

# Clean Slate

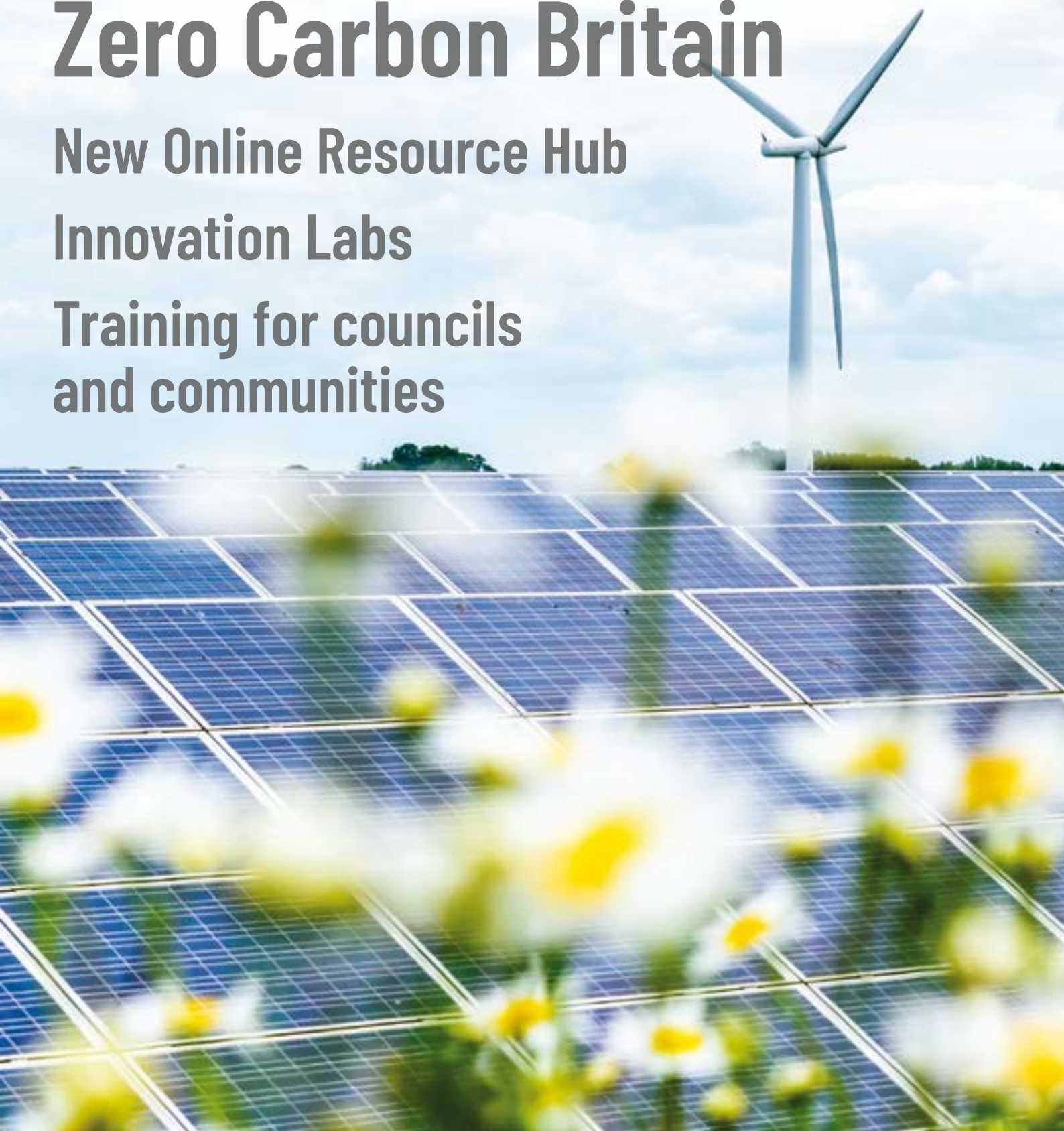
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## Zero Carbon Britain

New Online Resource Hub

Innovation Labs

Training for councils  
and communities







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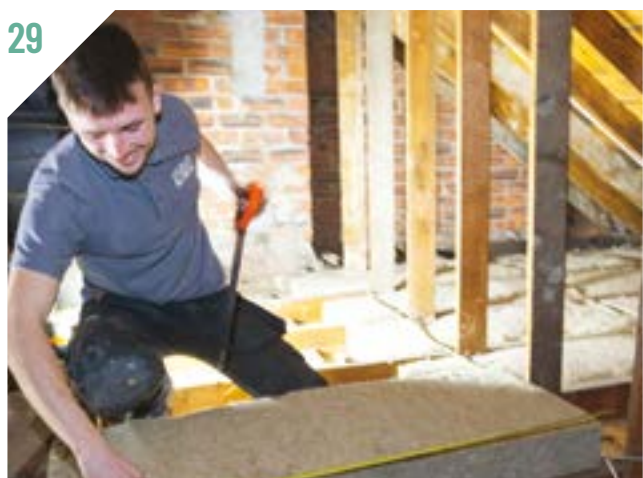
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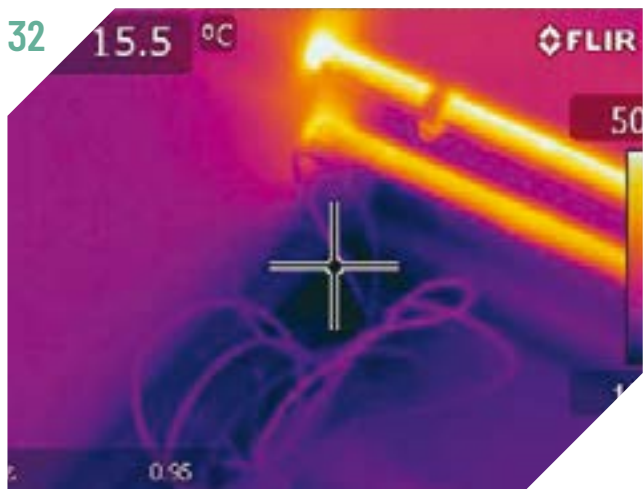
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# EDITORIAL

## Peter Tyldesley

### Making connections

I'm delighted to be writing to you from our newly reopened eco centre. Our students are back at CAT for hands-on practical learning, short courses are running again, and visitors have returned for days out exploring sustainable solutions surrounded by nature.

While we've been providing online courses, events and family activities all through lockdown, and plan to continue with these, it feels really good to be able to welcome people back to CAT for our trademark immersive learning experience. There's nothing quite like actually seeing solutions in action and meeting people in real life to help provide inspiration and connections.

I'm also very excited to be able to share with you some of the work to date and the ambitious plans of our Zero Carbon Britain Hub and Innovation Lab.

Since February last year, a dedicated team has been working to support local authorities, community groups and businesses to build their knowledge, confidence and skills to transform complex economic, social and political systems as we all work together towards zero carbon.

An integrated programme made up of an online resource hub, training and innovation labs is helping to increase understanding of the barriers to action and to explore, prototype and share solutions. Find out more on pages 19-25.

This builds on work that CAT has been doing for 15 years now, researching and sharing net zero scenarios designed to spark conversations around what kind of a future we want to build, and how we get there. You can read about some of the key milestones and achievements in Paul Allen's retrospective on page 26-28.

As Paul makes clear, all of this work is made possible thanks to our members and supporters. You are a key part of all that we do. Thank you so much for your incredible support – and do visit us if you can!

Peter Tyldesley  
Chief Executive Officer

**xxKeep in touch** Write to us: Centre for Alternative Technology, Machynlleth, SY20 9AZ



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**Read the CAT blog:**  
[www.cat.org.uk/news](http://www.cat.org.uk/news)



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## CAT eco centre reopens

As we go to press, the CAT visitor centre is once again open to visitors, students and short course participants after around six months of closure due to the global pandemic.

Graduate School students returned for number-limited study visits from 17 May and visitors and short course participants were welcomed back from 22 May.

As was the case last summer, visits are via advance booking only to allow us to control the flow of visitors and ensure that there is plenty of space for social distancing throughout the visitor centre.

CAT members can still enjoy free access – just drop us a line at [members@cat.org.uk](mailto:members@cat.org.uk) and we'll send you a link to your free entry booking form.

The first on-site Graduate School study visit in over six months allowed students to take part in a range of practical sessions using

sustainable building materials including timber, straw and earth, learning from expert tutors including CAT lecturers and guest speakers.

The need for social distancing in our teaching spaces, café and accommodation has meant limiting the number of students at CAT at any one time, but we've adapted teaching schedules to allow as many people as possible to experience our hands-on practical learning in a COVID-safe way.

MSc students can choose to study entirely from home or via a blend of on-site study visits and distance learning, so anyone who couldn't make it to CAT could still take part in the module.

It's a real joy to see the visitor centre full of life and learning once more. As a CAT member, your support has meant so much to us throughout these challenging times – thank you.

## What should secondary education for sustainability look like?

CAT is working with the British Educational Research Association (BERA) and partners across the UK to explore what education for environmental sustainability should look like.

Throughout May and June, secondary teachers and young people aged 16-18 are invited to contribute to a manifesto for education for environmental sustainability. A series of workshops will bring together young people and teachers to examine the current context for education for environmental sustainability, learn about alternative approaches, and develop a shared vision for the future.

The manifesto will be launched to coincide with the UN Climate Change Conference COP26 in November.

Partners include representatives from the University of York, King's College London, Liverpool Hope University, Strathclyde University and the Black Environment Network, with CAT leading on the contribution from Wales.

Find out more at: <https://www.york.ac.uk/education/research/uyseg/research-projects/manifesto-efes/>



How should we teach environmental sustainability?





### **CAT at Home webinars: climate justice series**

Join us online this summer for a new series of free webinars focused on different aspects of climate justice, with CAT Graduate School lecturers, guest speakers and graduates exploring the political, ethical and social contexts to the environmental crisis, and how they all intersect.

