

Annual review:
Generation regeneration



2021

Our mission

Engineers must play a fundamental role in designing solutions that will ensure humanity and the planet thrive. To achieve this, we are inspiring and upskilling individuals and organisations to put global responsibility at the heart of engineering.

A message from...

Our Chief Executive

It's now over two years since we launched our strategy for 2021-2030 and we are beginning to see the impact.

We have re-aligned resourcing and activities to our goal of reaching a positive tipping point where global responsibility is at the heart of engineering. We have actively grown our design challenges for universities and professionals. We have remained forward-looking despite a persistently challenging economic backdrop, taking difficult decisions on how we fund our activities to ensure we remain financially sustainable. We have restructured the staff team and recruited new Trustees with extensive industry experience, including a new Chair.

Crucially, we have centred our efforts on two key pillars: **reimagining education** and **reshaping practice**. In both cases, our focus is on systems change, supported by resources that we have developed in collaboration with others: a Reimagined Degree Map and a Global Responsibility Competency Compass. These - and other complementary resources - are designed to equip and empower changemakers who share our vision.

A particular highlight of this year has been the Systems Change Lab, bringing together educators, students, industry and institutions to find practical ways to embed global responsibility in university courses.

In our 20th anniversary year, in 2024, we hope to see changes in university curricula and further progress towards placing our Competency Compass at the heart of professional development. As this report shows, all that we achieve is thanks to the dedication and support of our many volunteers, Chapter members, trustees, staff, partners and collaborators.

Together we are a movement for change.

John Kraus

Chief Executive



Reimagining education

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Is it fair to expect students to graduate into an industry tasked with fixing the climate crisis, when they haven't been adequately equipped with the skills necessary to do so?

Students studying engineering choose it because we wish to be change makers, at the forefront of innovation and responsible for redefining the future of the planet.

In an [NUS sustainability skills survey](#) of more than 30,000 students, over 60% of university students expressed that they would like to learn more about sustainability - a testament to the collective consciousness of this generation of students. But what about the remaining 40%? Even if someone isn't intrinsically motivated by sustainability, their actions as an engineer will still have an impact on people and planet.

We must ensure that engineering curricula are designed not just to impart technical knowledge but also to cultivate a deep understanding of the impacts of engineering decisions and the ethical responsibility that accompanies innovation.

It is important to recognise that while in most cases students are taught about sustainability, it is often in an isolated way. As students we acquire pockets of understanding, but this is often too simplistic for the complexity of the subject. What we require is a systemic understanding, one that connects the dots and reveals how everything fits together in context. Without these connections, any impact will be less effective.

Ellie Carey

Student at the University of
Bristol and Engineers Without
Borders UK Student Champion



We are catalysing change in engineering curricula, with the launch of our first Systems Change Lab.

Almost 20 years after Engineers Without Borders UK was formed as a response to widespread dissatisfaction with engineering curricula, we are looking at systemically improving engineering degrees to ensure that the engineers of tomorrow are equipped with the skills to meet global challenges.

In today's world, a traditional focus on technical skills is insufficient. We are now focused on reinventing how we educate engineers to be globally responsible. Universities still produce a mainstream of engineering graduates with little more than basic sustainability skills, typically delivered as a bolt-on or afterthought. And yet we need sustainability to course through the veins of the curriculum, embedded in every module, in every discipline.

We are determined to build on over 20 years' unrivalled experience of working closely with university educators and accrediting bodies, to transform university education for engineers. As such, we are thrilled to have launched our first [Systems Change Lab](#) in partnership with the Royal Academy of Engineering.

The Change Lab brings together a representation of all the groups who shape engineering degrees, including deans, heads of departments, educators, accreditors, industry players and current engineering students. Together, we are exploring and testing why and how to integrate global responsibility as a central feature within university engineering education.

Running until at least March 2024, the Change Lab will help to co-create a Reimagined Degree Map - a new toolkit that supports universities to navigate how to design degrees that create globally responsible engineers. This has been endorsed by the Engineering Council as a progressive interpretation of AHEP 4.



