



Raising Standards

Climate Emergency Task Group
End of Year Report 2022

Forewords



This is our third annual report and, thanks to so many people's commitment and hard work, we have more than ever to say. Please enjoy and while looking back at the year, start to anticipate the changes ahead.

I'm very excited by this year's redefinition of what is expected of our profession – from the requirements of the Structural Awards and the Joint Board of Moderators' degree courses – to the Institution's support of Part Z proposals for the Building Regulations.

However while looking back at the past year, we are also reminded of all we have yet to achieve. The outcomes of COP27 show how vulnerable the 1.5°C limit really is. It is crucial that engineers and our professional bodies keep pressing for changes that drive construction emissions to zero as quickly as possible if we are to avoid the most catastrophic changes to our world.

In 2023 the Institution will continue to provide practical guidance to help members achieve lower carbon outcomes. We will also be showing our members how to make changes beyond carbon – helping them understand how designs can be regenerative by building stronger and more engaged communities and delivering positive outcomes for the natural environment. This will make new demands on the ingenuity of our engineering but also require us to dig deeper into our own ethical approach to being professionals. The IStructE Code of Conduct expects all members to “have regard to the public interest” - this has never been more important for us to respect and achieve in a rapidly changing world.

To conclude, I must express my personal gratitude and that of the Task Group to Martin Powell. He has encouraged and enabled us to effect change in the Institution that I would not have thought possible, putting us at the vanguard of climate emergency response in the built environment. Although Martin is moving on in the Spring, he leaves behind an Institution well positioned to build off these foundations with energy and conviction.

Dr Mike Cook

Chair, The Climate Emergency Task Group



In our 2021 review, I urged all readers, wherever in the world they were based to set their own personal climate action objective in their professional life. I wonder how many felt able to rise to that challenge.

We are now only seven years away from 2030, the date the world is targeting for the halving of global emissions. With each passing year, the size of the challenge becomes increasingly onerous and inevitably the point will come where it becomes a practical impossibility to meet that target. The narrative for success does not make comfortable reading, not least, the mixed response from governments around the world where rhetoric does not always match action and where sometimes even the rhetoric is missing.

None of this can be allowed to diminish the structural engineering profession's ambition to make real change in the reduction of embodied carbon and in writing this forward, I believe we are entitled to allow ourselves a modest round of applause for the grit and determination that is being shown by the Institution in supporting individual members as well as companies take appropriate actions. The tools and information to make change to design practice has never been better and I salute all those who have contributed in anyway to this development. The Institution's Climate Emergency Task Group and our Head of Climate Action Will Arnold have been tireless at every step of the way. Our collaborative energies ensure we are not operating in a vacuum and increasingly we are working behind the scenes with other parties in advocating change to UK regulations. Regulation must go hand in hand with the changes and innovations that are in the gift and capability of the profession to deliver if we are truly to make sustained progress.

I have no doubt that the Institution will continue to be at the vanguard of change in the year ahead and hope that this annual review of progress will encourage you to review, benchmark and reflect on what more might need to take place within your own sphere of influence. We truly need to be in this together.

Martin Powell

Chief Executive, The Institution of Structural Engineers

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Introduction

Welcome to the 2023 End of Year Report from the Institution's Climate Emergency Task Group (CETG). Since we formed the task group in 2020, we have continued to lead the way in bringing embodied carbon into the standard practice of structural engineers around the world.

We hope that this report gives you hope for the progress being made by the profession in making the world a better place for all living things. 2022 saw more firms than ever commit to calculating and reducing carbon on every project they work on, with embodied carbon becoming "the norm" for many practitioners, and the 'Structural Engineers Declare' movements continuing to grow around the world.

As always, we say thank you to the extraordinary number of members who dedicated time and attention to the generation of ideas, production of new guidance, and similar contributions to help our community of engineers to tackle the climate crisis. In this report, we highlight some of the fantastic achievements of the past 12 months, and look forward to 2023. We have also updated last year's Sustainability Resource Map, on page 12, with all the latest guidance.