The series starts on 23 June with an introduction to climate justice from Judy Ling Wong (who you can read an interview with on pages 16-17).

You can find out more and book your place on our website, where you'll also find recordings of past webinars covering a wide range of topics related to solutions to the climate and biodiversity crisis, from community energy to gardening for wildlife, and from transforming transport to sustainable food systems.

[cat.org.uk/webinars](https://cat.org.uk/webinars)

### **Student exhibition to explore 'The Lives We Want'**

CAT is delighted to collaborate with Aberystwyth University on a new exhibition of student work, entitled 'The Lives We Want: Life and Earth Beyond Covid-19'.

Students at both institutions have been invited to submit proposals in a range of media that envision how we can engage with climate change and biodiversity loss and what really matters in a life post-COVID.

An online exhibition is scheduled to begin in June 2021, and the invitation for student proposals will be open until 31 July 2021. We also look forward to holding a physical exhibition at Aberystwyth University and at CAT later in the year.

Adrian Watson, Head of CAT's Graduate School said: "During our

postgraduate courses, CAT students gain the knowledge and skills to think about the solutions to climate change and biodiversity loss and this exhibition allows our students to put all of this into creative practice. Many of our students come not just from environmental science backgrounds but from architecture and the arts too, so we are looking forward to seeing how they interpret the brief and what media and artefacts they contribute."

To find out more, visit: <https://wp-research.aber.ac.uk/the-lives-we-want/>

### **New Eco Refurbishment online course**

A new two-day online course looks at how to transform buildings into cosy, low impact, energy efficient homes.

This online version of our popular Eco Refurbishment course gives you the opportunity to learn from Nick Parsons, one of the UK's leading eco refurbishment experts, and discover what key improvements you can make to your home.

Topics covered include understanding heat loss, insulation materials and methods, air-tightness and ventilation in refurbishment, and how to plan and implement incremental refurbishments if you have to do the job one stage at a time over a long period.

The course takes place across two Saturdays, on 3 and 10 July, with case studies, live lectures and online discussions.

Find out more and book your place at [cat.org.uk/short-courses](https://cat.org.uk/short-courses)

### **Climate.Cymru: a message from the people of Wales**

In the run up to COP26, CAT is partnering with Climate.Cymru, a collective of organisations working

together to send a message to global leaders from the people of Wales, asking them to take action to protect people and nature from the ravages of climate change.

With partners including RSPB, WWF, National Trust and more than 60 other organisations, we want to "make sure our leaders arrive at the summit with the voices of Wales ringing in their ears."

Find out more and add your voice: <https://climate.cymru/>

### **Ethel and Gwynne Morgan Trust Bursary offered until 2024**

We're pleased to announce that the Ethel and Gwynne Morgan Trust have extended their CAT postgraduate bursary programme for a further three years.

The bursary of £4,500 is awarded each year to a new student on one of CAT's postgraduate courses. It is aimed at part-funding someone who wishes to apply the knowledge and skills they learn in a practical way to combat the climate and biodiversity crisis in Wales, but whose financial situation would otherwise have prevented them from studying with us.

The Trust, whose main aims and activities focus on the advancement of education in science in Wales said: "We are delighted to continue offering this bursary until 2024 to fund new postgraduate students at CAT and look forward to seeing the impact those awarded the bursary will have on developing a sustainable future for generations to come."

The 2021 bursary closed to applications on 1 June; applications for 2022 will open early next year. For more details please contact Alis Rees [gsmo@cat.org.uk](mailto:gsmo@cat.org.uk) or visit [cat.org.uk/funding](https://cat.org.uk/funding)



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## New Zero Carbon Britain course explores local energy solutions

In May we launched a new series of one-day online courses focused on the key themes presented in our Zero Carbon Britain research.

The first in the series explored local energy solutions, looking at how to set up and run a community or local energy project, with sessions on renewable energy options, efficiency and placement, how to kickstart a project and get stakeholders on board, and important legal and financial considerations.

Case studies from a mix of successful rural and urban schemes offered a vision of what projects could look like and achieve, as well as giving attendees the chance to ask questions and network.

Speakers included experts from CAT as well as community energy pioneers Repowering London, District Heating Divas, Bro Dyfi Community Renewables, Zero Carbon Wedmore, and more.

Paul Allen, CAT's Zero Carbon Britain Knowledge and Outreach Coordinator, said of the new series:

"We're excited to offer this opportunity to delve deeper into the solutions set out in CAT's Zero Carbon Britain research, and help communities, local authorities and local groups take positive action on the climate crisis."

"Not only are local energy projects empowering and financially rewarding, they can also provide an educational tool for local councils and communities on how to turn climate emergency declarations into positive action – offering a blueprint that can be implemented in other areas."

Upcoming courses will focus on buildings, land use and more – keep an eye on our website for details or sign up to our enews to get all the latest news, courses, information and advice from CAT. [www.cat.org.uk/sign-up](http://www.cat.org.uk/sign-up)





# COP26 and the path to zero carbon

Sarah Jenkinson, CAT Head of Policy and Communications



This decade is a moment of choice unlike any we have ever experienced. All of us alive right now share that responsibility and that opportunity. There are many changes to make over the next 10 years, and each of us will take different steps along the way. We have to cut global greenhouse gas emissions in half this decade. We are certainly seeing a lot of energy at the local level to get to zero carbon as fast as possible. It truly is amazing!

Here at CAT we are keen to showcase and share learning from all the exceptional examples of local practical action across the UK. As co-hosts of this year's UN Climate Summit, COP26, the UK has a fantastic opportunity to show local leadership and all the practical solutions blossoming in our communities. Please do keep sharing your stories with us.

Five years since the Paris Agreement, this year is crucial. The UN Environment Programme (UNEP) Emissions Gap Report 2020 states that we are set to exceed a temperature rise of 3°C this century, despite the growing number of net-zero pledges. Delays to emission cuts mean more emissions and therefore more warming – even if we get to net-zero by 2050. Cuts are needed now, in every nation every year, with transparency so people can hold governments to account, and to avoid ecological disaster.

November's COP26 in Glasgow is still the best chance we have of all nations upping their carbon emissions reduction commitments and aligning with the Paris Agreement goals. Activities are in full flow to shift the entire world on to a

trajectory towards a zero-carbon future, putting the 1.5°C goal in the Paris Agreement in sight. We need all nations to arrive at the climate summit with increased ambition in terms of their net zero commitments. The US has recently vowed to cut its carbon emissions in half by the end of this decade. President Joe Biden promised the new targets would help create jobs and maintain American competitiveness. Some of the world's biggest economies - like China, Europe, Japan and South Korea - have also launched plans to drive their emissions down to zero by mid-century.

At the time of writing, Ministers are in Berlin for the St Petersburg Climate Dialogues to discuss wealthier countries' commitments to increasing finance to support the nations most vulnerable to the climate crisis. The G7 Summit in Cornwall in June will also be a key milestone to COP26. Through its G7 Presidency, the UK has an opportunity to lead the world's response to a set of converging crises for the international community, including crises of human health, economic development, climate change and biodiversity loss. It is hoped that the UK will make steps to finance actions that support economic sustainability in terms of greening economic recovery, ensuring that we set trajectories that can achieve net zero greenhouse gas emissions by mid-century, with a commitment to enhanced international cooperation on financing a sustainable recovery worldwide.

From the corridors of power, back to our streets, September is our moment to shine as all eyes look to the UK. The Great Big Green Week will take place 18-26 September, and will be the largest event for climate and nature ever seen in the UK. Thousands of events will celebrate how communities are taking action to tackle climate change and protect green spaces, and encourage others to get involved too. If you're in Scotland, you can get involved via the Climate Fringe Week. Together we will be putting pressure on the UK Government to up its game on climate change. It will need all of us!

Keep an eye on our website for more on what CAT is doing and how you can get involved – and look out for updates in the next issue of *Clean Slate*.

[www.cat.org.uk](http://www.cat.org.uk)



CAT membership is the perfect gift for anyone who cares about climate change and other environmental issues and wants to know what they can do to help.

# BUY SOMEONE THE GIFT OF SUSTAINABILITY

“It’s always inspiring to hear people from CAT talking. You’ve inspired us for decades.”

Eluned Morgan AM

Buy someone a membership gift pack today and they’ll become part of CAT’s thriving and growing community of changemakers, plus:

- A gift welcome pack, explaining how to make the most of CAT membership
- Clean Slate magazine, packed full of news, views and practical tips – four times a year
- Unlimited free entry to our award-winning Visitor Centre – all year round
- A gift to unwrap on the special day
- And the knowledge that your gift helps support positive solutions to the challenge of climate change



## MEMBERSHIP OPTIONS

**Individual £30**

**Joint £36**

**Family £40**

## Why become a member of CAT?

Our members tell us that grappling with the urgency of and scale of environmental issues, like climate change, can feel overwhelming and huge. Being part of CAT and a wider community of people who are working on positive solutions to environmental problems can help.

Becoming a member of CAT is a perfect way to help CAT continue its extensive educational work and ensure that we can plan the future with confidence.

Contact Penny Rowland at CAT for more information 01654 705988.





# Your views

Get in touch at [members@cat.org.uk](mailto:members@cat.org.uk) or write to us at Clean Slate, Centre for Alternative Technology, Machynlleth, Powys, SY20 9AZ.  
If you'd like your letter to be considered for Clean Slate please mark it 'For publication'.



## Renewables experience

My wife and I live on a small farm in Co Down, N. Ireland. It is typical Drumlin country with small rounded hills. We decided that the top of one of these hills would be a suitable site for a wind turbine. A 5kW unit was selected and agreed with the electricity board. It was good to think that we would be reducing our electricity bills, be paid for what we did not use ourselves and be more environmentally friendly.

We chose the Evance 9000 model. Detailed plans of the foundations needed were supplied. The mast arrived in three pieces and was assembled and erected complete with generator and blades. The base of the mast is bolted to the foundation and is hinged so the mast is erected by a hydraulic ram from a horizontal position. A cable was laid to the



meter board with the inverter positioned next to it.