Change makers attending the in-person Systems Change Lab event in September

"The Change Lab has sparked a powerful educational movement that is working to empower students with the transferable skills, ethical awareness, and agility to co-create equitable solutions to global challenges. I'm thrilled to be joining forces with students, organisations, and fellow educators to drive this transformation."

Sarah Junaid, Senior Lecturer and Programme Director for Mechanical & Design Engineering, Aston University

Student finalist presenting their project at the Engineering for People Grand Finals in Govan



"The whole experience was so positive that, going forward, we've all committed to grabbing every similar opportunity with both hands. We genuinely think this is going to have a lasting impact on our lives [...]"

2022/3 winners of the Engineering for People Design Challenge

We're continuing to expand our in-curriculum design challenges, offering students the opportunity to design for people and planet.

Each year, we facilitate **over one million hours** of learning on globally responsible engineering, reaching a quarter of UK engineering undergraduates.

Our flagship programme, the Engineering for People Design Challenge, aims to bring to life real-world challenges in a safe and supportive environment, through a project-based learning approach. Since its inception in 2011, it has benefited over 70,000 students worldwide.

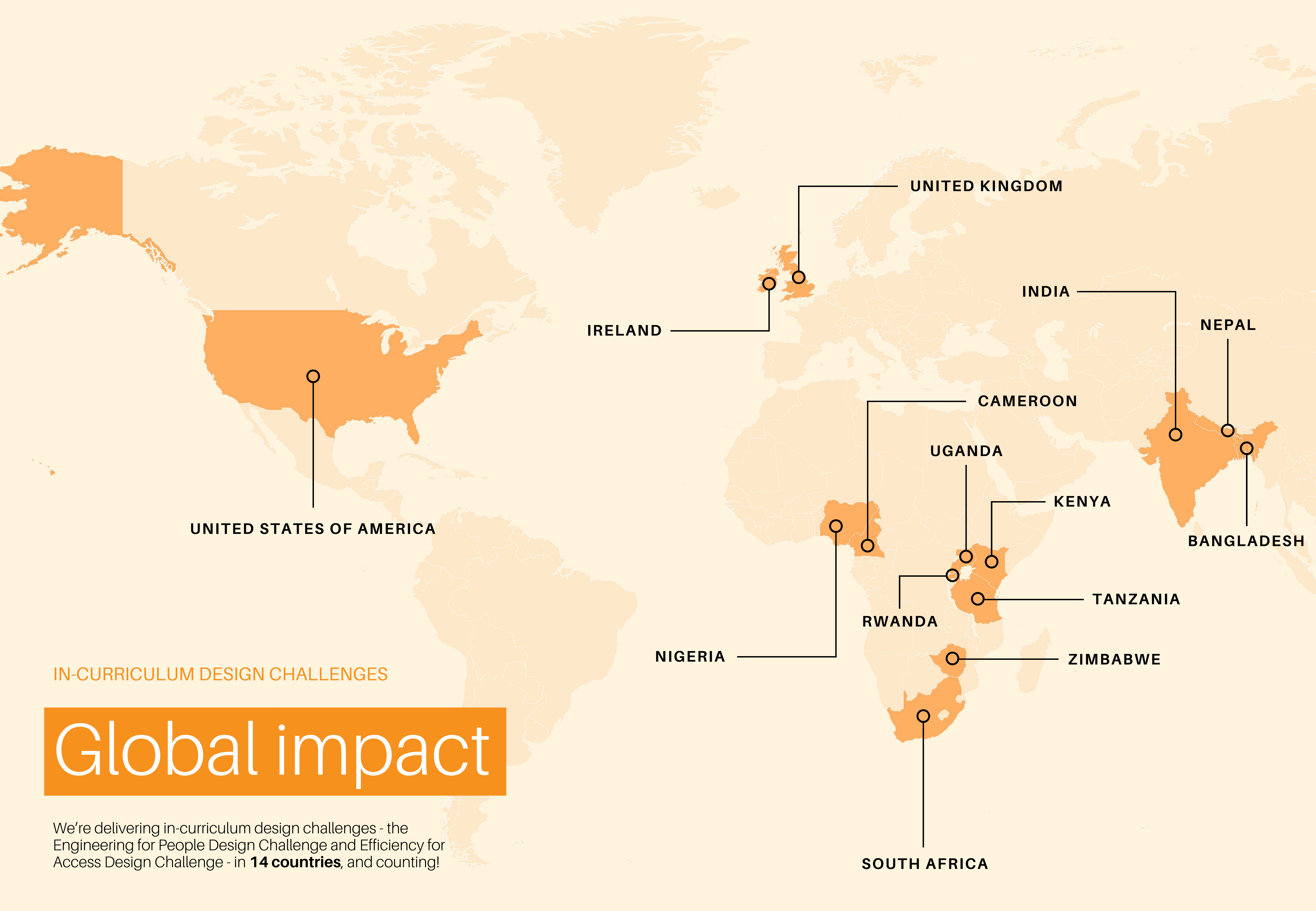
This year, the programme reached over 11,000 students across Cameroon, Ireland, South Africa, the UK and the USA, who came together to design solutions to address engineering challenges in Govan, Glasgow.