Next year is exciting, with a true raising of standards being implemented throughout the year. Changes to our Initial Professional Development and Exam come into force, complementing the updated Structural Awards format that was introduced in 2022. We will also be refocussing our efforts during the year, bringing much needed attention to topics such as the circular economy, and material decarbonisation.

Finally, we would like to draw your attention to our **Sustainability Skills Survey**, which will remain open until 28 February 2023. In it, we ask respondents to reflect on the progress made across the last four years, and ask for ideas on how we can do even more over the next.



2022 Key Activities

Collaborate and influence

Outreach

We are proud to have grown our global network during 2022, enabling us to reach both members and non-members around the world. CETG members have presented on structural sustainability, both virtually and in-person on behalf of the Institution. Presentations were delivered to audiences in Australia, Hong Kong, Iceland, India, the Netherlands, South Africa, Sweden, Switzerland, the USA; and at pan-regional events in Europe and the Caribbean.

Education

We also presented the work of the CETG and Institution to a number of universities around the UK throughout the year, alongside our work feeding into cross-industry groups such as the Royal Academy of Engineering Sustainability in Education group, and the Joint Board of Moderators. Sustainability continues to become embedded in education systems around the world, and we know that more and more graduates are entering our profession as an opportunity to “do good” with their career.

Carbon Regulation

Spearheading the call for regulation of whole life carbon emissions in the UK, our leadership of the **Part Z** industry proposal continues to drive debate in government. This year we held a formal launch event in Parliament, and have supported two separate MPs that have attempted to introduce such legislation through private members bills. We also presented on the work of our industry at an international whole life carbon conference run by Government in October, where it was demonstrated that the Part Z recommendations are aligned with much of the changes we see overseas. It is clear to us that whole life carbon regulation in the UK is a case of “when” rather than “if”, and we expect to see countries around the world follow suit.

Standardisation

We also recognise that the industry cannot simply wait for carbon regulation to be introduced, and so have been giving extensive support to the development of the **UK Net Zero Carbon Buildings Standard** – which we believe to be the first such initiative in the world. When launched next year, the Standard will contain the relevant carbon limits and requirements to enable clients, developers and funders to specify buildings in accordance with an industry approved specification for what counts as “net zero”.

The CETG and Institution are involved at every level of the Standard’s development and its long-term governance.

Support the profession

The Structural Carbon Tool

We updated and relaunched The **Structural Carbon Tool** early in the year, to coincide with updates to **How to Calculate Embodied Carbon** (see “Guidance”). The tool continues to be used widely across the industry, with many firms unlocking and adapting it to suit the specific needs of their firm.

We were particularly proud to see the tool win two awards during the year – the “People’s Prize” from the Alliance for Sustainable Building Products, and the “Best Sustainability Initiative” award from MemCom, the body for professional membership organisations.

Structural Engineers Declare

The CETG continues to support the work of the Declaration who have now formed an Action Group to continue to drive change amongst firms going forwards.

