

Clean Slate

No 134 Winter 2024 £2.50

Members Conference 2024

Ready for retrofit

**Why we teach —
cities and communities**



UPCOMING SHORT COURSES

FEBRUARY 2025

8	Making Pallet Furniture
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MARCH 2025

3-7	Graduate School Teaching Week: Energy Provision
6	Zero Carbon Britain: Live Online - Scaling-up Community Action
8	Renewables for Households: Heat Pumps
8	Making Pallet Furniture
15	Basic Tool Skills
15	Wild Wellbeing - Traditional Woodland Crafts
24-28	Sustainable Woodland Management

APRIL 2025

7-11	Graduate School Teaching Week: Communicating Transformational Social Change
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EDITORIAL



Eileen Kinsman

A unique community making change happen

While we can all make more sustainable choices individually, real change happens when we come together. That's why CAT is such a special place for so many people. It's where they formed the networks that have led to business ideas, new career pathways and more fulfilled lives.

The recent Members Conference was a wonderful way to reconnect with so many CAT graduates, volunteers and supporters. We shared stories, celebrated successes and discussed solutions to the challenges ahead.

Reading this edition of *Clean Slate*, I've once again been inspired by the many ways the CAT community is coming together to take positive action towards a safer, fairer and more sustainable future. Whether it's by researching progress on retrofitting, rethinking established ways of working in industries like construction, or putting eco-friendly bio-based methods at the heart of design, CAT graduates are setting an example for others to follow.

While the challenges of the climate and nature emergencies continue to grow, so does our resolve to tackle them, together. With your support, we will go on growing, equipping and empowering this inspiring community of ours – a community you are an essential part of.

Eileen Kinsman, Co-Chief Executive Officer

CAT students support workshops in India



Every final year CAT architecture student works on a final design project and research paper focusing on an area of interest or expertise they wish to develop. In October, as part of her final design project, Thea Brooman travelled to Kodaikanal in Tamil Nadu, South India, alongside fellow MARCH students, Cal and Yi.

They were hosted by Kodaikanal International School's (KIS) Center for Environment and Humanity, where they supported workshops on sustainable development through community

knowledge exchange and exploration of local natural building materials. The workshops included 50 local community members from a range of backgrounds and 50 students, both from local schools and KIS, interested in sustainability and the built environment.

Together, the participants explored the reuse of an invasive species, *Lantana camara*, as a fibre in natural bricks and in weaving furniture. Students Cal and Yi, who are passionate about earth building, facilitated the workshop sharing their knowledge and skills. Research gathered during the visit will support Thea's final design project which explores how an architectural workshop can facilitate decolonising methodologies between two cultures.

The students said, "The experience was transformative, engaging and fulfilling. The Centre was generous with its time, resources and knowledge. The ethos of the workshop carried very similar values to those of CAT: collaboration, knowledge sharing and community engagement. It was amazing to see how the community interacted through learning about natural materials. And it was a privilege to share the learning from our MARCH in such a special place with so many interested and passionate people."



Volunteer at CAT

For over 50 years, volunteers have been at the heart of CAT, helping to transform our site into an inspiring place full of organic gardens, sustainably managed woodland, green buildings and more. Today, volunteers continue to be an invaluable part of the CAT family. We were delighted to welcome our latest cohort of six-month residential volunteers in November.

Volunteering with us offers you the opportunity to gain skills and experience, meet like-minded people, and spend time connecting with nature in beautiful surroundings – all while helping to support our vital work.

Applications for our next six-month residential placements opened in December. Our next cohort are due to start at CAT on 28 April after a trial week from 24 March. Shorter periods of volunteering and regular days can also be arranged throughout the year. For more information or to apply to volunteer visit www.cat.org.uk/volunteer.

Dulas has Carbon Literacy Training at CAT

In early November, Dulas Engineering in Machynlleth came to CAT to take part in Carbon Literacy Training with our Zero Carbon Britain team. As part of CAT's Green Skills project (funded by the UK Shared Prosperity Fund), the company explored climate science, how the organisation can reduce its emissions, and created action plans.

Originally founded at CAT in the 1980s, Dulas is creating meaningful change through its pioneering use of renewable energy. Its solar powered medical fridges provide a lifeline for communities in the most remote parts of our planet.

Sustainability Project Manager Louise Skipton-Carter said, "I found the Carbon Literacy Training really interesting. It was an important reminder of the carbon costs and impacts of everyday activities. As an individual, I now feel motivated to try and reduce my own personal emissions as well as trying to make adjustments in my work area that will help contribute towards Dulas's net zero goals."

To enquire about bespoke training for your organisation, contact education@cat.org.uk.





Ecological Citizen(s) Network+ visits CAT

In October, we welcomed guests from the Ecological Citizen(s) Network+ to CAT. The network is based at the Royal College of Art in collaboration with University of York's Stockholm Environment Institute and Wrexham University and has a mission to catalyse ecological citizenship for positive climate action.

The visitors took a tour of the CAT site and gardens, enjoyed a workshop on food security, and heard about our Zero Carbon Britain project and Innovation Labs.

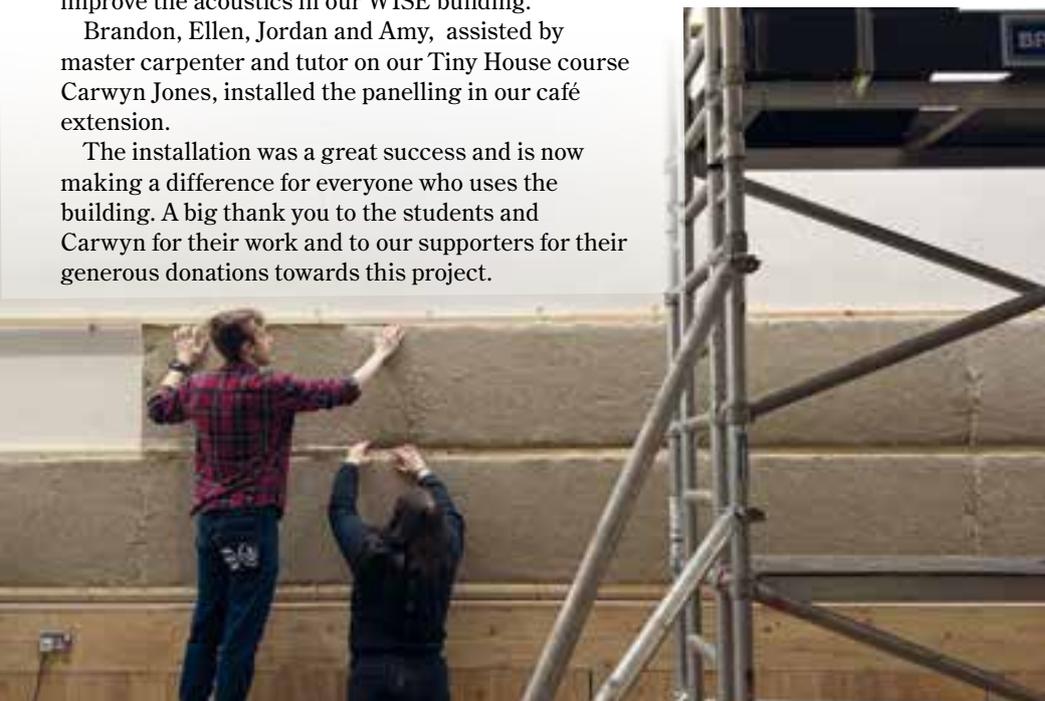
A member of the network said, "A huge thank you to you for hosting our visit. From the 'tiny downpipe gardens' and swift-box walls, to experimental green buildings and renewable energy displays, we have come away with a renewed motivation to keep exploring ecological citizenship for positive climate action."