The challenge culminated in the Grand Finals event, hosted in Glasgow, where a team from the University of Greenwich took home first prize for their concept, 'Health Pod'. [Discover the winning solutions.](#)

To support the continued evolution of the Engineering for People Design Challenge, we are working with independent consultants, Insley Consulting, to capture the long-term impacts of the programme on engineering education and to build recommendations for the future of programme to ensure its impact is even more meaningful for the sector.

Alongside this, we co-delivered the fourth instalment of the Efficiency for Access Design Challenge, a global, multi-disciplinary competition that empowers teams of university students to help accelerate clean energy access. This year's challenge reached 11 universities and over 100 participants across three continents. [You can explore this year's designs](#) on the open-source platform, Crowdsolve.



UNITED STATES OF AMERICA

IRELAND

UNITED KINGDOM

INDIA

NEPAL

CAMEROON

UGANDA

KENYA

BANGLADESH

TANZANIA

RWANDA

ZIMBABWE

NIGERIA

SOUTH AFRICA

IN-CURRICULUM DESIGN CHALLENGES

Global impact

We're delivering in-curriculum design challenges - the Engineering for People Design Challenge and Efficiency for Access Design Challenge - in **14 countries**, and counting!

Our student movement is inspiring change at universities across the country.

Engineers Without Borders UK was founded by a group of students in 2001. To date, students remain a central voice in the movement, providing critical input to our work to reimagine engineering education.

We now have 24 active student Chapters, this year welcoming 2 new Chapters at the University of Leeds and Heriot-Watt University.

This year we were also delighted to celebrate Engineers Without Borders - University of Bristol's 20th anniversary, making it the longest consecutively running student Chapter. Chapter President, Isabel Dodd, shared what the Chapter has achieved in this time and what's to come in a [blog on our website](#).

Highlights from across the Chapter network this year have included [EWB Imperial's attendance at The Great Exhibition Road Festival](#); EWB Sheffield organising their first Green Careers Fair; EWB Glasgow developing resources for STEM outreach; and several Chapters running their own Designathons. Chapter members also attended and spoke at several of our events, including the Systems Change Lab, where Ellie Carey (University of Bristol) and Patrick McAdam (Imperial College London) opened and closed the events with powerful keynotes.

To maximise the student voice within the Engineers Without Borders movement, this year we've evolved how we engage with Chapters. Following our annual Building Community Leaders event, hosted at Aston University in October, we have delivered a number of changes to improve communications between the Chapter network and expand their reach.

Supporting us to deliver these changes are a group of 6 Student Champions, who have each been assigned Chapters in groups of locality. The aim of this is for Champions to encourage and help Chapters to collaborate with other nearby Chapters.

Student Chapter members attending the annual Building Community Leaders event



Change makers attending the in-person Systems Change Lab event in December



We've joined forces with organisations who share our commitment to global responsibility.

We recognise that, alone, our ability to achieve transformation at the speed and scale required is limited. With this in mind, we've had another impactful year working with strategically-aligned organisations to transform engineering education.