The turbine has now been in service since 2009 and has achieved its 9000 kWh every year. We are delighted with it!

A few years later we decided to invest in photovoltaic panels. Our stone-built house and some of the farm buildings are grade 2 listed so the panels could only be put on one unlisted farm building. The PV panels were erected in December 2013 and have now generated a total of 9500 kWh. Any electricity we do not use ourselves is exported to the electricity board. Since 2018 we have had an all-electric Renault Zoe which we charge up every night at home from a 7 kW socket. So good use is made of all the electricity we generate.

David Erskine

## Climate justice and racism

We had several letters in response to the articles on diversity, equality and inclusion and on the links between racism and the climate crisis in the last edition of *Clean Slate* – thanks in particular to those of you who gave us links to additional resources or offered time and expertise.

Issues around climate justice are explored

in a range of CAT's work, particularly within our postgraduate courses and also in our Zero Carbon Britain research reports. This summer we are building on this by offering a series of free webinars on topics relating to some of the key aspects of climate justice.

The series starts on 23 June with an introduction to climate justice from Judy Ling Wong, founder of the Black Environment Network (see interview, pages 16-17). We'll take a look at what's needed for a just transition in the UK with CAT lecturer Dr Scott Leatham and CAT student Tanya Hawkes on 7 July. And CAT students Michael Lomotey and Jo Becker will examine links between racism and climate change on 4 August.

Find out more at [cat.org.uk/webinars](http://cat.org.uk/webinars), where you can also find recordings of past webinars on everything from nature restoration to renewable energy. Do join us if you can.

## Errors & omissions

Hillel the Elder, the Jewish scholar to whom the saying 'If not now, when?' is attributed was described as a 'medieval scholar' in CS119. In fact Hillel belonged to antiquity. Our thanks to Ruthi Brandt for spotting this error. Ruthi says:

*"The full quote is "If I am not for myself, who will be for me? And being only for myself, what am I? And if not now, when?" Which can be interpreted as a need to take personal responsibility, but also work with others. Which is also an important message in the context of both climate change and racism, and seems to have been central to CAT's attitude towards sustainability for more than 40 years!"*

**Coming up at CAT** – This is just a selection of upcoming events. Check out our website for additional dates and more activities and events, online and at CAT – [cat.org.uk/whats-on](http://cat.org.uk/whats-on)

### July 2021

3 & 10 July: Eco Refurbishment: Live Online

3-4 July: Cob Building

17 July: Secret Life of Birds Experience Day

17-18 July: Introduction to Bees and Beekeeping

17 July: Renewables for Households: Solar Hot Water

21 July: Gardening for Nature Experience Day

24 July: Nature Detectives Family Day

### August 2021

9-13 August: Building with Straw Bales

11 August: Moth Night Experience

14-15 August: Introduction to Solar P.V. & Off Grid Solar P.V.

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# Pine martens at CAT:

## Waiting with bated breath – and baited cameras

One of around 50 pine martens introduced into Mid Wales to help bring this important species back from the brink is now a regular visitor to the CAT woodlands. **Dulcie Fairweather** reports.

**T**he pine marten is an integral part of British fauna and plays an important role in the natural dynamics of woodland ecosystems, so we've been delighted to help provide a safe haven for these intriguing and charismatic creatures that were once on the edge of extinction in England and Wales.

Following some scattered sightings at CAT, we have worked hard to improve their chances through careful woodland management and installing den boxes. Over the past few months we've been thrilled to find signs of increasing use of the CAT woodlands and have even enjoyed some brief glimpses on our camera traps.

### **A woodland specialist**

Favouring the quiet of the night, the pine marten is a creature that few people actually spot.

One of six members of the weasel family (Mustelidae) native to the UK, the pine marten is distinguished by its beautiful creamy yellow to apricot throat patch or 'bib', the shape of which is unique to each individual. They have a rich chestnut brown fur and prominent, rounded ears which are highly sensitive.

Similar in size to a domestic cat, the pine marten is extraordinarily agile and a very confident climber – often landing on their feet. Amazingly, pine martens can leap up to four metres between tree branches. They boast numerous

adaptations for arboreal life, including powerful forelimbs, a long tail to aid balance, and sharp, semi-retractable claws – the only member of the mustelid family to have this feature.

The pine marten prefers woodland habitats, living in tree holes, old squirrel dreys or old birds' nests. Mature trees with holes and cavities are important for the species, as it uses these sheltered spaces to rest and raise young. Male pine martens can require up to 200 hectares of woodland for their territory.

Although classed as carnivores, they have an incredibly diverse diet and are opportunistic predators. They will feed on small mammals, birds, eggs, frogs, insects and fruit, adapting their diet to





## Managing woodlands for people and nature

Pine martens rely on well-connected, diverse woodland habitat for food, shelter and to raise their young.

At CAT, we have been planting more native trees and maintaining a well-developed ground and shrub layer to create a mosaic of habitat to allow the pine marten population to spread even further.

Continuous cover forestry is an approach that delivers a continuous timber supply without the need to clear fell (the removal of all trees from an area chosen for logging). We sustainably manage our woodland in this way, so it offers the most suitable environment for martens. We also retain areas that are protected and managed as non-intervention or minimum intervention zones, which will provide martens with shelter and food.

Our woodland provides the animals with natural dens in the form of retained deadwood and old trees, and with a range of food thanks to diverse tree species and dense ground cover, which supports small mammals, birds, invertebrates and fruits.

If you're keen to learn more about the skills and techniques of biodiversity conservation and using sustainable management principles, we offer a comprehensive Sustainable Woodland Management course. The main tutor for this highly practical five-day course is woodland manager Rob Goodsell, who takes care of CAT's beautiful and sustainably managed woodland, Coed Gwern. Take a look at our upcoming courses at [cat.org.uk/short-courses](http://cat.org.uk/short-courses)

Mark Medcalf / Shutterstock.com

what is most readily available. In fact, grey squirrels make up part of their diet, so martens could prove a beneficial natural control of this invasive species. Recent studies in Scotland and Ireland have concluded that when pine martens move into an area, greys move out, allowing once-abundant red squirrels to reclaim old habitat.

### Spotting the signs

As a result of their varied diet, their droppings – known as scat – can contain fur, feathers or the delicate bone fragments of small rodents. Sometimes, in the summer months, you may happen across scats that are blue or red in colour – a good indication that pine martens have been feasting on bilberry or rowan berry.

Pine marten scats can look very much like a fox's, but there are a few ways to differentiate them. The easiest tip is to simply follow your nose. Foxes produce dog-like droppings and can be strongly pungent – although my dog can't seem to resist rolling in them! On the other hand, pine marten scats tend to have a musty sweet scent that is not as unpleasant and

is often compared, rather bizarrely, to parma violets.

Furthermore, pine martens have an intriguing way of hip wiggling while scatting, which produces a distinctive coiled shape. Despite being a nocturnal and elusive creature, pine martens are rather exhibitionist about their scat and will leave their droppings in prominent places such as the middle of paths, rocks, tree stumps and even on top of den boxes.

If you're in the woods looking for clues of a marten's presence, keep an eye out for footprints. Whilst dogs and foxes have four toes, mustelids like badger, stoat, otter, mink and pine marten all have five toes.

### Plight of the pine marten

Known in Welsh as bele'r coed (marten of the wood), they were once one of our most common carnivores, roaming the wild and ancient woods that carpeted Britain.

Heavily persecuted by Victorian gamekeepers, pine martens were shot for sport and killed for their fur, and the habitat that they depended on for their arboreal life drastically reduced. As a

consequence, the pine marten became one of Britain's rarest predators and was considered functionally extinct in England by the early 1900s.

Despite the overwhelming odds, the species clung on in remote corners of Britain. Thankfully, pressures were less intense in Scotland and the martens fared better there, with the North West Highlands offering sanctuary to scattered individuals. Over the second half of the 20th century, the Scottish marten populations flourished thanks to strengthened legal protection and conservation efforts. As a result, the species has achieved a significant recovery with a healthy population of over 4,000 animals.

However, south of the border the species remained all but absent, with the exception of small pockets in northern England and Wales. Showing little sign of natural recovery, it was painfully clear to conservationists that intervention was imperative to safeguard the future of this native animal.

### The road to recovery

That's where the Vincent Wildlife Trust



(VWT) stepped in, successfully restoring a viable population of pine martens to the forests of Mid Wales. Over a period of two years, a total of 51 pine martens were translocated from the Highlands of Scotland in a tremendous effort to prevent the species from going extinct in Wales.

Prior to these endeavours, the last recording of a Welsh pine marten was as roadkill near Newtown in 2012. In a remarkable contrast, the 'first' Welsh born and bred pine marten after relocation was born in 2017. They are now breeding successfully, increasing in numbers and expanding their range. The iconic species has become a symbol of resilience and recovery, and its return to the Welsh landscape has been greatly celebrated.

Last year, some much welcomed good news was the arrival of kits from the first pine martens to be reintroduced to England – marking a milestone in the mission to boost their recovery across the border.

### Giving pine martens a helping hand

Here at CAT, we are dedicated to creating a place where nature can thrive – especially endangered species such as the pine marten.

In 2019, excitement mounted as numerous sightings of pine martens were reported on our land. An officer from the Vincent Wildlife Trust came to investigate and explore possible areas of pine marten interest in our woodlands. Wildlife cams were set up and artificial den boxes (which were already set up and well established) were checked for activity. Any research that could disturb pine martens, such as trapping animals or monitoring den boxes, must be carried out under licence.

Pine martens were regularly filmed further up the valley in nearby woodland by our neighbour Julie Brominicks, with the offspring of one of the original translocated animals making adorable viewing.

Equipped with the knowledge that we had martens in the area, we encouraged the animals to explore the new camera trap locations by offering a bounty of tasty delicacies – including strawberry jam, peanut butter and raw chicken eggs (a favourite of theirs). Camera traps are our eyes and ears in the woodland and help us to build up a picture of local biodiversity.