Students install acoustic panelling in WISE building

As part of their Build module earlier this year, some of our architecture students designed and installed panelling made of IndiNature hemp insulation bats, linen and wood to improve the acoustics in our WISE building.

Brandon, Ellen, Jordan and Amy, assisted by master carpenter and tutor on our Tiny House course Carwyn Jones, installed the panelling in our café extension.

The installation was a great success and is now making a difference for everyone who uses the building. A big thank you to the students and Carwyn for their work and to our supporters for their generous donations towards this project.



Join CAT's Board of Trustees

CAT's board of trustees is keen to hear from people with a variety of backgrounds and skills who want to play an active part in the strategic oversight of the charity's work and share a passion for CAT's mission.

We welcome candidates with leadership experience in the private, public or charity sectors, who are prepared to get involved in different aspects of CAT's activities. Some of the skills and expertise we particularly need include:

- Finance or accounting experience, ideally a qualified accountant
- Understanding of the Welsh political and economic landscape

We also welcome applications from those with broad experience of leadership in any sector.

CAT Trustee Roger Thomas who has considerable experience of successfully running large Wales-wide organisations in the environmental management field said:

Being a CAT trustee is both a privilege and an opportunity, requiring a personal commitment of time, energy, skills and experience to help guide and monitor the charity in successfully delivering its purpose. This is an exciting time to join us, when addressing the challenge of the climate and biodiversity emergency has never been more important. CAT has advanced plans to redevelop the iconic site in mid-Wales and is in the process of developing our next 5-year strategy to take forward our delivery of education and influence across a range of channels. You'll be working with like-minded fellow trustees in piloting an organisation full of passionate and expert individuals who understand the urgency we face, to create a safer, healthier and more equitable future for all.

Expressions of interest close on 31 January 2024. Find out more at www.cat.org.uk/vacancies

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study@cat.org.uk ☎ 01654 705974

New short course –

Building with Earth and Natural Fibres

A new short course on Building with Earth and Natural Fibres is now available, led by CAT graduate and architect Maria Sierra Sánchez.

This two-day course gives you a practical introduction to earth buildings and using earth and natural fibres as a building material. Whether you want to build your own earth structure or simply learn more about earth as a building material, this is a great opportunity to get started. The course will equip you with the skills and confidence to source, design and build projects.

Maria is an architect specialising in green building. She worked in conventional architecture before redirecting her career to sustainable construction by studying our MSc in Green Building. Maria has run workshops and courses on earth and natural fibres in the UK, Spain, Mexico and Colombia. Additionally, she has researched adult education and experiential learning, creating a teaching methodology that incorporates diverse learning modes and has been shown to increase participants' confidence.

The Building with Earth and Natural Fibres short course takes place between 10 and 11 May and again between 13 and 14 September. Head to www.cat.org.uk/short-courses to book your place, or phone the Short Course team on 07719 087 461 or 07719 087 463.

CAT students exhibit in London

When James Warne of Inhabit group, a long-time CAT supporter and contributor to our MArch Sustainable Architecture course, offered space in London for final-year students to exhibit, they jumped at the chance. Kieran Catton and Giada Gonzalez led the curation on behalf of their fellow students. At the private view on 3 October at Inhabit's offices, supported by recruitment consultants Eden Brown Built Environment, the students shared their work with architects and engineers from London and beyond as well as family and friends.

The exhibition showcased the students' final design projects and their extensive supporting technical research reports. It highlighted many of the special features of the course, from community consultation and place design (in Llandudno Junction and Conwy) to live build projects around the CAT site. The students, now graduates, shared how the course, while being an ARB approved Part 2 programme, has a

distinctive approach, fundamentally rooted in learning by doing, respect for people, places and the planet, and an ethos of collaborative practice.

Visitors praised how the students had integrated sustainability into their projects, particularly through experimentation and the use of natural materials. They were also positive about CAT's hands-on approach to teaching and learning and how this is the future of architectural education.

Our thanks to the team at Inhabit, including Eliana Longo Collins, Anya Mantle and Barnabé Riandée.

The students' work can be seen in the accompanying yearbook at www.cat.org.uk/student-projects.

Wales Climate Week

Wales Climate Week is an annual virtual conference organised by the Welsh Government. The theme of the 2024 event, taking place between 11 and 15 November, was Adapting to our Changing Climate. This follows the Welsh Government's new national Climate Adaptation Strategy, which sets out a vision of what a Wales well-adapted to our changing climate looks like and the actions we need to take to get there.

The five-day conference included a series of keynote and interactive panel sessions covering the impacts of climate change on our land and agriculture, marine, fisheries, nature and food systems; energy, transport, communications, water and wastewater infrastructure; businesses, economy and finance; health and social care systems; and on our towns, cities and communities. Sessions also explored the issue of fairness and the disproportionate impact of climate change on different groups. We also considered global warming projections (including the risks and the opportunities), the international context (from the impacts of climate change to how other nations are adapting), and the links between climate mitigation and adaptation.

CAT Co-CEO Eileen Kinsman delivered a talk and Q&A on 'Growing green skills from a quarry in Mid Wales'. She shared how empowering people to take action – from CAT students to community groups, organisations and beyond – is key to meeting the challenges we face.

CAT contributes to Net Zero Buildings Standard

Graduate School senior lecturer Bryce Gilroy-Scott has contributed to the pilot version of the UK Net Zero Carbon Buildings Standard, released on 24

September. This contains the technical details on how a building should meet the Standard, including what limits and targets it needs to meet, the technical evidence needed to demonstrate this, and how it should be reported. In the future, projects will be able to verify that they conform to the Standard.

With an extensive background in sustainable architecture, Bryce works as a consultant on building energy modelling and renewable energy. Over the past two years, he has been a volunteer in the Homes – Sector Group for the Standard. This is a large-scale project with many volunteers engaged in research and modelling. Bryce supported the group with data analysis and organised and co-chaired sector group meetings.

Bryce hopes the report will raise awareness and lead to discussion on sustainable building in the UK, both in policy and funding.

Download the report at www.nzcbuildings.co.uk/pilotversion.

Free public lectures

CAT's Graduate School welcomes guest lecturers to support our teaching on topics addressing the climate and nature emergencies. Recently, we have opened some of these lectures to the public.

These free lecturers have featured expert speakers such as climate scientist Kevin Anderson, architect and author Sumita Singha, campaigner for global climate justice Leon Sealey-Huggins, and food policy expert Tim Lang.

For upcoming topics and dates, keep an eye on www.cat.org.uk/public-lecture. You can also prebook an evening meal in CAT's café and join students in discussion and debate before the lecture begins.