We began work with our strategic university partner, City University, to develop an Engineering in Society module, enabling students to develop their portfolios as future leaders, while broadening their skills and understanding of how to be globally responsible in their professional lives. We also supported two students on the University of Warwick's MSc Humanitarian Engineering programme to develop their dissertations, which will contribute to the development of the Engineering for People Design Challenge and Reimagined Degree Map.

As part of our partnership with TEDI-London, we extended an internship opportunity to Anya, a finalist in last year's Engineering for People Design Challenge. Anya actively contributed to shaping this year's design brief for the challenge ([watch her Day in the Life video here](#)) and enhanced the support offered for Chapters.

In September, we attended the European Society for Engineering Education (SEFI) [2023 conference for Engineering Education for Sustainability](#), attended by professors, students and industry representatives from 41 countries. Here, in collaboration with the Royal Academy of Engineering, we published and presented a conference paper on *Tools To Reshape Engineering Education To Prepare Students And Professionals To Be Globally Responsible*. The paper introduces the Global Responsibility Competency Compass and Reimagined Degree Map, exploring what they mean for educators, as well as the outcomes and perspectives gathered through testing the tools.

We also worked with the Engineers Professors Council and the Lemelson Foundation on a new workshop: [How to Use New Tools to Integrate Sustainability into Engineering Teaching](#). The workshop introduces three new tools designed to help engineering educators make changes across curriculum: The Reimagined Degree Map, which we have developed with the Royal Academy of Engineering; the Sustainability Toolkit (Engineers Professors Council); and the Engineering for One Planet framework (Lemelson Foundation).

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As we see in the news every week, the climate and nature crises are a reality *now*, impacting the natural world and communities worldwide.

We don't have time to wait for the next generation of graduates to deliver the change needed. All professionals working today have a duty to step up and develop their skills and capabilities to embed global responsibility across every aspect of their work, and advocate for change in their projects, teams, and organisations.

Engineers Without Borders UK is supporting professionals and their employers to define what that may look like.