We finally captured film of a curious pine marten at the beginning of 2021 – and what a wonderful feeling it was

to playback footage on the camera and realise what had come to say hello! Since then, we have been treated to frequent visits from pine martens, even when there is no bait available. It is extremely heartening to know that our carefully managed woodland is supporting these fascinating animals. [CS](#)

### About the author

*Dulcie is CAT's Natural Resource and Volunteer Officer, helping manage our woodlands and wild spaces for people and nature. She has a BA (Hons) in Marine and Natural History Photography, a course that put heavy emphasis on environmental subjects and concerns.*



Caught on camera – a brief glimpse of the pine marten in the CAT woodlands. You can view this and other clips of CAT wildlife at [cat.org.uk/cat-at-home](http://cat.org.uk/cat-at-home)





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# CAT STORIES

Every day we're inspired by the stories of CAT members, supporters, students, graduates and volunteers who are out there making a real difference in the world. Meet some of our changemakers – and let us know your CAT story!

## Mark Luntley

Mark sits on the boards of multiple community energy groups, including Westmill Wind and Energy4All, which works to expand the number of renewable energy co-operatives in the UK. He is also a Community Energy Director for REScoop, which brings community energy groups together across Europe.



When Mark first visited CAT in the 1990s he was concerned about climate change, but CAT demonstrated what a possible future might look like. Completely enthused, he joined as a member that afternoon and has looked forward to his regular *Clean Slate* ever since.

*"We renovated our house and reduced our energy consumption by about a half, but wanted to do something that was more community-based."*

Clean Slate had an advert for the Baywind community wind farm in Cumbria, and I happily joined what was one of the UK's first community energy projects. A few years later the Baywind-established Energy4All launched a community energy project in Oxfordshire, where I live. I joined the Westmill Wind board a few months later, later becoming Chair, a role I've now had on and off for 12 years. We created an educational charity and have shown over 12,000 visitors around the site. I was also able to help create the adjacent Westmill Solar co-op – at the time the UK's largest community owned solar project.

*This all grew out of that first visit to CAT. I was inspired by what I saw, and it set me on a journey that instilled a new set of values and which ultimately changed the direction of my life."*

## Jenny Howard Coles

Jenny graduated from CAT in 2013 and now works as a Senior Development Manager at Centre for Sustainable Energy (CSE) in Bristol.

Before studying at CAT she worked as a freelance events manager. As her events work became increasingly focused on

environmental issues, she decided to apply to CAT to gain more knowledge and grounding in sustainability topics like building, infrastructure and the way we live.

*"I felt that the course would work well for me, with intensive residential modules where I could get immersed in the learning. As a freelancer, I was able to work in between modules and took the course part-time, which worked well for me."*

*"The course at CAT was an absolute game-changer. It shifted my career up a few gears and gave me the solid grounding in the knowledge that I needed. I also found that I did well in some of the more technical modules which I had imagined I would struggle with – so it was a real lesson in being open to developing skills in areas you had previously assumed would not be for you. I often say this when I'm talking to young people – just because you're not good at maths at school doesn't mean you won't thrive in a technical role later in your life!"*

Jenny is motivated to develop projects that tackle climate change and challenge the way our economy and energy system work. One of the projects she is currently involved in is Bright Green Future, an environmental leadership programme for Black, Asian and minority ethnic young people. The students give her a lot of hope for the future – and sometimes she gets to join their annual summer school, which takes place back at CAT!



# CAT conversations:

## Judy Ling Wong

Environmentalist, poet and painter Judy Ling Wong has spent four decades working on social justice, diversity and inclusion in the environmental movement. **Meg Stuart** caught up with Judy ahead of her upcoming talk introducing our new climate justice webinar series.



**B**orn in Hong Kong, Judy lived in three different cultures before settling in the UK in 1974. Having spent her earlier career dedicated to the arts, in 1987 she co-founded the hugely influential Black Environment Network\* (BEN), of which she is now Honorary President.

Judy is a major international voice on policy and practice, including a vice chairship for the DEFRA Civil Society Partnership Network and membership of the UN Habitat Global Stakeholders Forum. She has an OBE for pioneering multicultural environmental participation and a CBE for services to heritage.

**Meg Stuart: What does climate justice look like to you, and why do we need to talk about it?**

Judy Ling Wong: Climate justice is about attending to the needs and rights of all disadvantaged groups. I represent

multicultural environmental participation, but the issues apply to all disadvantaged people. They usually contribute the least to environmental damage, and yet they bear the most impact, and often this impact multiplies all the other dimensions of disadvantage. This is really unjust.

Very early on at BEN we set a challenge to the environmental sector: there's no such thing as a purely environmental project; a purely environmental project is one that has neglected the social, cultural and economic dimensions. It is basically about challenging all policymakers to make all policies people-centred; how we are taking action for impact on people, alongside impact on nature.

**MS: How do you use art and creativity to advocate for social and climate justice?**

JLW: Often the popular understanding of the arts, especially in the West, is

simplistically restricted to the production of objects for sale, but the most important part is creativity.

Being creative and making change, in whatever field and form, if you do it well, is an art. The artist Joseph Beuys put together a new remit for a particular kind of artist that he called 'social sculptors'. It sounds strange, but what he means is that when you work with processes, and you creatively and intentionally manipulate what is happening to society, you're sculpting society. So in that sense, I am a social sculptor too.

**MS: How important is intersectionality in your own work and in the climate movement as a whole?**

JLW: It's the basis of all my work and creativity. Intersectionality is about an integrated approach. For example, the challenge BEN set for the environmental sector was to solve problems across social, cultural, environmental and economic systems.

When CAT's researchers came to me to comment on the Zero Carbon Britain reports my challenge was about people-centred policy. Think of the 900 million people at the moment living on under two pounds a day, it's unacceptable. They need to have a standard of living way beyond that, and inevitably with that normal, average life, they are going to emit more. The vision of equity set within environmental policy means that extra amount of emission has to be factored into calculations for net zero. When you think with people-centred policy other things come into the equation that are not just about pure environmental measures.

Intersectionality isn't just about the negative bits, it's about the richness that people can bring from different cultures and sectors. It's only through this integration that we have the most benefit and the most impact on climate change and all our problems.



**MS: In 1987 you co-founded BEN, which has implemented an amazing body of policy, research, training and projects. Could you tell us about some of the projects you've been most proud of?**

JLW: We did a whole series of firsts in terms of methodology and fields of work. I was instrumental in putting into place the National Trust's first diversity policy. Organisations like these are important because they influence what the nation sees as its identity. Now when people visit sites they see that diversity, equality and inclusion is on the agenda, they see the multicultural history of the properties.

One of the underpinning principles I'm most proud of is that over 30 years of participation work, I can collapse the whole process into two phrases: we love what we enjoy and we protect what we love. In those two phrases you can see and understand where the creation of the environmental movement came from, and how it was dominated by the middle classes. They have all the circumstances to enjoy nature: they have gardens, at the weekend they drive out into the countryside, and so on. When you enjoy and love nature and what you love is being destroyed, what do you do? You fight for it. Lo and behold, environmental movement!

When we bring in disadvantaged and excluded groups, a lot of times we're talking about the front end of that process: we love what we enjoy. They have no access, so it's all about access to nature enjoyment first of all, then with that comes wanting to protect it, like everybody else.

**MS: How far have we come in the climate movement since you established BEN and how far do we have to go?**

JLW: The climate movement is an urgent and remarkable movement, but when you look back to 1987 when BEN was established, the movement was very much nature conservation based. We established the paradigm people for nature, nature for people, instead of just people for nature.

One major step was the acknowledgement that minorities in this country are the majorities of the world. We are a bridge to what is happening across the world - an important element of the story of climate change and its impact on people.

I also want to acknowledge the watershed moments that have helped

us to move forward. Black Lives Matter is an international watershed moment that has pushed people to put diversity, equality and inclusion on the agenda. In the UK we also had a watershed moment with the death of Stephen Lawrence. The Macpherson commission was put into place and came up with something that was momentous in the transformation of Britain - the legal duty to promote race equality in all statutory organisations and organisations heavily funded by the government. That was a push forward for us all, and now we have this second opportunity for change as a gift to the world from the black community.

**MS: You work with organisations ranging from United Nations forums to small grassroots charities. Could you tell us about your approach to working with different audiences?**

JLW: If you work at the top of policy you find that you can only implement it successfully when you talk meaningfully to grassroots communities and the huge population they represent. Policies set by people not in touch with conditions on the ground for different sectors of the community often fail because of this.

For example on sustainable transport, to enable disadvantaged communities to take up cycling they need bikes, and bikes are expensive! A long time ago we set up successful bike projects in Wales. We held workshops to refurbish donated bikes and trained people on how to service their bikes using the tools in the workshops.

This is an example of what we want to happen in society - the coming together of policy at the top and policy implementation at grassroots. We listen to the needs of different communities and the policy dimensions and aspirations and link them up together through relevant actions.


**MS: You've given guest lectures here at CAT as well as at universities across the UK. What role do you think education has to play in reaching zero carbon?**

JLW: Education is a phenomenal opportunity for zero carbon. Universities and schools are in themselves often intersectional because different kinds of people are mixing and spreading the message across all those sectors.

Educational institutions like CAT

are also important because when parliamentary groups come together to solve problems and discuss things like climate change, they use documents like the Zero Carbon Britain report. You have influence and the expertise you are giving is fundamental to our success in the future.

**MS: You were recently included in the BBC Power Women List, and the Forbes List of 100 Leading Environmentalists in the UK. Who inspires you in the climate change and social justice movements?**

JLW: I'm proud to say that after BEN's 30+ years, we now have a rising generation of activists and experts. I am inspired by the energy of emerging activists. There is a project called Climate Reframe, an open database of the 100 most established multicultural climate activists and experts in the UK. We're going to expand this to include newer activists and encourage the movement to use them - they won't grow without opportunity. Our visibility and the influence that comes with that is part of what is going to move us all forward. I look forward to the building of an increasingly inclusive future. 