Mach Maethlon Harvest Festival

On 5 October, CAT Gardener Petra Weinmann and Co-Head of Marketing and Communications Alis Rees were invited to join Mach Maethlon's Harvest Festival/Gwyl Cynhaeaf and apple pressing at Y Plas in Machynlleth. This community-led project grows edible crops around Machynlleth and connects people with local food and sustainability.

Alongside inspiring local food projects and growers, Petra and Alis shared growing advice, updates on CAT's activities, and ways people can get involved by volunteering. They also got to press and taste delicious juice from some of the apples from CAT's orchard.

'The finance COP'

After two weeks of intense debate plus a 30-hour overrun, COP29 ended with a global agreement on climate finance. CAT's Paul Allen, an official observer, reflects on the key challenges being discussed and explores what needs to happen next.



Despite the frustrations, the United Nations Climate Change Conference (COP) process is the only global mechanism we have for protecting the planet and the space it provides for human life. My role as an official observer was to virtually attend many of the negotiations where groups and blocs from across the globe came together to agree what must be done. The key challenges are increasing the speed of emissions reductions, scaling-up adaptation to help people cope with extreme weather, and providing support mechanisms to deal with the loss and damage experienced by communities across the globe.

Reducing emissions

Following the landmark 1.5°C Paris Agreement, every five years countries must ratchet up their commitments to reduce emissions, called nationally determined contributions (NDCs). The next round of NDCs, which sets targets to 2035, must be submitted by February.

In the run up to each COP, the UN Environment Programme (UNEP) releases its annual Emissions Gap Report. This year it was titled No more hot air... please! making a clear case that nations must commit to dramatically increase the ambition of their NDCs or

the 1.5°C goal will soon be beyond reach.

Taking advice from the Climate Change Committee, the Energy Security and Net Zero Secretary Ed Miliband submitted the UK's ambitious new NDC during COP29 committing to slashing greenhouse gases by 81% from 1990 levels by 2035. CAT welcomes this commitment, but delivery must be rooted in an equitable plan. People and communities across the UK must be invited to join the journey, exploring ways to use the income from clean energy to deliver benefits in lifestyles, employment, resilience and provision of the skills needed.

By the end of COP29, three new NDCs had been submitted, by the UK, UAE and Brazil. At the time of writing, we wait to hear from other countries.

Adaptation

Adaptation is not an option, it is a necessity. This is because protection for vulnerable areas is now urgent. Released just before COP29, the UN Adaptation Gap Report 2024: Come hell and high water makes it clear that nations must dramatically increase adaptation.

A key barrier for many developing nations is the finance required. Unlike investing in renewables or saving energy, adaptation does not directly earn a return

but helps prevent the future costs of loss and damage.

Loss and damage

The growing direct costs to infrastructure, livelihoods, natural systems and economies from extreme weather often exceeds what communities can cope with. This is a growing global challenge which demands increased financial support. Throughout COP29 I witnessed deeply moving stories of the impacts from countries across the globe and a growing recognition that the current loss and damage fund must be scaled up.

Talking finance

Back in 2009, at COP15 wealthy nations agreed to deliver \$30 billion annually, rising to \$100 billion by 2020, to enable developing nations to deal with climate change. Although the wealthier countries did finally meet this in 2022, it has now become clear it falls far short of what is needed. For the first COP in 15 years, delegates had to agree a "new collective quantified climate finance goal".

As the negotiations rolled on, new finance goals were called for, in the order of \$1.3 trillion per year. Some NGOs and negotiator blocs also expressed concerns that including too much in private sector

loans could drive developing countries deeper into debt.

After two weeks of intense discussions, the negotiations overran by more than 30 hours. Although COP29 recognised the \$1.3 trillion annual target by 2035, only \$300 billion per year is set to come from grants and low-interest loans from developed countries.

While this may be presented as a significant rise in support for poorer countries hard hit by climate change, it is nowhere near enough. India was one of the many countries not happy with this deal, stating, "This, in our opinion, will not address the enormity of the challenge we all face."

Although the wealthier countries agreed to take the lead, other countries were encouraged to make voluntary contributions. This highlighted a need to update the language used. For example, the COP process still defines China and India as 'developing' countries without obligation to provide finance. Today, China is one of the largest economies, so in the COP29 agreement, its support was included in the finance target.

Things must be improved by COP30

Solutions are not happening fast enough. Climate finance needs to be real money, not loans. The increase should be much

higher to meet the actual needs of vulnerable and impacted countries, include inflation, begin much sooner, and include the profits made by the fossil fuel industry. Draft COP agreements must be ready well before the final day, and rules are needed to ensure lobbyists are from companies working on solutions. Also, countries must rapidly submit more ambitious NDCs and delivery plans.

Focus on solutions

As usual, there was a diverse mix of official COP side-events exploring innovative solutions. CAT is a member of the International Network for Sustainable Energy or INFORSE, which promotes the new concept of a global goal of 'sufficiency'. This investigates the enablers for changing individual and collective lifestyles so that we all can live within planetary boundaries, while simultaneously increasing the wellbeing of citizens, communities and ecosystems.

As solutions scale up, they can change systems. In 2023 the UK green economy grew 9%, which shows that innovation drives employment and prosperity.

In addition, the global installed capacity of photovoltaic (PV) solar has now hit 2 terawatts, only two years since the 1-terawatt landmark was reached.

The growth rates across this industry have been around 40% for decades and will continue as solar becomes the most cost effective way of producing power in the world.

Delivering the UK vision

As we move forward to COP30, there is an urgent need to pull together around the UK's commitments for 2035. Targets and goals are important, but these must become actions in our towns, villages, cities and countryside to get us on the path to zero carbon and boost community resilience. The UK can demonstrate genuine leadership, but to deliver change at scale, new skills are vital. The stories shared at COP29 continue to motivate CAT to support the deeply committed groups who visit us. We must all continue to do everything we can as part of an evolving eco-system of positive climate and nature solutions. 

About the author

Paul is CAT's Zero Carbon Britain Knowledge and Outreach Coordinator. He has been involved with our research into zero carbon scenarios since the beginning, coordinating the development of research reports and liaising directly with government, industry, NGOs and the arts to share findings.

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Members Conference 2024 – sharing knowledge, skills and stories

Our annual gathering for the CAT conference is always a testament to the power of community and the shared vision that has driven CAT for over five decades. As always it was a wonderfully inspiring event and if you missed it, here are some of the highlights.



"I always feel encouraged when I come to CAT. The atmosphere is calming and energising at the same time."

For more than 50 years the CAT community has faced challenges head-on. Through collaboration – sharing knowledge and skills – we have found ways forward together. This was one of the key themes of the latest Members Conference held in October.

Sharing CAT's work

Co-CEOs Eileen Kinsman and Paul Booth opened the conference with highlights from CAT's work over the last year. They shared the success of our graduates, updates on some of the interesting projects we have been involved in, and

positive feedback from university and group visitors. We also heard about the exciting redevelopment plans and ways for members and supporters to input into our next five-year strategy.

Celebrating the CAT community

We were pleased to meet many more new members (with over half of the attendees coming to the CAT conference for the first time!), spend time with old friends, welcome back familiar faces, facilitate vital conversations and provide a space where members can share and learn as a community.