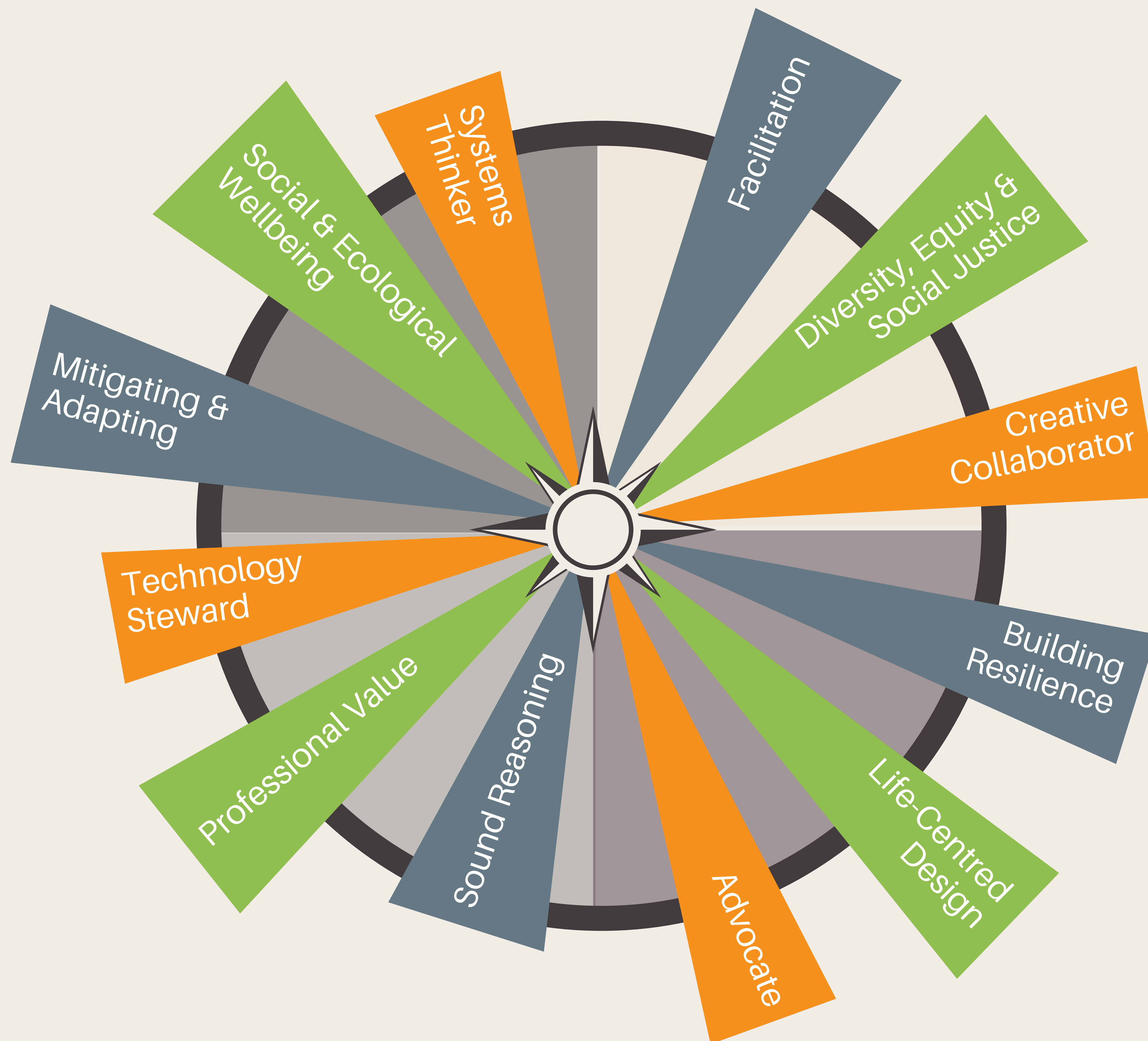
Milly Hennayake

Senior Civil Engineer at Arup
and Engineers Without Borders
UK Change Maker and
Member-Elected Trustee



Reshaping practice

Introducing the Global Responsibility Competency Compass



We launched a brand new tool, supporting professionals to develop capabilities needed to stay relevant in the face of global challenges.

In June we launched an innovative tool, the [Global Responsibility Competency Compass](#), which points practitioners to the capabilities needed to stay relevant in the context of today's challenges and provides practical ways for them to develop themselves.

Alongside the tool is an up-to-date Learning Library - a curated bank of resources that will help individuals find practical learning related to each of the 12 competencies. If you have an idea of how we could evolve this space, or a suggestion for additional learning, we would love to hear from you at community@ewb-uk.org.

Critically, the Compass has been endorsed by the Engineering Council as a progressive interpretation of UK SPEC. [Read here](#) for perspectives on why this could be really powerful.

To support the tool's uptake across the sector, we delivered two training sessions with the Institution of Civil Engineers's 1,000 person strong reviewer community, which explored how to use the Compass and provided support for how they could assess professional commitment as part of the interviews informing professional qualifications.

We have also created training to be featured on the WFEO Academy's website and are now actively seeking people who would like to contribute as we explore how teams can benefit from using the compass.

"Engineering Council endorses the use of the Global Responsibility Competency Compass as a progressive interpretation of UK-SPEC. This tool helps to bring to life and articulate the skills and actions everyday engineering professionals need to act in a way that is sustainable, equitable and ethical."

Engineering Council

We are bringing regenerative approaches to the fore.

For a second year, we supported Constructivist to deliver the [Regenerative Design Lab](#), a six-month accelerator programme for leading engineering and construction industry professionals interested in bringing regenerative approaches to the fore of everyday practice. Through the programme, participants have the opportunity to learn about regenerative design principles and support each other to put them into practice.

The overarching mission of the Lab is to find out what works and communicate it to the rest of industry. To ensure wider systems change, we are also supporting a special edition of the Lab for senior policy professionals, which will hold a particular focus on policy-driven regenerative design for engineering and the built environment.

“The Regenerative Design Lab has provided me with a vision of hope for a construction industry which can truly make the world a better place. It gave me the time to begin to understand and think regeneratively and the confidence to take this into my project work, to clients and the wider industry.”