*\*The Black Environment Network uses the word black symbolically, recognising that the black communities are the most visible of all ethnic groups.*

### About the author

Meg is part of CAT's Marketing and Communications team, one of the hosts of our free webinar series, and a fellow artist.

## Get involved - CAT webinars and courses

On 23 June, Judy will host an introduction to climate justice to kick off our new free webinar series. The series will explore the political, ethical and social contexts to the environmental crisis and how they intersect. Find out more and book your place at [cat.org.uk/webinars](https://cat.org.uk/webinars).

Judy is a guest lecturer on our Graduate School masters courses. Find out more about studying with us at [cat.org.uk/gse](https://cat.org.uk/gse)

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# ZERO CARBON BRITAIN



## HUB & INNOVATION LAB

### ZERO CARBON CONNECTIONS

A new team at CAT is working to support councils and community groups in the transition to net zero. **Anthony Hurford** gives us an overview of the Zero Carbon Britain Hub and Innovation Lab, and outlines some of the ways that it is influencing change. ►►

In February 2020, the new Zero Carbon Britain team gathered at CAT for the first time to begin planning how we would work together to inspire, inform and enable decision-makers to respond to the climate and biodiversity emergency. Little did we know that in just a few short weeks all of our plans would be upended and our newly formed team would be unable to meet in person for many months.

Fast forward to May 2021 and we now have a three-year strategy for working with councils and community groups, we've trained over 500 people, we're rolling out new innovation labs to bring people together to co-create solutions, and we've just launched a new online resource hub.

### Shaping the project

CAT has been researching and sharing ways of getting to net zero greenhouse gas emissions for more than a decade, but this project has a specific focus on helping councils and community groups, so our first step as a team was to create a new strategy with these audiences in mind.

As a starting point, we needed to know more about what kind of support councils and communities needed to help

turn climate emergency declarations into zero carbon action plans. We composed a survey to find out what support they already had and what was most needed that we could provide. We held informal conversations and more formal structured interviews with other organisations working towards net zero carbon, to get a better sense of where the gaps were and how CAT could help. We searched documents and websites to see what was going on that we could build on, or avoid duplicating, and began to form a picture of how we could best play our part in the larger whole.

We developed a theory of change, outlining how we saw ourselves combining and deploying the resources available to us and what impacts we believed that would have, based on our experience, the information we were gathering and the Zero Carbon Britain work to that point. This will be revisited throughout the project to help us build on what we learn, guide our thinking and help us challenge ourselves about how to have the biggest impact in the time available to us.

### Interconnected strands

Drawing this all together, we developed a strategy that emphasised the

interconnections between three main strands of work that we believe can support action at the speed and scale necessary to address the climate and biodiversity emergency.

The project supports local action by councils, communities and other organisations primarily through an online resource hub, training programme and innovation lab.


The online resource hub brings together the wide range of useful and freely available resources that we've discovered through our research and interactions with people from across society who we're coming into contact with through the training, events and innovation lab components of the project.

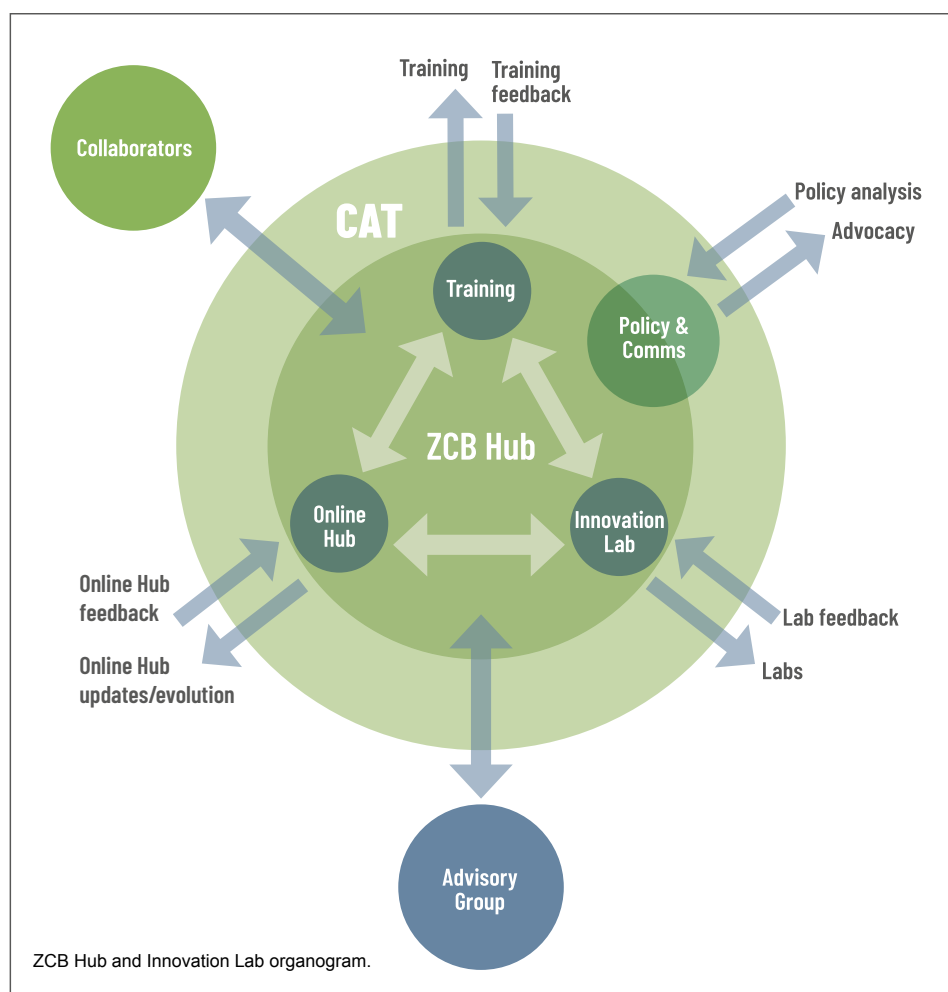
Our training courses and other events bring us into contact with a diverse section of society through highly interactive sessions. As well as sharing expert insights and valuable skills, these invite participants to share their knowledge and experiences with each other. Some of these are captured and publicised through the online hub. Training programme interactions help inform us of the critical barriers people are facing in their transitions to net zero, and some of these barriers might become topics for innovation lab processes.

Innovation labs typically involve multiple workshops for multiple people with an interest in, a role to play, or power within a current system for getting things done in society. By bringing all these perspectives together, it's possible to develop innovative new ways of problem solving together. Outputs of these innovation lab processes will feed into the training, or may help to define training needs for a particular group of people. We'll also raise awareness of the innovative solutions that are developed by including them in our selection of online resources.

### Critical decade

We're enthusiastic about the mutually supporting nature of these three strands of work, and their relevance to CAT's wider work, particularly where our research and training can help to influence policy at a national level.

We're receiving lots of positive feedback about the need for what we're doing and how it can be even more effective, and there's no shortage of work to keep us busy in this critical decade for climate action. 



Discover more about the Zero Carbon Britain Hub and Innovation Lab



There's a lot of useful information and advice out there for councils, communities and organisations that want to take action on zero carbon, but finding what you need isn't always easy. **Anthony Hurford** introduces a new resource from CAT that's designed to help.

CAT's new Zero Carbon Britain Online Resource Hub brings together the huge array of free and useful resources for inspiring, informing and educating those taking action on the climate and biodiversity emergency, or trying to work out what to do first.

Whether you're a member of a town council looking for information about emissions in your local area, or a community member trying to engage a council in supporting action, you'll find inspiring stories, information and advice from a wide range of sources, all gathered together in one easy-to-use online hub.

If you're running a small business and looking for support for taking action on the climate emergency through your work, or if you're an individual looking for a tool to help calculate the value of trees in your area to help maintain or increase tree cover, there's something in the Hub for you, and for many others in different situations.

## Simple to use – easy to share

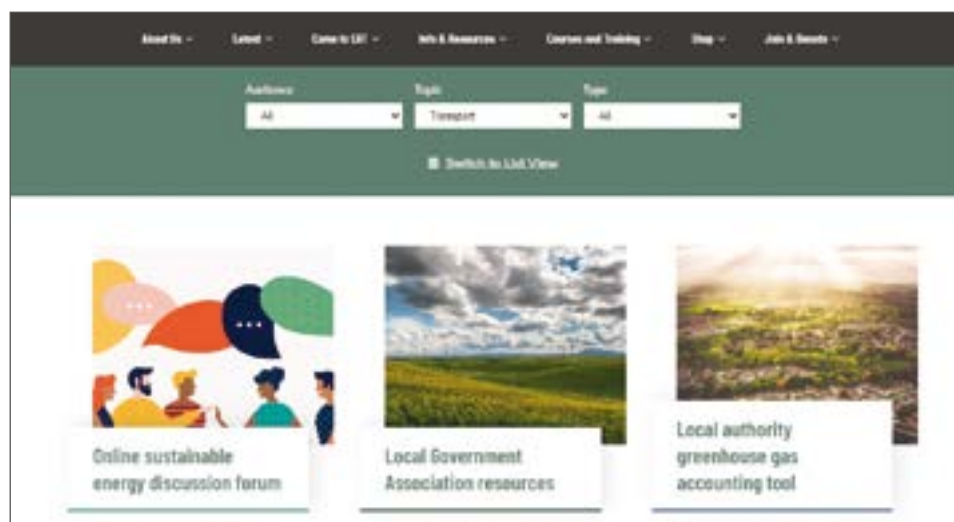
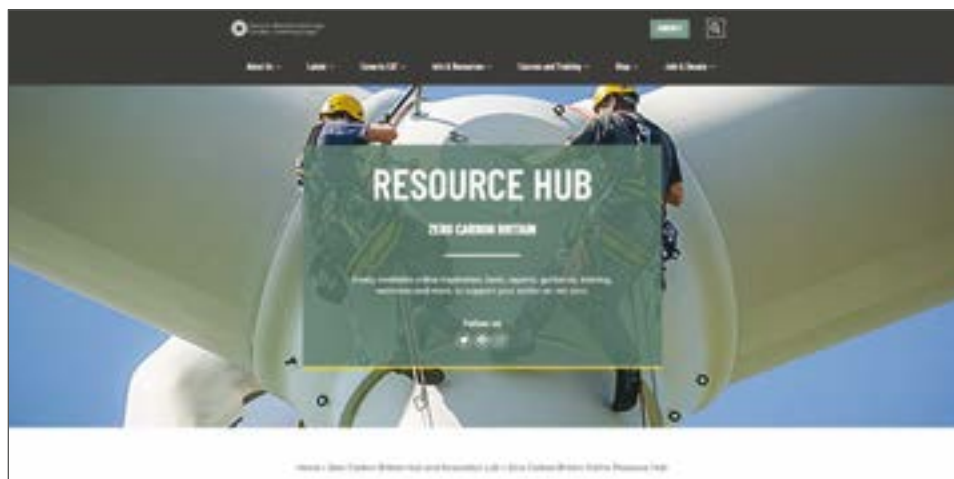
The online resource hub has been designed to be easy to use. Just go to the Zero Carbon Britain pages on the CAT website at [cat.org.uk/zcb](http://cat.org.uk/zcb) and select the Resource Hub link. There are three filters you can use if you'd like to narrow down your search to resources that relate to a particular audience or topic, or are of a particular type.