Our members brought their own presentations to share during Show & Tell sessions, showcasing the expertise, experiences and range of projects taking place across CAT's membership. Examples included:

- CAT student Maria de Farago presenting their dissertation research on land use and carbon sequestration in Wales.
- CAT volunteer Rick Watson speaking about his years of experience dedicating his time and diverse skills.
- Member and CAT graduate George Dale sharing insights into their role managing 'behind-the-meter' wind turbines at Ecotricity and their views on the future of the energy market.

This year we introduced 'home groups', with attendees getting together in small groups at the start and end of the day to discuss the issues, share things they enjoyed and network.

Getting a flavour of CAT's activities

After hearing about the wide scope of CAT's activities, attendees got to experience some of them through workshops, sessions and tours. These included:



- A tour of CAT's beloved Coed Gwern woodland by our knowledgeable Woodland and Natural Resources Officer Rob Goodsell. We learned about sustainable woodland management techniques and explored the thriving woodland ecosystem nurtured and maintained by our hardworking volunteers.
- A taste of what it's like to study at CAT's Graduate School of the Environment, with lecturers leading discussions on topics including the critical intersection of justice and sustainability, ecology and biodiversity and exploring building techniques and materials across the CAT site.
- An interactive 'Bold Futures' workshop led by CAT's Education & Engagement team, which encouraged attendees to imagine what a zero carbon future might look like.

get together and hear about each other's inspiring journeys. Here are some of the stories shared this time:

"Through my CAT membership and then studying the MSc Sustainability and Behaviour Change course I have been awed by the diversity of people you meet at CAT, who all bring their own views and knowledge of sustainability projects. The already beautiful CAT site comes alive because of the CAT community. That's the best part, in my opinion." Judith



"I moved into the renewable energy space in 2020. I worked for a solar installer for a year before joining Ecotricity. My qualification and time studying at CAT was pivotal to my getting these jobs and my subsequent work. I developed skills and knowledge that support my work in renewables, from pricing to designing to communicating." George

"CAT to me is evidence of the beauty of our earth and that harmonious existence is possible. My visit to the Members Conference allowed me to connect with people who have a shared purpose. It gives me hope that we can achieve something amazing!" Wendy

"I've been volunteering in CAT's Gardens team for two years now. I have always been inspired by the transformation of the site from bare stone to vibrant ecosystems. I am now able to contribute to and learn from the processes of continuing that transformation. As a volunteer I am offered CAT membership, so I have attended the last two Members Conferences, enjoying the positivity these occasions have brought." Rick

"I started an MSc at CAT in February 2002. My family has lots of memories and stories from our time at CAT since then. We regularly join the annual Members Conference for inspiration. Being involved in the CAT community has shown us we are not alone in trying to make the changes we need to see and that we have the solutions." Holly

This year's Members Conference will take place from 15 to 17 August. Sign up to our email newsletter to be first to hear when booking opens: cat.org.uk/sign-up

Your stories

The CAT community is made up of people taking practical action on the climate and nature crises all over the world. Whether you're a recent member of the CAT family, or have been involved for a number of years, we enjoy hearing about the impact CAT has had on your life. Our annual Members Conference is an opportunity to



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- Breakfast included

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Happy 10th birthday Adaptavate!

2014



After travelling the world seeking adventure and working odd jobs, Tom began working life as a builder and plasterer. Seeing first-hand the waste that the construction industry is responsible for and the cost to get rid of it, Tom enrolled on a master's degree at CAT.

Through his thesis, he created, developed and tested the first samples of what is now known as Breathaboard. He applied for an entrepreneur competition taking him to the European finals and winning him a place on the Climate Kic Accelerator at Imperial College, London.

"Ten years ago, almost to the day, the first samples of what is now known as Breathaboard were made up in a small quarry in the hills in Wales. A place they call the Centre for Alternative Technology. Adaptavate is now the vehicle for change that we are building, originally inspired from the unique energy of CAT and its students, such as Alberto Fernandez Minguela, who supported me in the early stages." – Tom Robinson, CEO and founder

2015



Tom continued to build the foundations of the business while at Climate Kic. Adaptavate moved into Unit 10, its Gloucestershire home until 2022.

- **Awards** – Shell LiveWIRE Award for 2015 Young Entrepreneur of the Year and the Green Alley award in Berlin

2016



Tom was joined by new Adaptavator Owen – they trialled mixes for Breathaboard, testing different combinations, and developed what is now known as Breathaplasta Universal. This led to the soft launch of Breathaplasta at UK Construction week. The first major case study with the UK Green Building Council was secured.

- **Funding** – a successful BBSRC grant bid funded proof of concept for Breathaboard in collaboration with the University of Bath
- **Patents** – the initial patent for Breathaboard was filed

2020



With COVID-19 hitting, Adaptavate struggled to grow the team and keep on track with the Innovate UK Smart Grant project. However, in between lockdowns the team grew and designed and built one of its early prototype process development machines, Lucy.

2021



Adaptavate had visitors from Innovate UK to its 'curing chamber' and was then successful in securing more support from Innovate UK to build its pilot line.

- **Patents** – filed for its third Breathaboard patent, looking at continuous extrusion of fibrous pastes.

2022



Adaptavate moved to Bristol, its new HQ. The organisation started to commission labs and build the infrastructure and pilot line. CTO Jeff Ive was a guest lecturer on CAT's postgraduate courses showcasing Adaptavate's work and products, providing our students with invaluable knowledge and insights from within the industry

- **Funding** – secured the Innovate UK IPP project then closed a £1.3 million equity round to go alongside it in a total seed round of £2.2 million
- **Funding** – attained the SMART Grant to accelerate carbon-negative development work for products
- **Patents** – fourth and fifth patents filed: accelerated carbonation, curing and construction products comprising pyrolyzed feedstock
- **Team** – from five to 11 people.

Over the last five decades, many successful sustainability-related businesses have been born and nurtured at CAT. One such organisation is Adaptavate, which celebrated its 10-year anniversary in 2024. Adaptavate's story shows how CAT graduates go on to create practical solutions to the climate and biodiversity crisis. Here's how CAT helped Adaptavate's founder and CEO, Tom Robinson, go from on-site builder to business builder.

2017



2018



2019



Adaptavate rebranded away from green, eco and experimental and towards a healthy, high performance and scientifically engineered look. The company continued to make Breathaplasta from Unit 10, by hand, and was featured in high-profile case studies like The Conduit, London.

- **Funding** – Tom won a Shell Private Grant
- **Team** – CAT graduate Jeff joined the team, bringing his technical expertise (he is now the Chief Technical Officer).



Jeff and Tom were working hard to understand how to scale the production technology. Breathaplasta went from strength to strength with a reformulation to incorporate waste streams and was exported for the first time to a distributor in the Netherlands. The team took receipt of new valve sacks and upgraded to contract manufacturing.

- **Patents** – a second patent was filed.



Government funding led to the organisation developing its accelerated carbonation technology and assessing the impacts and value of Breathaboard waste. The company built its life cycle analysis and environmental product declarations (EPD) tool during this project. For this, they worked with the University of Bath and the Biorenewables Development Centre, consolidating its technology with independent verification. Breathaplasta became CE marked.

