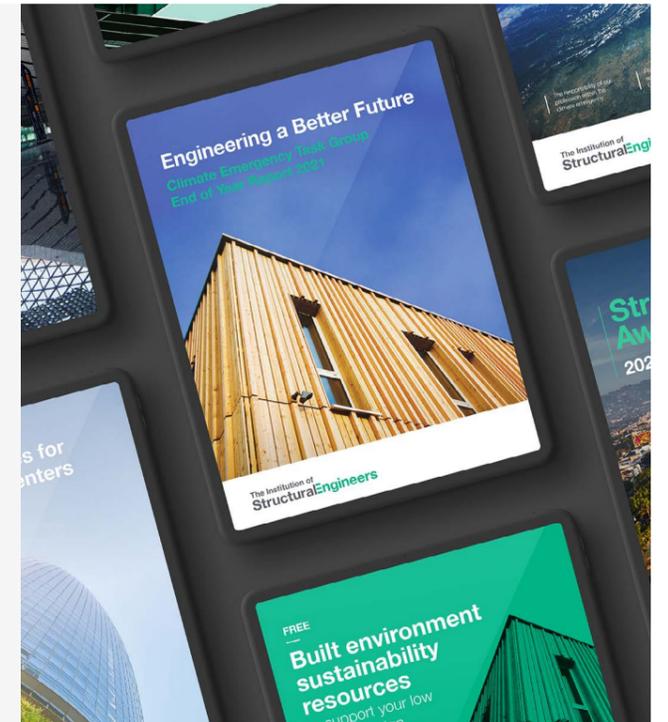
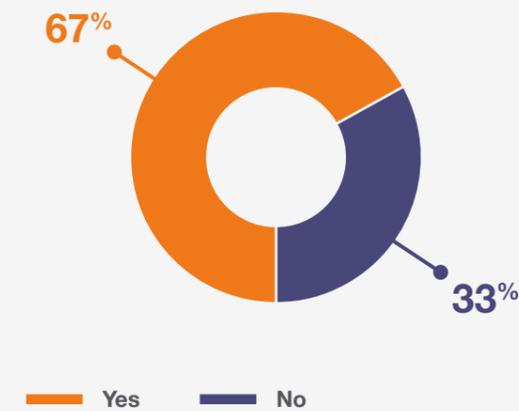
Members' clients

Sustainability priority for clients

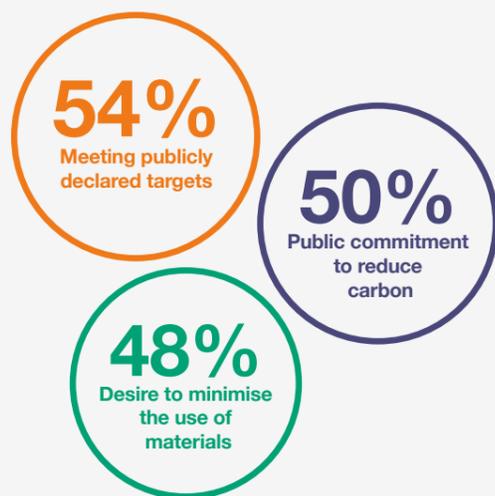


IStructE resources

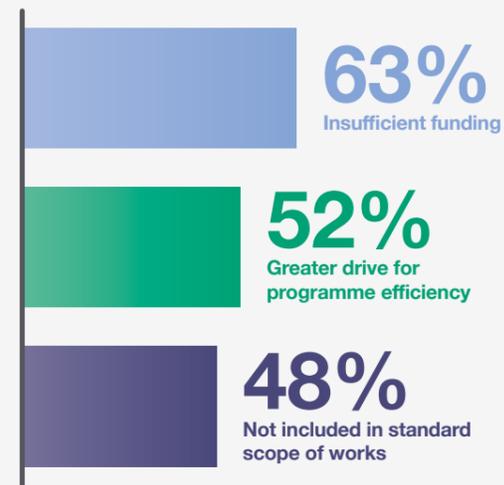
What percentage of respondents use IStructE resources in their work?



Clients' main sustainability drivers



Clients' main sustainability blockers



Most useful resources



Looking forward to 2024

Our aims for the next year are based around our goal of helping all members to achieve a high level of ability in working with and reducing embodied carbon, whilst also developing their knowledge around wider aspects of sustainability and regenerative design principles.

Embodied carbon and resource use

- Identify opportunities for the Institution to provide targeted embodied carbon guidance for smaller and non-UK firms.
- Produce simple introductory embodied carbon guidance for clients and other disciplines adjacent to our profession.
- Continue our active involvement in the development of the UK Net Zero Carbon Buildings Standard and Part Z.
- Review both *How to calculate embodied carbon* and *The structural carbon tool* in line with recent updates to the RICS Professional Standard on **Whole life carbon assessment for the built environment.**

Holistic sustainability

- Create guidance focussing on the impact that the use of construction materials can have on both nature and society.
- Raise awareness around key non-structural carbon issues that impact the closest design decisions that our collaborators need to make, such as on energy use.
- Work with the Young Members' Panel to produce bitesize circular economy guidance notes, tackling resource use as well as carbon.

Regenerative design

- Work with industry partners to influence policy, codes and norms, aiming higher in the system for greater change.
- Distil learning points from *The regenerative structural engineer* to share with members.
- Collaborate with other industry bodies such as UKGBC to share lessons on regenerative design and systems change.



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