Once you select a resource, you'll have the option to click through to access the full resource or you can click on a category header to find similar resources.

The resources are designed to be easy to share with your networks via email and social media.

Take a look at this new service and tell others about it, wherever they're acting on the climate emergency. The more connected the Online Resource Hub is to its users, the better we can support them.

We see great potential for the Hub to help bridge the current gap between councils and the communities they serve – councils have limited resources and a wide remit, whereas communities have a wealth of additional experience, local knowledge and connections, and in many cases time to spare for causes they're passionate



about. Facilitating the two working better together could stimulate a powerful driving force for action at the speed and scale necessary.

## Developing the content – with your help

We plan to continue to build on this free resource and are collaborating with a number of other organisations to define and develop future iterations. Ideas so far include a more interactive forum function, methods for councils to interact with each other and for councils to hear what's needed in communities for transitioning to zero carbon living.

We're intent on the Resource Hub evolving in line with user needs, so if you think something's missing in terms of content, or have ideas for a feature that

would increase support for action then we'd love to hear about it.

Please get in touch at [zcb@cat.org.uk](mailto:zcb@cat.org.uk) with your suggestions, ideas or additional resources – and please share the links to the Hub with your local councils and community groups.

[cat.org.uk/zcb](http://cat.org.uk/zcb)

## About the author

*Anthony is CAT's Zero Carbon Britain Hub Project Manager, leading on the new online resource hub and supporting our training programme and innovation labs. He has a background in managing large research and consultancy projects, and developing collaborative management approaches for complex environmental systems – the focus of his civil engineering PhD and post-doc research.*

Lack of knowledge is often identified as one of the key barriers to effective action on climate change. **Amanda Smith** looks at how our new Zero Carbon Britain training programme is helping to address this gap.



CAT's Zero Carbon Britain training is designed to provide councils, communities and other organisations with the knowledge, confidence and skills to help achieve net zero greenhouse gas emissions.

Our training courses and workshops work alongside and are informed by the other aspects of the Zero Carbon Britain programme, using learnings from the online resource hub and innovation labs to further develop our teaching. This allows us to quickly and effectively share new understandings and innovative solutions.

It works in the other direction too: thousands of people from hundreds of organisations will benefit from our training programmes, and the stories shared and the knowledge and contacts we gain can feed into the development of other areas of our work.

## Building on past successes

## Banning on past successes

CAT had successfully run a Zero Carbon

Britain course for a number of years prior to the development of our new Hub and Innovation Lab, with an in-person conference-style event offered at CAT twice a year, usually attracting 50-90 people per event.

The course typically provided an overview of CAT's Zero Carbon Britain research and an opportunity to discuss and explore themes and case studies through workshops and seminars. Its interactive format provided extensive opportunities for networking and social contact with people interested in, or already working towards, net zero.

This was our starting point for the development of a new, expanded training programme as part of the new Zero Carbon Britain Hub and Innovation Lab. We wanted to build on the success and feedback received from the existing course whilst developing training to suit specific audiences.

In February 2020, as the Zero Carbon Britain Hub and Innovation Lab project

started, we delivered our first training, face to face, when the North Wales Wildlife Trust came to CAT for a full day workshop to explore the findings of the Zero Carbon Britain report and use these to inform their climate action plan.

Then the pandemic struck.

## Moving online

We had always planned to offer digital training as a development of the project, but now it was first on our list, and over the past year everything has been offered online.

We quickly converted our existing Zero Carbon Britain training to a digital format, offering our first online event in April 2020. The course, which ran over a day and a half, was attended by 93 participants and was a huge success, giving us a great starting point for our digital offer.

From the start, we wanted to build in as much interaction as possible and reproduce the networking and



discussions that would have taken place on site at CAT.

The course is highly interactive and includes case studies, real life examples and peer learning with other participants, providing a platform to share ideas about the practical steps participants can take towards a zero carbon Britain. With time built in for reflection and action-planning sessions, participants have the opportunity to think about how they will use what they have heard during this intensive and immersive online learning experience.

We have now run seven of these online courses, reaching over 500 participants through this type of training alone and drawing in a range of people looking for a deeper understanding of CAT's rigorously researched end-point vision for a net-zero society. Along the way, we have continually adapted and developed the content in response to feedback and based on our experience of running the course.

### Specialist courses

In addition to the 'Zero Carbon Britain: Live Online' course, we are currently developing more specialist courses that will enrich the training offer by providing a more detailed exploration of the key themes from CAT's Zero Carbon Britain research.

These can be targeted at specific audiences, for example councillors, senior managers and officers with responsibility for environment, finance, planning and sustainability, as well as those working on projects that have a direct relationship with carbon reductions.

We have just launched our first specialist one-day course on local energy solutions, aimed at community energy groups or smaller councils. On this course we explore the energy themes of the Zero Carbon Britain report and learn from the experience of others through case studies and stories. Expert input on stakeholder engagement and legal perspectives will provide a great overview of what you need to think about when setting up or managing such a project. We will use this model as we develop other themed courses.

### Bespoke training

We have also been developing a bespoke training offer with a 'menu' of options for local authorities and other key audiences.

The bespoke training builds on the general Zero Carbon Britain training

to look at sector-relevant detail and support for the organisations we are working with to identify next steps.

We have worked with community groups, education groups, wildlife organisations and councils in this way.

Through our bespoke offer, we deliver a range of levels of training – from a one-hour presentation through to a series of workshops. A route often

Europe and all corners of the UK, and we've had feedback about how accessible this training is for those who would have found it difficult to travel to CAT.

We've also sought to widen the reach and accessibility of this training in other ways, for example through the offer of bursary places for those who might otherwise be unable to take part.



chosen is to start with a one hour session for initial thinking and then have a longer workshop at a later date to get actions underway.

### Train the trainer

Integral to the training offer is the development of a 'train the trainer' programme. Our train the trainer courses will be available from June, and we are working with local authority audiences for the first one. These courses will be offered as part of our published programme but are also available as a bespoke option.

We are delighted to be delivering this training through the Carbon Literacy Project, offering carbon literacy with a Zero Carbon Britain flavour! The key idea is that one or two people within an organisation or team are trained and accredited to deliver the training, they then share this training with others, using their expertise and sector-specific knowledge.

### Accessible learning


Accelerating the switch to online learning has allowed us to reach participants who would otherwise have found it difficult to engage with our training, either due to location or circumstances. We have welcomed participants from Alabama, mainland

We do have plans to offer face-to-face training again in the future, but this will be alongside our online training and events.

### Overcoming barriers to action

We regularly ask participants in our training programmes to share with us what they consider to be the top three barriers to reaching net zero. One phrase that comes up every time is lack of knowledge, and that is what we want to address with the training that we offer.

Our training is current and topical, continually developing and evolving as the findings of the innovation lab, online resource hub, policy, communications, knowledge and outreach work inform what we are doing.

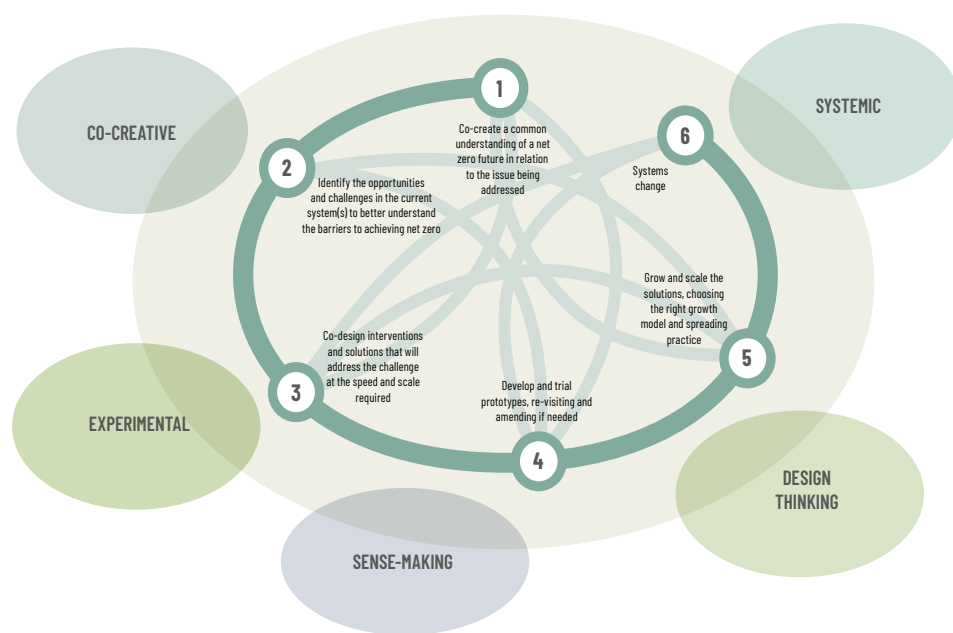
We'd love to hear from you with any ideas you have about how we can develop our training to best support the work that you are doing. Get in touch at [zcb@cat.org.uk](mailto:zcb@cat.org.uk) and take a look at our upcoming courses at [cat.org.uk/zcb](https://cat.org.uk/zcb) 

### About the author

*Amanda is CAT's Zero Carbon Britain Training Manager. She has over 20 years' experience in teaching, school leadership, adult training and organisational improvement.*

# co-creating innovative solutions

Complex problems like climate change require us to work together to understand the challenges and to design effective solutions. **Dr Anna Bullen** introduces CAT's new Zero Carbon Britain Innovation Lab, aimed at exploring and sharing routes into systemic change.