- **Funding** – won its first Innovate UK SMART grant
- “Environmentally positive solutions are not one size fits all, and neither are business cases. This project will allow us to scale the next generation of bio-materials through absorbing CO₂ from emitting processes all over the world through localised production models. This is a really transformative way of looking at this conservative, vertically integrated industry that is looking for a step change.”* – Jeff Ive, Technical Director

2023



2024



Today



Adaptavate started this year by launching the Breathaplasta product family, growing from just Breathaplasta to Breathaplasta Thermal, Universal and Smooth. The company designed, built and commissioned its pilot line with a world first, and by the end of the year was producing standard-hitting boards.

- **Funding** – closed a further £2 million investment round to develop and industrialise carbon-negative materials, globally
- **Awards** – Breathaboard was awarded the FIS Sustainable Innovate award and the MiB Innovation of the Year
- **Team** – doubled in size from 11 to 22.



Adaptavate commenced its certification process, and the hand-picked, pioneering pilot projects started to go live.

The world's building product markets and production companies are looking at what Adaptavate have developed. Tom and the team are excited to continue to conduct their global experiment on how to industrialise an industry-changing business of the future where ecological impact comes first and economic profit is a by-product.

Will you be the next CAT success story?

If you're inspired by Adaptavate's success and want to develop the knowledge, skills and tools to make a difference, CAT's Graduate School is the place for you. Find out more about our postgraduate courses by contacting our Admissions Team, at study@cat.org.uk or on +44 (0)1654 7059574.

Hawkland – eco business takes flight

Over the last 50 years, CAT has played a crucial role in many successful sustainability-related businesses, including Hawkland, an ecological design and build company based in Bristol. Director and CEO, **David Copeland**, shares how knowledge, skills and connections gained at CAT have supported the business so far.



Hawkland designs and delivers sustainable spaces, specialising in low-carbon retrofit projects, leveraging the latest developments in eco-friendly design and bio-based materials.

Business values shaped at CAT

I met my fellow directors, Chris Hawker and Ben Nother, while studying at CAT. This early experience was instrumental not only in the founding of Hawkland but also in shaping its core values. CAT introduced us to a new way of thinking

in design and construction, increasing our awareness of environmental responsibility and fuelling our passion to challenge the conventional construction industry.

After meeting Chris at CAT, I worked with him on several projects run by Strawbuild. From this we decided to start our own company, providing specialist sub-contracting services, and swiftly after bringing retrofit and renovation into the company.

Being based in Bristol made sense as the community there is renowned for

its commitment to sustainability. Our experience at CAT, along with our new connections in Bristol, allowed us to confidently focus on sustainable retrofit practices.

Starting small

The company began as a small, subcontract building company, specialising in eco-focused techniques, driven by the values and knowledge we gained at CAT.

Initially, we focused on small-scale construction projects that used natural, bio-based materials, like straw bale and hemp, with an emphasis on low-carbon construction. We were particularly interested in offering practical solutions to climate change through the built environment.

The pandemic offered a unique opportunity to reflect on the first three years of the business. With most of our upcoming projects on hold, we used the time to take stock and think about what to do next.

Reconnecting and growing

After the pandemic, in 2022, Ben reconnected with Chris and I, noticing we shared common goals around sustainable construction. Chris and I realised we could offer a more comprehensive package by integrating architectural services into the company, streamlining the customer's journey. Initially, we began a strategic partnership between the two companies, working together on several projects.

As work developed, we decided to merge companies. Hawkland expanded, integrating architecture into its offerings to provide a more holistic approach to sustainable construction. By providing in-house architectural services, we were able to manage projects from the initial design phase through to completion, ensuring that sustainability is embedded in every aspect. This integration allowed us to fully control the use of eco-friendly materials, energy-efficient designs, and innovative construction methods, ensuring the project stays true to its environmental goals.

Additionally, it helped streamline communication between the design and build phases, reducing delays and





misunderstandings and enabling us to create cohesive, sustainable and high-quality projects.

Current projects

In 2022 I joined the NatWest Accelerator programme, which played a key role in refining my business strategy and accelerating Hawkland's growth. The programme equipped me with valuable skills in marketing, pitching, finance, visioning, mindset and leadership, all of which have contributed to the company's development. It also helped me expand Hawkland's Bristol-based network and tap into business opportunities across the Southwest, further broadening the company's operations.

This experience opened further doors for Hawkland, tapping into funding opportunities from the West of England Combined Authority, leading to involvement with the Retrofit West



launch, culminating in a site visit from Dan Norris and Ed Miliband. This relationship also gained Hawkland a Good Employment Charter accreditation.

Collaboration and strategic partnerships are essential to Hawkland's mission of delivering sustainable, eco-friendly construction projects. By working closely with material suppliers,

architects, local councils, and energy-efficient system providers, we ensure that every aspect of a project aligns with our environmental and ethical goals. These partnerships enable us to access cutting-edge technologies and sustainable materials, critical for reducing the carbon footprint of our builds.

CAT's continued influence

The skills we learned at CAT have consistently proven useful in our daily work, enhancing both understanding and operations. Expertise in building physics, critical analysis and problem solving is applied every day. From CAT we gained a deep understanding of the impact of the built environment and how to mitigate it through the use of natural materials – principles that are now core Hawkland values.

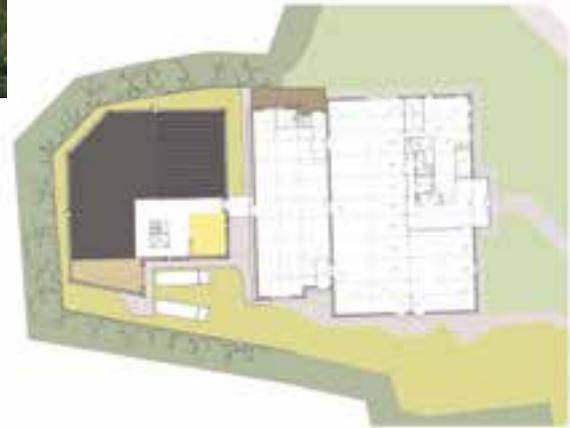
Over the years, we've shared our experiences with the Hawkland team, inspiring some members to pursue courses at CAT to expand their skills and bring more value to both Hawkland and the industry.

Looking to the future

Going forward, we hope to make the

way we work even more seamless and efficient, improving the operations of architecture, project management and construction services. We aim to further grow the architectural team, offering enhanced services such as thermal modelling, embodied carbon analysis, and Passivhaus and EnerPHit designs, alongside our full range of architectural services. We will continue to offer our services in Bristol and the surrounding areas, with projects in Herefordshire, Somerset and beyond.

While many companies focus on new builds, we are pursuing innovation in



retrofitting, addressing the needs of existing buildings. We are committed to delivering state-of-the-art sustainable retrofits, examining every aspect of the value chain and integrating vertically where possible, while ensuring high-quality delivery and a superior customer experience.