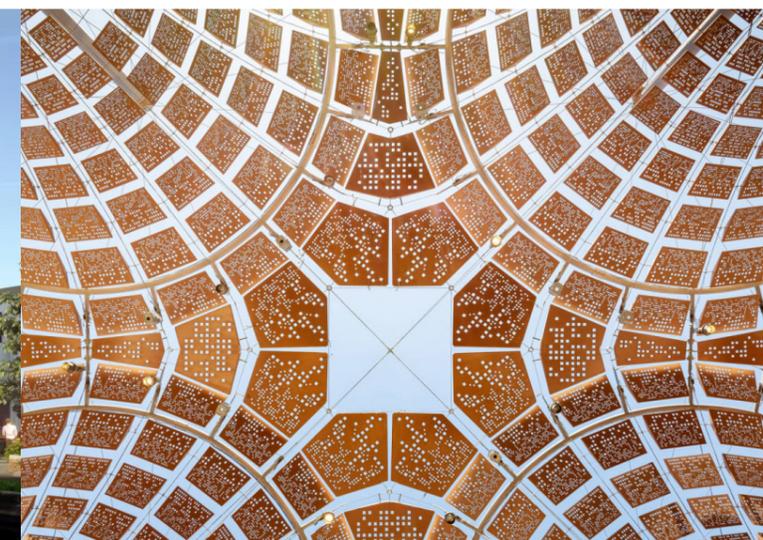
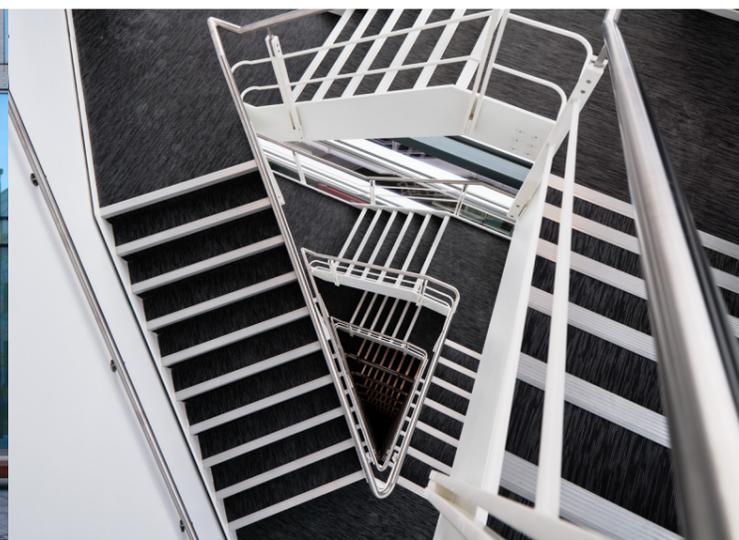
As in previous years, the Institution hosted the annual Structural Engineers Declare Summit, and it was a delight to see this run for 2022 as a hybrid event, with around 70 firms represented at Bastwick Street, and the same again dialling in online. The event opened by reflecting on the significant steps that firms have been taking to embed sustainable thinking in their work (from carbon-crunching of entire portfolios of work, to championing designs that utilise hundreds of tonnes of reclaimed steel sections). The event then looked forwards to next year and explored what change is needed.

Sustainability Open Spaces

We continue to champion the Institution’s Sustainability Open Spaces (SOS) initiative – informal groups in which members and other engineers can join together to share climate related issues, questions and ideas with each other. Typically run on a regional level, the groups are open to any members who are interested, including those who have little sustainability expertise themselves, but want to hear from others. To join a group, please contact your **region’s committee** in the first instance, or alternatively by emailing climateemergency@istructe.org with a subject line of “SOS”. You can keep up to date on activity through the **Sustainability Open Spaces LinkedIn page**.

Template Sustainability Report + Sustainability Checklist

Finally, we published both a template Sustainability Report, and an accompanying sustainability checklist. These tools enable engineers to ensure that they are covering a wide range of sustainability aspects on their projects, and to effectively communicate these ideas to their clients. The template Sustainability Report can be downloaded from **The Structural Plan of Work webpage**, and the complementary checklist can be viewed at **on its own page**.



Guidance

How to Calculate Embodied Carbon 2nd Ed

Our industry-leading guide [How to Calculate Embodied Carbon](#) was updated and relaunched, to reflect the industry's understanding of embodied carbon, and the quality of carbon data, research and thought leadership. Key updates were made to our communication of timber and sequestration, and carbon factors for materials including steel and concrete were brought in to line with current thinking.

The Structural Engineer

As the Institution continues to normalise sustainability within the profession, the focus of articles within the Institution's magazine likewise progresses towards embedding sustainability within all the content rather than focussed within a specific section. During the year, the CETG continued to help generate sustainability guidance for the magazine, with articles published during the year covering topics from unlocking circular economy potential to reducing carbon in new-builds.

Courses

Over 500 people accessed our [Embodied Carbon Basics free eLearning course](#), which outlines the fundamentals of calculating embodied carbon on structural projects. The content is taught through a series of short videos and quizzes and covers topics ranging from the carbon implications of different materials to the differences between how we talk about new-build and reuse projects.