The Zero Carbon Britain Innovation Lab process.

As we know, climate change is a complex problem, the implications of which affect everyone, albeit to different degrees. Such complex problems, which include multiple stakeholders with intertwining and often contradictory interests, are often called 'wicked' problems. Whilst they present multiple possible approaches, there is no obvious single root cause or solution. In other words, wicked problems, such as climate change, are everyone's problems – they are no single individual or organisation's responsibility and require multiple stakeholders\* to address them effectively.

In order to tackle complex problems like climate change in the current economic climate we have no choice but to innovate. We need solutions that work across a complex range of interacting areas; solutions that not only offer technical fixes but also help overcome political, cultural, economic and psychological barriers. Yet too often approaches to innovation are ineffective and do not lead to the rapid systems change that is required if we are

to avoid catastrophic climate change.

An innovation lab offers a viable tool to both design and implement the solutions needed to face this complex challenge.

## Experimentation and participation

Innovation labs take a variety of forms, but essentially use experimental and participatory methods to tackle complex issues or challenges.

Central to an innovation lab process is 'design thinking', which is used to understand a particular issue and its impacts, and in turn design solutions to the challenge.

In addition to this, innovation labs are co-creative, experimental, sense-making and systemic in their nature. They involve an iterative process that seeks to understand the participants (stakeholders), challenge assumptions and redefine problems before co-designing, prototyping and implementing solutions to those problems.

## Exploring challenges and solutions – together

*Design thinking* provides a user-centric approach to solving problems, developing an understanding of the people for whom a product, policy or service is being designed. It focuses on human beings from the outset, so instead of viewing problems solely from an organisation's resource perspective or the system's perspective, we view them through an experience perspective, i.e. how the problem is perceived or experienced by the stakeholders.

*Co-creation* is a creative collaboration between diverse stakeholders to define, clarify, create and realise visions that provide value in a deeper sense. It draws on a range of perspectives and ideas in order to inform the process, and ultimately design and create the 'product'. It blends these ideas to create new ideas, exploring both the existing challenges and the potential solutions. The participation and collaboration of diverse stakeholders beyond consultation, as opposed to teams of experts or technocrats, represents the social nature of labs; the greater the diversity, the greater the potential for innovation.

Whilst design thinking and co-creation differ slightly (design thinking contributes to create value through in-depth user observation; co creation methods are aimed at creating value through user interaction), both are user-centred, aimed at creating value through experience and fostering innovations.

Innovation labs are *experimental*; we take an iterative approach to the challenges we are addressing by prototyping interventions then reviewing and amending them until we get it right. We expect failure along the way, in the full knowledge that we learn as much from failure as we do from success.

The innovation lab process is *sense-making*; we support participants to come together to understand what's happening and why. We encourage participants to let go of preconceived ideas about the problems that exist and the best



***“All solutions and interventions that are developed will be shared widely, supporting other organisations to adapt and implement them, contributing to the scaling up and rolling out required to address the climate emergency.”***

solution(s) to them. This not only builds the sense that change is necessary, but creates an openness to novel responses and approaches.

Finally, innovation labs are *systemic*. The ideas and initiatives developed in social labs, released as prototypes, go beyond dealing with a part of the whole, or symptoms, and address the root cause of why things are not working in the first place.

### **The Zero Carbon Britain Innovation Lab**

CAT's Zero Carbon Britain Innovation Lab aims to:

- Develop greater understanding of current barriers to net zero;

- Co-design innovative measures to address those barriers;
- Identify mechanisms through which those measures can be prototyped;
- Implement and monitor prototyping of the solutions;
- Create routes into larger scale impact or systems change.


Typically, our labs will use participatory tools and methods to enable the participants to work together to: explore the current situation (system) and its barriers to addressing the climate emergency; develop a vision of where they want to get to (e.g. net zero); and identify opportunities that will enable their journey to that vision.

From that process we co-design interventions and solutions that can be prototyped within the current situation. We support the participants to evaluate those solutions and where necessary revisit them to adjust accordingly.

Where needed, we can draw on our training offer to support the participants in developing the additional skills and knowledge required for implementation.

All solutions and interventions that are developed will be shared widely, supporting other organisations to adapt and implement them, avoiding duplication and unnecessary use of

resources. Our online hub will share outputs from the lab and our training will support organisations to understand and implement the solutions. Finally, reports on the findings from each Lab process will also be shared with policy makers. We will work with others to engage the political community to inspire and influence policy making at multiple levels, from local councils to national governments.

In this way, our innovation labs have the potential to make a significant contribution to the rolling out of effective solutions at the speed and scale required to address the climate emergency. 

*\* In this context, we define a stakeholder as any individual or organisation with an interest in (e.g. may be impacted by) and/or influence on, the issue (it might be a decision, policy or process) and its outcomes.*

### **About the author**

*Anna is CAT's Zero Carbon Britain Innovation Lab Manager. She is an experienced and qualified facilitator and project manager, with 25 years' experience in the sustainability sector, and is a firm believer in the use of co-creation methods in order to design effective and meaningful solutions to issues such as climate change. She has a PhD in Sustainable Citizenship*

## **Upcoming Labs**

We plan to run a variety of labs, addressing different barriers, and ensuring best use of our funding. As well as the Staffordshire Councils lab introduced in the last issue of Clean Slate, we have lots of other ideas in the pipeline, including the following:

### **A land use lab**

Our land provides the food that feeds us, fibre for a variety of purposes, and is central to the livelihoods of many social groups, particularly in rural areas. In addition, it provides a multitude of ecosystem services vital to human well-being and provides crucial opportunities in relation to carbon offsetting and capture. As such, it is a critical resource for food security and sustainable development and must play a central role in our journey to net zero.

The UK cannot reach net zero without significant changes to how we manage our land. Agriculture, forestry and other land use is responsible for just under a quarter of anthropogenic greenhouse gas emissions, primarily from deforestation and agricultural emissions (livestock, soil and nutrient management), whilst agricultural food production alone is responsible for just under 10% of total UK greenhouse gas emissions.

Historically, agriculture, forestry and other land use have often been dealt with separately, but this is now changing, most notably

in the IPCC Fifth Assessment Report, when the vast majority of the terrestrial land surface, comprising agriculture, forestry and land use were considered together in a single chapter.

The land use innovation lab plans to bring together representatives from all of the land use sectors to explore existing barriers to reaching net zero and to co-design solutions.

### **A business innovation lab**

We are working with the Shropshire Climate Action Partnership (SCAP) Enterprise Group to understand the barriers that businesses face in addressing the climate emergency and how best to engage them in the journey to net zero.

We supported SCAP both through providing training for them and then in the development of their climate action plan, which is based on CAT's Zero Carbon Britain research, and are now working with them on this particular element.

We will run an innovation lab process with the Enterprise Group and a sample of businesses to identify and understand the barriers to addressing the climate emergency, to explore the co-benefits for businesses that arise from addressing the climate emergency, and to design an effective process by which the Enterprise Group can engage businesses across Shropshire in delivering on their climate action plan.

# together we have made a difference!

CAT has spent many years researching and sharing zero carbon scenarios. **Paul Allen** looks back at some of the key milestones and successes from a pioneering project.

CAT began its initial Zero Carbon Britain research 15 years ago, at a time when relatively few people recognised that such radical reductions in greenhouse gas emissions would be needed to combat the growing threat of climate change.

The idea was initiated in conversations mapping out the wide range of environmental challenges faced by humanity, classifying these in terms of whether they gradually increase or whether they feedback and get worse very quickly. It became clear to us that climate breakdown was one of the most serious problems, which led to a coming together of CAT staff and students from our Graduate School to explore solutions.

The idea for the Zero Carbon Britain project was inspired by the very first 'Alternative Energy Strategy for the UK', published by CAT in 1977. At a time when UK energy strategy was based on North Sea oil and the promise of nuclear power, this first ahead-of-the-curve report offered a radical alternative based on five years of testing and developing new technologies and practical solutions at the centre.

So, to kick off Zero Carbon Britain, CAT pulled together a new research team and some of the original 'Alternative Energy Strategy' authors to begin to map out solutions.

## **Evidence-led ambition**

In 2007, after several months of detailed work including a wide range of expert consultations, the first Zero Carbon Britain report was published, aimed at informing the national energy debate.

At that time the UK Government target of 60% reduction of emissions by 2050 was well ahead of its global peers, but still fell far short of what is now known to be needed. This was clearly outlined in the foreword to our 2007 report, penned by Sir John Houghton, Former Co-Chair of the Intergovernmental Panel on Climate Change (IPCC) and Former Director General of the UK Meteorological Office:

"The authors of Zero Carbon Britain present a timescale for action that begins now. I commend their imagination (coupled with realism), their integrated view and their sense of urgency, as an inspiration to all who are grappling with the challenge that climate change is bringing to our world."