Of course, we will continue to embed our values of sustainability and innovation, which were shaped at CAT, at every stage of the customer experience, ensuring they align with our mission. [CS](#)

About the author

David Copeland is a director and CEO at Hawkland, currently focusing on the business development side of the company. <https://www.hawkland.co.uk/>

Why we teach – cities and communities

Next in our series looking at topics and themes explored by students on CAT Master's degrees, **Dr Sam Saville** explores the role of cities and communities in bringing about a more sustainable future.



Students discuss adaptation and design of built environments.

Many visitors to CAT appreciate a retreat from the hustle and speed of urban life, an immersion in our burgeoning Celtic rainforest, a reconnection with nature. Why then, from our rural position, do we teach a module about cities?

In short, because CAT has always been about getting our messages out beyond the quarry. If we are serious about tackling the climate and biodiversity emergencies, cities and urban spaces need to be on the agenda.

Communities are something we as humans need to thrive, whether we find ourselves in urban or rural settings. Community, justice and well-being needs to be embedded in our imagining, campaigning for and creation of sustainable, regenerative, healthy places to live.

Why is teaching about cities so important right now?

Since 2007, more than half of the world's population have been urban dwellers.

The World Bank's latest estimates put this total at 4.6 billion people and the UN predicts that the global urban population will be 68% by 2050. In high income countries the proportion of those living in urban areas is much higher – in the UK it is approaching 85%. While the figures are lower in low income countries, this is where most urban growth is expected to occur.

Putting this into context, according to the History Database of the Global Environment built up areas make up less than 2% of the earth's land area. Yet those population figures mean our resource and energy use is concentrated in these areas. The UN gives a ballpark figure of 80% of energy consumption being attributable to urban areas.

The latest Intergovernmental Panel on Climate Change (IPCC) report found urban populations to be disproportionately at risk from the impacts of climate change, such as extreme heat, flooding, fires and water scarcity. We should not ignore that

much of the growth in majority world urban areas is in informal 'slums', with inadequate services and potentially unsafe living conditions. Cities raise important issues of justice. Experiences of cities, and indeed rural areas, vary widely. From a global and national perspective, impacts, vulnerabilities and capacities are not evenly distributed.

"Global urbanisation offers a time-limited opportunity to work toward widespread and transformational adaptation and climate resilient development..." IPCC 6th assessment report

While all this might sound daunting, cities and urban areas represent huge opportunities for positive interventions, as they emerge, grow and adapt. You may have heard of various city coalitions, movements and programmes working on sustainability as well as zero carbon plans and climate emergency strategies. We want our students to be able to contribute to this important work.

What are the main teaching methods?

Our approach is to introduce concepts and tools that encourage an interconnected understanding of the complex flows of people, resources, energy, waste, food, water, information, and plant and animal species that link our urban, rural and remote communities.

Using case studies focusing on local places, students practise applying broad ideas to specific contexts. As we consider potential solutions and ways to create and adapt our built environments to be healthier, more liveable and sustainable, we embed thinking about how to address the historical injustices of previous designs and systems. For example, transport infrastructure has historically been designed to allow efficient routes for workers to commute to a regular workplace, rather than for the more complex movements and multipurpose trips that those involved in care work, the gig economy and child-raising require. This uneven experience of mobility is highly gendered.

The module week at CAT is a blend of lectures, discussion, practicals and a local field trip. We share our in-house expertise alongside guest lecturers involved in the practices of urban design and community living and researchers working in cities around the world. This covers a breadth of topics including affordable housing, urban ecology, urban agriculture, community energy, and urban environmental justice.

The introduction of key concepts and ideas in the lecture theatre is supported throughout the week with opportunities to apply this learning. We make use of our long-term experiments around the



Aberystwyth Solar Farm visit.

CAT site with what is now referred to as a form of ‘green infrastructure’ – green roofs. Students explore what kind of difference these designs can make in terms of attenuating run-off or affecting the microclimate. Our architecture staff host a mini urban design exercise, getting students to think through the practicalities and potential impacts of transformational change.

The field trip to our nearest urban centre of Aberystwyth is a highlight for many students joining us in person. We visit local projects putting into practice positive innovations and students try their hand at ethnographic research methods, using place-assessment tools and practising their presentation skills. Online, we encourage students to experiment in their own local areas, which can result in transformative re-framing.

How do students use this learning?

Many students find the knowledge and skills gained from this module help them in implementing change in their current roles. Others see possibilities for positive interventions in their local communities, whilst some are enabled to change careers.

Ruth Norbury works for Blackpool Council as their Active Travel Officer – directly using her knowledge from this module together with the research from her MSc thesis on barriers and enablers for women cycling in Blackpool.

Ruth says, “My work at CAT has helped me to understand how to be as effective as I can be in changing travel

behaviours. In my role I am putting into practice my knowledge of systems intervention and targeting my efforts towards more collaborative working across departments and policy makers, questioning and developing our collective mental models and ideas around public space, transport and collective climate action.”

She adds “During my last year (part time) of being a CAT student I requested work experience with Active Travel Blackpool and this together with the amazing experiences I had at CAT really helped me to secure a 'Green' job. The guidance and opportunities I received whilst I was a student at CAT gave me the confidence to understand and communicate the current research in Active Travel and the ability to work with my colleagues to develop Active Travel in Blackpool.” 

About the author

Sam is a senior lecturer in sustainability at CAT's Graduate School of the Environment. As a CAT alumna herself, she has a broad understanding of the technical and design aspects of sustainability and applies her expertise in social sciences to teach on the more human aspects across the MSc courses. Her PhD in Human Geography focused on environmental policies and practices in the Arctic archipelago of Svalbard. She has further research experience on projects closer to home, exploring globalisation in rural Wales, barriers to the uptake of energy efficiency measures, and processes of change.

Ruth Norbury, who took our cities and communities module, and her friend Fatima.



CAT stories

Our unique community continues to use the knowledge, skills and networks gained at CAT to enable positive action on the climate and nature crises. This time we hear from CAT's Eco Refurbishment course tutor **Nick Parsons** and recent short course attendee **Mike Russell**.

Nick Parsons has worked in sustainable building and renewable energy for over 25 years, though his involvement in energy-efficient refurbishment started with a housing association back in the early 80s. It was around this time that he first visited CAT and was inspired by the innovation he saw, despite the relatively small budget.

In 2000 Nick joined an energy project in Sheffield, which became the South Yorkshire Energy Centre (SYEC), promoting and demonstrating sustainable building. Ten years later he became a sole proprietor focused on surveys, consultancy, project management and training, plus hands-on contracting. While he no longer does whole-house surveys, he still offers single-issue advice and problem solving, face-to-face and online.

In 2007/08 he developed and taught the first Eco Refurbishment course at CAT and has been sharing his considerable experience in this area with students ever since.

Nick says, "I got the gig at CAT entirely thanks to Helen Sharma, one of the brilliant team of volunteers at SYEC, who became the Short Courses technician, and later administrator, at CAT.

"People come from all sorts of different backgrounds. Sometimes they start off with no construction experience and end up being acknowledged as an expert in green building. And even if they don't work as experts, they gain the knowledge and confidence to commission or undertake eco-refurbishment work on their own houses. We need a lot more. It's a wide-open opportunity.