Our [Net Zero Structural Design](#) taught course was similarly popular, with nearly 100 people completing the five-week interactive programme, and gaining tools and techniques for challenging briefs, creating low-carbon ideas, and promoting better solutions to clients and collaborators. Sign-ups are now open for the four cohorts that will be run in 2023.

Climate Emergency Conference

This year's conference centred on three topics – carbon, broader sustainability, and influence. It featured presentations on topics from materials to circular economy, plus a panel debate looking at the influence engineers can have on the design process when working well with their clients.

Videos from the 2020, 2021 and 2022 conferences are shown alongside other relevant recordings in the table on Page 14.

Holistic sustainability guidance

Through the year we held discussions and hosted workshops to identify the broader areas of sustainability where structural engineers can have most impact. The outcomes will be used to identify areas of guidance to be developed in 2023. This included running a workshop with the Institution's Council - three years on from their last discussion around the UN Sustainable Development Goals.

Standards

Joint Board of Moderators Accreditation

As of October 2022, all JBM-accredited civil engineering degree programmes need to place the climate emergency central to the curriculum, in line with the relatively new [JBM guidelines](#). Universities have been asked to confirm that this has been achieved, and all JBM visits are now assessing programmes against the new guidelines.

Initial Professional Development and Exam

Last year the Institution undertook a review of our routes to membership and specifically the assessment criteria for the Professional Review Interview and Examination. The review led to changes in the assessment criteria which will be introduced in 2023. The CETG has been supporting this by providing guidance for interviewers and examiners on the sustainability aspects of the new criteria.

Continued Professional Development

Away from the CETG, but relevant to this Report, the Institution's Board agreed that from 2023, a greater emphasis should be placed on sustainability as part of the Institution's CPD requirements, to bring it in line with our safety requirements. The CETG will work with the Institution in the coming year to bring this to fruition.

The Structural Awards

This year the CETG worked with a task group set up by the judges of the Structural Awards to finalise a new approach to the Awards, moving the focus away from scale, stature, and span, and towards celebrating how our work impacts on people, the planet, the profession, and the process of design and construction. We were proud to see this change result in a renewed focus at both shortlisting and the Awards ceremony itself in November, and encourage readers to look at the awards [website](#) to check out this year's winners.