Regenerative Design Lab participant

Outside of the Lab, we also featured in the [August edition of *The Structural Engineer*](#), by the Institution of Structural Engineers', which looked at adopting regenerative principles for a nature-positive future. Our piece - *Moving towards co-creating with communities* - authored by Innovation Director, Emma Crichton, delved into why the shift towards co-creating with communities is an essential component of regenerative design and how it will affect the role of structural engineers.

Cohort 1 participants of the Regenerative Design Lab at Hazel Hill Wood



Morgan da Silva speaking at the *Technology: For all?* panel event in October



We are showcasing the inspiring work of change makers across the sector.

We recognise the power of storytelling to inspire change in practices.

In October, we hosted a panel discussion focussed on one of the 12 competencies of global responsibility outlined in the Compass - Technology Steward, where we heard from guest speakers about the issues, challenges and opportunities for tech and the role that technology stewardship could play in creating a safe and just future for all. [Watch back the conversation.](#)

We also welcomed two new Change Makers from across our network, who shared their journeys in engineering so far and insights around how they have driven positive change. Explore [Professor Tim Ibell](#) and [Simon Joe Portal's](#) profiles on our website.



Simon Joe Portal



Professor Tim Ibell

Throughout the year, we also developed and contributed to thought pieces on a plethora of topics relating to globally responsible engineering, including: [Engineering ethics](#), published by the Institution of Mechanical Engineers; [A new vision for engineering education](#); and [TEDI-London Talks: A conversation with the school for future engineers.](#)

We've continued to enhance our virtual offer, supporting individuals to deepen their understanding of global responsibility wherever they are in the world.

Our virtual design challenge, Reshaping Engineering, returned for a third year, inviting student and professional participants from around the world to design solutions that could reshape how engineering is taught and practised, to ensure a safe and just future for all.

Hundreds of passionate changemakers joined us as participants, mentors and judges, with the top prize going to a student team whose design aims to educate STEM students across all levels about ethical engineering and empower them to advocate for these issues, as part of a comprehensive "Ethical Engineer's Toolbox".

"Reshaping Engineering merges the theoretical and the practical in a fun and thought-provoking way. This is the only way to truly learn something."

Reshaping Engineering participant

This year, **over 6,400** people enrolled on our virtual experience programme, delivered in partnership with Forage. The programme, aimed at upskilling those within the engineering community on globally responsible practices, provides participants with an opportunity to interrogate the role of engineering, learn about the principles of global responsibility, how to encourage participatory and inclusive outcomes in practice and critically reflect on their role in ensuring a more safe and just future for all.

Student Chapter members attending the annual Building Community Leaders event



The Enginoars as they completed their race across the Atlantic ocean.



With thanks

It is thanks to the generosity of our supporters that we have continued to grow the size, reach, impact and ambition of the Engineers Without Borders movement.

We would like to share our gratitude to our **inspiring volunteers**, who continue to give up their time to provide critical support to our staff team. To our **student Chapters**, who are key to spreading our message at universities across the country. To our **university partners**, who are delivering our programmes and upskilling the next generation of engineers. And to our **partners, collaborators and sponsors**, who enable us to continue to deliver and expand our programmes.

We would also like to give special recognition to the **Enginoars**, who rowed 36 days, 8 hours and 57 minutes across the Atlantic ocean in the name of global responsibility.

Finally, in March, we said farewell to two long-serving trustees, who completed their terms: Nick Tyler and Jon Prichard, both of whom had been actively involved with the Engineers Without Borders movement for many years. Jon, who stepped down as Chair, commented: "My engagement with a charity that didn't want to ignore the facts was both refreshing and motivating." We would like to share our sincere gratitude for their ongoing commitment to our mission.

Partners

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Efficiency for Access
Engineers Without Borders South Africa
Forage
Granger Reis
Insley Consulting Ltd.
Royal Academy of Engineering

In 2024, the story continues...

2024 marks our 20th anniversary as a registered charity, and we are more excited than ever about the trajectory of the Engineers Without Borders movement. We are ambitious about the changes we can make to engineering education and practice, and believe that, together, we can ensure engineers play a pivotal role in supporting humanity and the planet to thrive.

We welcome you to be part of the change.

Join the movement.