"It's important that we make it easy to get information about our homes. People like me need to tell people what's good practice and what's not, and get that information out there. They can then make informed choices. If they come to CAT and learn how to do it right from the start, they're less likely to make expensive mistakes.

"I've always thought CAT is a fantastic place. Not just because of the way it started, but because of the way it has carried on, because of its inspirational nature. CAT has inspired several generations so far, and I would really like to see it inspire many more."



Mike Russell runs his own eco-garden design business. He has previously worked for the National Trust as a ranger and the Wildlife Trust encouraging environmental education.

Mike spent his childhood at an Environmental Education Centre, immersed in nature. While studying art and visual studies at Oxford Polytechnic (now Oxford Brookes University) in the 1980s, he set up a wildlife gardening business with a friend.

In 1987 they made the journey from Oxford to CAT in their Morris Minor van to help in the gardens. This time at CAT inspired his philosophy for his business and continues to do so today.

Mike recently returned to CAT for the Eco Refurbishment course, having bought a house in need of renovation with his wife, Jane, in Shropshire. The couple are keen to approach the project in an environmentally friendly way that is beneficial to wildlife as well as themselves.

Mike says, "CAT is a place that inspires you and makes you think about your place on the planet. I hadn't visited for quite a long time, but it still has that same wonderful feeling.

"Nick, who ran the Eco Refurbishment course, really went the extra mile to share his knowledge. That was reflective of CAT – a welcoming and outward-looking community rather than somewhere where people want to hide away from everyone else.

"CAT inspires you when you are there and then motivates you to do something afterwards. Coming away this time, I saw that everyone has their own little jigsaw piece of the planet to look after for the benefit the whole of mankind and the universe. So we need to do the best we can with it, and maybe educate other people as well."

If you would like to share your CAT story, email members@cat.org.uk to tell us how CAT has influenced your work, volunteering or daily life, and what the community means to you.

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Ready for retrofit

In their final year, CAT students produce a dissertation in which they explore and research solutions to the challenges of the climate and nature crises. CAT graduate **Charlotte Ravenscroft** shares her analysis of Local Skills Improvement Plans in England and how they are affecting progress on retrofitting homes.



In the Climate Change Committee's words, meeting the UK's emissions targets will require 'near complete decarbonisation of the housing stock'. The Committee has highlighted the need for steep increases in skilled workers to retrofit millions of homes between 2020 and 2050, including replacing the nation's mainly gas boilers with low-carbon heating. In total, more than 250,000 full-time-equivalent workers are forecast to be needed.

For my MSc dissertation, I decided to investigate how this was going in England. After an initial search, I could find little evidence that anything was being done in policy terms to build retrofit skills. The Climate Change Committee's 2023 assessment had deemed progress on skills as 'significantly off track'. The literature pointed to difficulties for tenants and homeowners in finding suitable contractors, even when previous government schemes had provided vouchers to pay for retrofitting measures. Meanwhile, there were plenty of news stories about mouldy homes, botched spray insulation and flammable cladding, demonstrating the harms caused by a lack of skills, knowledge and regulation. As other researchers had concluded before me, leaving retrofit skills development to the market wasn't working.

Local Skills Improvement Plans

However, potentially promising was the recent launch of Local Skills Improvement Plans (LSIPs) in England by the Department for Education. Following legislation in 2022, these plans would be drawn up in each area during 2023 to advise local further education (FE) colleges about future local skills needs. They would cover whatever was deemed a priority locally – from AI to healthcare, tourism to net zero. Colleges would then be required to meet these future skills needs. An employer body was appointed in each area to lead the process of developing the LSIPs.

So it was a fortunate coincidence of timing for my research, that a nationwide exercise of skills planning was underway. In summer 2023 the 38 LSIPs produced nationally were published. My research question asked: Would these new LSIPs highlight the importance of retrofit skills and lead to more people being trained? Would this be sufficient to get retrofit skills back on track?

LSIP research findings

Reviewing the LSIPs in autumn 2023, it was quickly apparent what a mixed bag they were. A few plans highlighted retrofitting as a major, urgent priority, with the need to upskill tens of thousands of workers locally. But others didn't

mention it at all or only very briefly (see figure 1).

Reading through the plans in more detail, it was clear from the LSIP reports that the majority of employers did not yet understand the skills required to achieve decarbonisation / net zero:

'There is currently a lack of knowledge and understanding of Net Zero within the construction sector regarding practices, new skills, and technologies. For example, the impact of the retrofit agenda on the UK's Net Zero target is poorly understood.' North of Tyne LSIP, p9

'According to labour market data... there is a specific need for workers with skills in energy efficiency and low-carbon transition within sectors like construction... However, feedback from employers in the region indicates a limited awareness and understanding of climate literacy.' Derbyshire & Nottinghamshire LSIP, p20

Even where there was basic awareness around decarbonisation, construction firms were not planning to upskill their workforce:

'While there is no mandatory requirement in law, many do not see it as a priority and therefore do not have it as part of their plans either in upskilling