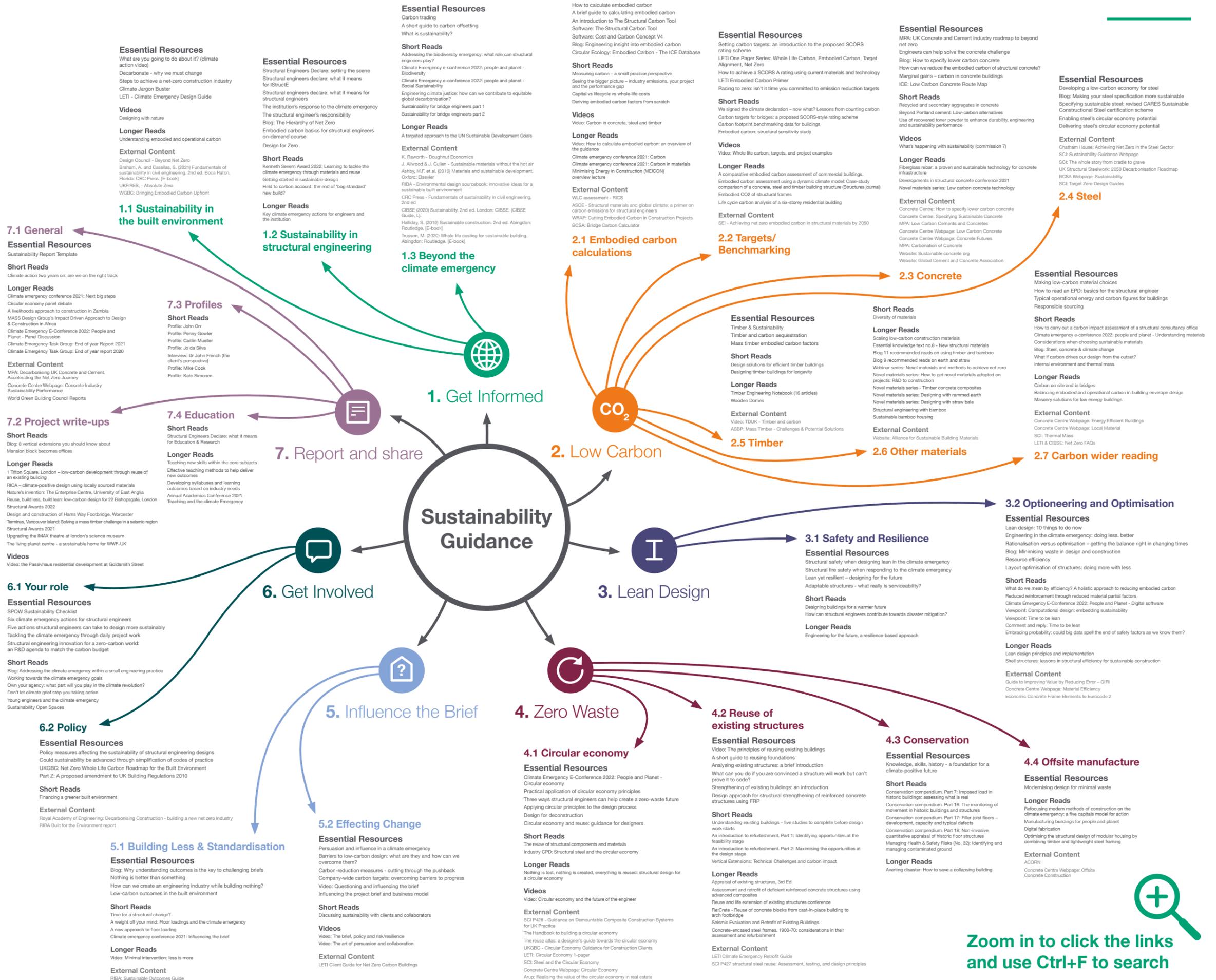
Society for the Environment

The Institution became a Member of the [Society for the Environment](#) at the end of 2022, and are working towards Licensed Membership in 2023. Once complete, this will enable us to start processing candidates for Chartered Environmentalist (CEEnv) status in 2023 – allowing members that lead on sustainability through their work to gain formal recognition for this.



Sustainability Resource Map

Please Note: These resources are highlighted to the reader for their potential value/interest. Further resources are available via the "see more" links on the Climate Emergency webpage, as well as new resources published since the last update to the resource map. Some have been produced by third parties. The Institution of Structural Engineers does not necessarily endorse (nor is it responsible for) any statement or opinion expressed within these.



Zoom in to click the links and use Ctrl+F to search

Videos

General
Video
What are you going to do about it?
A targeted approach to the UN Sustainable Development Goals
Minimal intervention: less is more
Designing with nature
The art of persuasion and collaboration
How to calculate embodied carbon
Circular economy panel discussion
The business case for the reuse of buildings
The learning outcomes for professional membership (annual academics conference):
COP26 Sustainability in the built environment - panel discussion



Structural Engineers Declare Summit 2021
Video
Part 1 - Where are we now?
Part 2 - At the crest of the wave
Part 3 - Emergency action next steps



Novel materials webinars
Video
Webinar series: Novel materials and methods to achieve net zero
Novel materials series: Designing with rammed earth
Novel materials series: Designing with straw bale
Novel materials series: Low carbon concrete technology
Novel materials series - Timber concrete composites
Novel materials series: How to get novel materials adopted on projects: R&D to construction



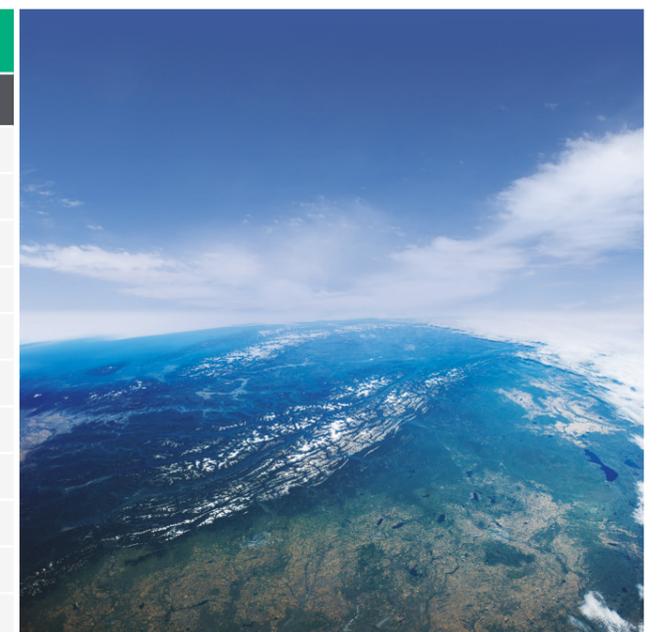
Climate Emergency Conference 2022
Video
Understanding materials
Use less stuff
Digital tools for reducing carbon
Circular Economy
Biodiversity
Social Sustainability
Panel discussion on influence and persuasion



Climate Emergency Conference 2021
Video
Influencing the brief
Carbon
Carbon in materials
Carbon on site and in bridges
Next big steps



Climate Emergency Conference 2020
Video
The climate emergency, and what the Institution is doing about it
Understanding carbon
Lean design principles and implementation
Modernising design for minimal waste
The principles of reusing existing buildings
Questioning and influencing the brief
Getting involved in sustainable design
Working towards the climate emergency goals
Making changes within the practice's daily project work
Making changes to influence the project brief and business model
Key climate emergency actions for engineers and the Institution



Looking forward to 2023

As we move into 2023, it is more critical than ever that we keep the industry's pace of change up. COP27 highlighted how precariously the global target of 1.5°C warming rests in the balance, and all industries need to take this opportunity to redouble their efforts to tackle climate breakdown.

For this reason, the Climate Emergency Task Group's primary focus in 2023 will be on embedding the carbon literacy that we have started to develop across the membership during previous years. We need to rapidly reach a point where all structural engineers across the world can estimate the embodied carbon of their projects, reduce this through efficient and appropriate use of new material, and work with supply chains to specify materials in a manner appropriate for the whole planet. Supporting this, we also need to enable engineers to start embedding circular economy and regenerative principles throughout their work, in order to maximise our impact around the world.

As such, the CETG's focus for 2023 will be across four areas:

On **carbon literacy**, we will:

- work to develop embodied carbon understanding across a greater cross section of membership through articles, talks, and regional group visits, including a presence in the UAE during COP28.
- raise awareness across the membership of the updated requirements around Initial Professional Development, the Examination, CPD and the Structural Awards.
- collaborate with the UK construction industry to publish the country's first *Net Zero Carbon Buildings Standard*, creating a level playing field for clients and developers, and encouraging investment in sustainable buildings. If necessary, we will also publish Institution guidance related to the Standard, and start updating *How to calculate embodied carbon* and *The structural carbon tool*.

On **materials**, we will:

- publish Institution policy papers consolidating knowledge on the sustainable use of concrete, steel and timber – including consideration of the larger system impacts beyond individual projects.
- commission short briefing notes on material innovations that the Climate Emergency Task Group have identified as being 'ones to watch'.
- publish guidance looking at the broader impacts of materials beyond carbon.

Around the **circular economy**, we will:

- publish a new guide, *Circular economy and reuse: guidance for designers*, and raise awareness of its contents through the year.
- create additional bitesize circular economy guidance throughout the year to supplement the guide, aiming to include the "non-carbon" benefits of circular design.
- seek out additional case studies of projects to feature in blogs and *The Structural Engineer* articles.

To **widen our responsibility**, we will:

- publish structural engineer focussed guidance around biodiversity, social impact, resilience and resource use, relating to UNSDGs as appropriate.
- publish guidance around Regenerative Design and its relationship to structural engineers.



The Institution of Structural Engineers
International HQ
47-58 Bastwick Street
London, EC1V 3PS
United Kingdom

T: +44 (0)20 7235 4535
E: climateemergency@istructe.org
W: www.istructe.org

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