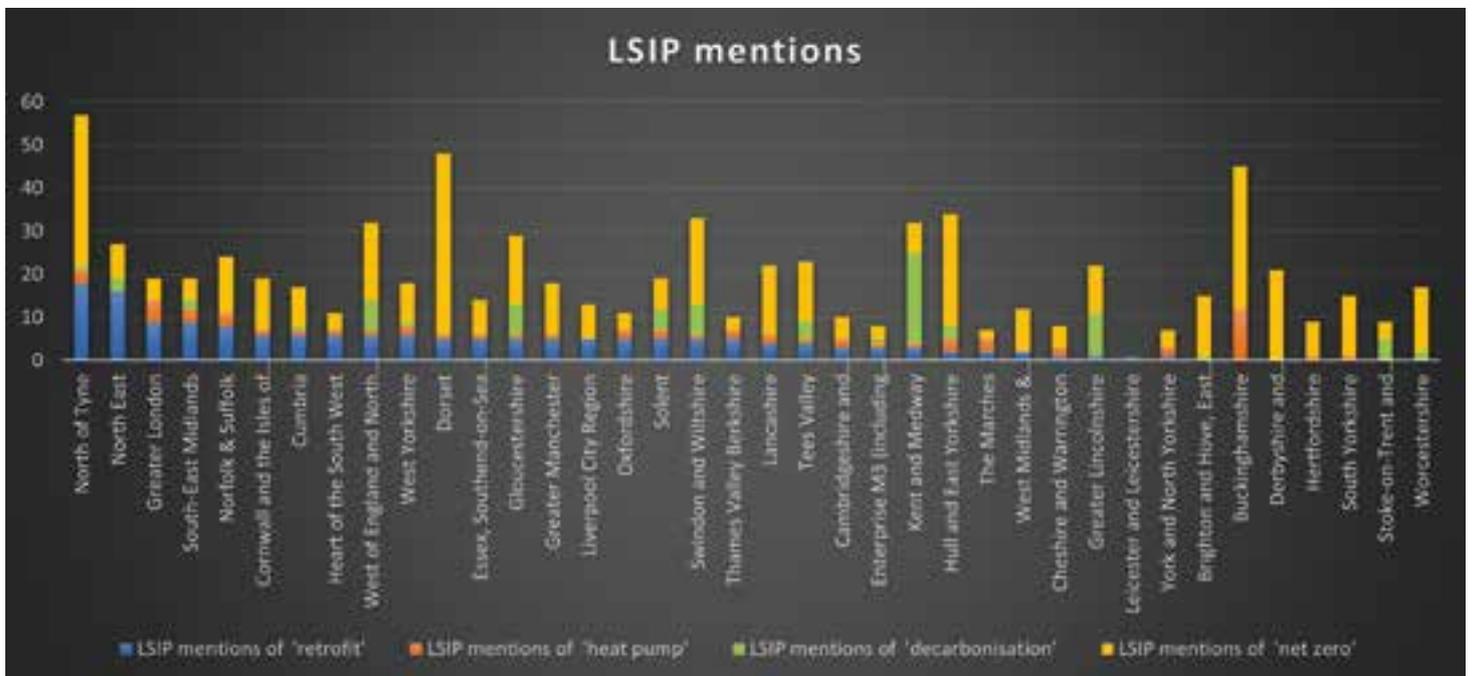


Figure 1. LSIP mentions of 'retrofit' alongside other relevant terms.

their current workforce or recruiting for roles.' Lancashire LSIP, p23
 '...there is a need, but until there is increased consumer demand for retrofitting, employers – most of which are SMEs – are reluctant to invest in training.' Enterprise M3 (including all of Surrey) LSIP, p12
 'When asked about Green Skills for the future most businesses (95%) highlighted recycling as a priority skill... [Actions] that require higher investment...came much lower in their priorities.' Liverpool City Region LSIP, p6, p24



Meanwhile, many LSIPs reported existing skills shortages and recruitment challenges within the construction sector, due to Brexit and other factors. This suggests it could be an uphill struggle to fill retrofit skills gaps with new recruits:

'Severe lack of young people choosing a career in construction.' Buckinghamshire LSIP, p10
 'The construction sector is projected to become Dorset's second biggest employment growth sector by 2035, currently the eighth. Recruiting enough employees to fulfil need will be arguably its greatest challenge.' Dorset LSIP, p8

Overall, my analysis of LSIPs served to reinforce previous researchers' conclusions that retrofit skills aren't going to build themselves.

What next for skills policy?

As the final part of my dissertation, I interviewed seven experts about my findings and they were generally not surprised. One explained why employer-driven LSIPs aren't sufficient on their own to address the retrofit skills challenge:

"The trouble is...the employer view is very much: what do we need in the next six months... So if employers say what we're short of is scaffolders, let's spend some money on some scaffolder training... You're not going to solve retrofit by every six to 12 months saying, 'Right, what's the shortage that we can foresee on the horizon?' You need to take a long-term strategic view and you need to take the industry

with you over a period of at least five years, probably 10 or longer." Expert interviewee

I asked the experts for their policy recommendations. Broadly, their consensus was that a national strategy for retrofitting is needed, which sets higher quality standards so that training effectively becomes mandatory. Longer-term funding for government retrofit programmes would help build market confidence so firms pursue training – but microbusinesses would also need subsidies for training. Moreover, every new entrant to the construction sector needs to learn basic building physics, so they understand how their chosen trade contributes to a building's energy efficiency and thermal comfort. This is going to require colleges and awarding bodies to update their courses and qualifications.

In conclusion, only by combining a series of policy interventions – simultaneously on the demand and supply sides – are we likely to see a breakthrough in retrofit skills nationally. 

About the author

Charlotte Ravenscroft completed her MSc in January 2024. The Gatsby Charitable Foundation published her research in June 2024 (read it at www.gatsby.org.uk/uploads/education/2024-06-26-retrofit-report-final.pdf). Charlotte is now working on a further project for the Gatsby Charitable Foundation, Ashden and the National Retrofit Hub that builds on the research.

Legacy – help CAT's work continue into the future

For those of us who share CAT's vision and values, legacy giving offers a unique opportunity to contribute to the survival of our natural world, and all those who depend on it.

Making a Will can be an easy task to put off. It can be a challenging subject to approach and the process can seem complicated. But putting your wishes in writing is about more than simply allocating your possessions after you've gone. It's about protecting your loved ones, supporting causes you care about, and continuing to make a difference.

Protect your loved ones

A Will provides clear instructions on how your assets should be distributed, reducing stress and potential conflicts during an already difficult time of loss. Without a Will, the state decides who gets what, which may not align with your wishes, especially if you have a partner you're not married to, stepchildren, or close friends you'd like to provide for. By making a Will, you ensure your loved ones are supported and looked after.

Tax benefits

Leaving money to charities in your Will can help reduce taxes on what you leave behind for your family. It is always worth seeking proper advice from a solicitor, but leaving part of your estate to charity may lower its taxable value, so more of your assets can go to the people and causes you care about.

Peace of mind

We have heard from our supporters that there is peace of mind in knowing your affairs are in order. It allows you to make thoughtful decisions about what sort of legacy you want to leave behind for the world and how you want to be remembered, ensuring your values and priorities are reflected.

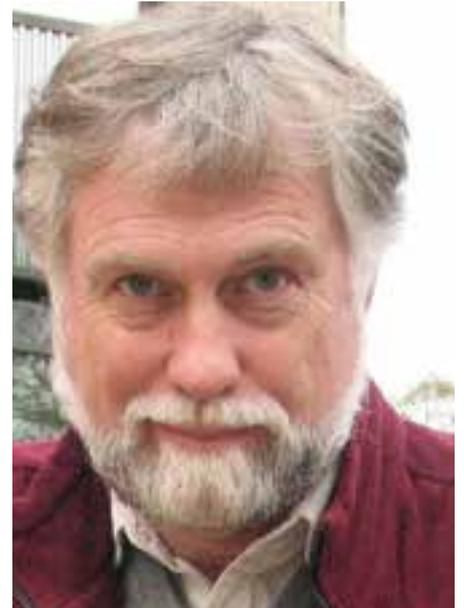
Support causes you care about

Including charitable donations in your Will allows you to leave a lasting impact on the causes close to your heart. Gifts in Wills, large and small, add up to make a phenomenal difference to charities, offering support during challenging times and funding vital projects when other types of support are not available.

John Newson, one of our members, who recently pledged a legacy gift to CAT, explains his decision:

"I have included a percentage of my residual estate for CAT, in my Will, along with other charities that I have supported during my life. I do not think that the need to develop, test and disseminate low-impact, low-carbon alternatives to fossil fuels is going to disappear. I give my time, attention and resources to the energy transition, so I want this to continue after I'm gone, by powering those, like CAT, who are working hard to advance the cause. Our work is our legacy. Money helps the work to continue into the future. Nothing ends."

Making a Will is one of the most



CAT Member, John Newson.

important things you can do, at any stage of life, to ensure you leave your mark on the world. Each gift left to CAT will help us educate, inspire and enable more people to take action on the climate and nature emergencies for years to come. And each legacy gift, like John's, can inspire others to follow, creating a ripple effect of positive change. [🌱](#)

For more information and support on leaving a gift in your Will, contact Freya by emailing legacies@cat.org.uk or call 01654 523015.



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