The climate science was clear, humanity had to be more ambitious, so we had begun to map out what, at that time, was unthinkable, simply because the evidence compelled us to do so. ►



We have placed as much emphasis on communications as we have on detailed research. Image shows Paul Allen at the UN climate talks in Bonn, 2015, in the run up to COP21 in Paris.



# The Zero Carbon Britain project timeline

**1977** – CAT publishes the inspiration for the project, 'An Alternative Energy Strategy for the UK', presenting copies to Tony Benn's Ministry of Energy.

**2006** – Conversations between CAT staff and students explore the major environmental challenges of the 21st century, and the Zero Carbon Britain project is born.

**2007** – CAT's first Zero Carbon Britain report published, exploring how we can power down energy demand and scale up renewable energy production. The report is launched with the All Party Parliamentary Climate Change Group in Westminster.

**2010** – 'Zero Carbon Britain 2030' published. This report increased our exploration of major changes in the food, agriculture and land-use systems in order to provide the required negative emissions, and offered more detail on policy and economics.

Catherine Martin, Co-ordinator of the All Party Parliamentary Climate Change Group, 2008-2011, said: "Zero Carbon Britain has allowed us to open up crucial conversations with government, Parliament, and the business world about Britain's energy future."

**2013** – 'Zero Carbon Britain Rethinking the Future' report delves into the detail on managing variability in supply and demand of a 100% renewable energy system, and on balancing our land use to provide a healthy diet.

Joan Walley, former MP and Chair of the All Party Parliamentary Climate Change Group said: "Zero Carbon Britain shows that the solutions to our problems do exist... Not only is this essential for a sustainable future but vital for our sense of wellbeing."

**2014** – 'People, Plate and Planet' published, detailing the impact of various dietary choices on health, emissions and the area of land required.

**2015** – 'Who's Getting Ready for Zero?' In the run-up to the UN Paris negotiations CAT assembled a team to produce an overview of international scenarios. It collected and highlighted the work of hundreds of

people around the world who have developed visions of possible futures. We were excited to be asked to share it in a side-event at the Paris climate negotiations.

**2017** – 'Zero Carbon Britain: Making it Happen'. This report explored how we can overcome barriers in innovative ways, bringing together thinking from psychology, sociology, political science and economics, as well as faith and spiritual practice, arts and culture.

**2018** – 'Raising Ambition'. This update of the 2015 international report brought together a range of scenarios exploring climate-stable futures at global, regional, national and sub-national scales.

**2019** – 'Rising to the Climate Emergency'. As awareness of the emergency increased, this report incorporated the very latest developments in science and technology, aiming to stimulate debate and catalyse action across all areas of society.

**2020** – CAT's new Zero Carbon Britain Hub and Innovation Lab launched, thanks to a generous donation from the Moondance Foundation. You can read about this new phase of the project on pages 19-25.



*This work has been supported by an amazing group of charitable trusts and foundations over the years, as well as by our incredible members and supporters. We've also benefited from the time and expertise of a huge number of people.*

*A huge thank you to everyone involved – this work would have been impossible without you.*

*Together, we have made a difference!*

This initial report introduced the dual parallel processes of powering down demand, by using an efficient approach to delivering society's goals, whilst also powering up clean energy in buildings, industry, transport, diets and land-use.

Back in 2007, electric vehicles were in their infancy, so the idea of a mass switch was not yet visible, but we knew it was possible. Similarly, solar and wind were still small-scale and not yet cost-competitive, but we could see things were changing.

### Communicating to influence

To ensure this work had maximum impact, we placed as much emphasis on communications as we did on detailed research – this was not going to be a report that sat on a dusty shelf.

Despite it being well ahead of the curve, or perhaps because of it, this initial report gained an amazing amount of traction. We were invited by the All Party Parliamentary Climate Change Group to launch this first report in Westminster, drawing a packed room and opening many new conversations.

Shortly after the report's release, the Liberal Democrats launched their energy policy: 'Zero Carbon Britain – Taking a Global Lead'. For the first time, a major UK

political party had adopted a zero carbon policy!

The then Liberal Democrat Shadow Secretary of State for Business and Enterprise thanked us, saying: "These proposals were largely inspired by the Welsh-based Centre for Alternative Technology and I would like to thank them for the ground-breaking work."

Then in 2008, the UK's Climate Change Act was a world-leading piece of legislation and the result of a wide range of groups working together as part of the Stop Climate Chaos Coalition.

### Fifteen years of zero carbon solutions


Over the following decade, as well as presenting at the UN COP climate summits in Poznan, Copenhagen, Paris, Marrakech and Madrid, key presentations have included UK, Welsh and Scottish Governments, a great many local authorities and councils, active citizen groups, Local Enterprise Partnerships, Wildlife Trusts and church groups. We have also been invited to play key roles within bodies such as the Climate Change Commission for Wales and the Science Advisory Council for Wales.

In 2009 the Smithsonian Institution invited us to run a 'Convergence on Zero'

in Washington, one of the very first net zero events in the USA, followed in 2013 by securing Winston Churchill Memorial Trust funding to explore and share rapid decarbonisation research across America.

The Zero Carbon Britain team have also recognised the key role of arts and culture in bringing change to life, presenting to key players including National Theatre, Royal Opera House and Donmar Warehouse, and working with Arts Council Wales to host an artist-in-residence.

Over the past 15 years CAT's research has reached and supported many thousands of people, and we are proud to have helped catalyse area-based projects such as Zero Carbon Shropshire, Dorset, Cumbria, Liverpool and Yorkshire.

Policies and actions at many levels are getting more ambitious, but there is still much to do as we enter a new ambitious phase for this pioneering project. 

### About the author

*Paul is CAT's Zero Carbon Britain Knowledge and Outreach Coordinator. He has been involved with our research into net zero 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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# MATERIAL MATTERS

Natural insulation manufacturer IndiNature is on a mission to clean up the construction industry. Co-founder, CEO and CAT graduate **Scott Simpson** looks at what they've achieved so far and reveals exciting plans to scale up.



Scott Simpson, CEO (left) and Sam Baumber, COO of IndiNature at 2020 industrial hemp harvest.

**T**he construction industry is responsible for almost half of UK carbon emissions, including emissions from heating and cooling as well as from manufacturing products and in the construction itself. Much of the UK's housing stock is cold, damp and poorly insulated, leading to wasted energy, fuel poverty and health problems.

At IndiNature, our aim is to help transform the industry through mass-manufacture of natural insulation systems made from UK-grown fibres.

IndiNature is a materials R&D company based in Scotland, with a manufacturing subsidiary. Along with other co-founders I set up the company in 2018 because of the need for natural fibre construction insulations to be widely available in the UK and globally.

Most conventional insulations, like mineral wools and petro-foams, have massive carbon emissions in manufacture, are made from non-renewable resources and end up in landfill – plus they are horrible on your skin and your lungs when cutting and handling.

Instead, IndiNature uses UK-grown industrial hemp to create insulation products that are reusable, recyclable and biodegradable – and a joy to work with. This includes: IndiTherm, a flexible thermal insulation 'batt' made from UK crops; IndiBoard, a semi-rigid, multi-purpose thermal and acoustic insulation

board; and IndiBreathe, which combines the two to create a highly energy-efficient system. Of these, IndiTherm is now being manufactured and is available for use in UK households.

## Locking in the carbon

Rather than contributing to emissions during manufacture, our products are designed to be carbon negative.

We've had a cradle-to-gate Carbon Life Cycle Assessment done on our IndiTherm insulation, accounting in great detail for everything from the point when our farmers plant their seeds through to transporting to our factory and the amount of energy our factory uses.

This assessment showed that our process uses one-eighth of the energy inputs of conventional rockwool or glasswool insulations, partly due to our renewable crops pulling carbon dioxide out of the air when they photosynthesise.

All of this together means IndiTherm actually has a net capture of carbon by the time it reaches the factory gate, ready to be shipped out locally.

If IndiTherm is used instead of rockwool in an average UK home, this could save 4.4 tonnes of CO<sub>2</sub>e off the upfront carbon.

## Reducing waste, improving performance

At end of life our 100% natural products

can be easily reused, reprocessed into the same products again or even hot-composted, all while being durable in a building even in the most extreme environments.

We use local industrial hemp not only because of its sustainability, but also because it has incredible performance advantages, including rigidity to resist slumping in buildings and vapour 'breathability' to reduce risk of trapped moisture, meaning buildings last longer and have fewer damp problems. It also has good thermal and acoustic properties.

The use of natural materials means we have no toxic volatile organic compounds (VOCs) from products off-gassing into homes or offices, and builders love our materials because they're soft to touch and there's no petrochemical or glass dust blowing about during installation.

## Upscaling UK production

Natural fibre insulations are fantastic in so many ways, but most are imported to the UK and are expensive, plus they have additional carbon footprints from the long freight distances. Currently there are severe shortages of imported construction insulation in the UK due to Brexit, Covid and the Suez Canal backlog.

To help grow the UK market, we are raising capital to set up the first dedicated high capacity natural fibre



Scott with IndiTherm, a flexible thermal insulation 'batt' made from UK-grown crops.

insulation plant in the country, due to open in the Scottish Borders next year. We are outsourcing until then. As well as our IndiTherm flexible batt insulation, we'll also be making our higher density insulating and acoustic IndiBoards.

At capacity, the factory will capture 10,483 tonnes of CO<sub>2</sub> a year; over 30 years, this will be the equivalent to planting 5,200,258 trees.

### Teamwork through tough times

The past four and a half years have been tough. We've been through a lot of highs and lows as we've developed products and processes and raised capital from nothing – but our team is so motivated to make a difference.

We couldn't have gotten this far without an amazing team, who are all driven by the same values and bring an incredible range of knowledge, skills and experience. For example, our fantastic architectural technologist Nikita Wolfe-Murray has a Masters in sustainable design as well as experience of hands-on construction work. Having someone like Nikita on the team is invaluable, designing the factory and product install guide and helping support customers asking about appropriate applications and systems for a wide range of new builds and retrofits.


### The CAT connection

The success of IndiNature is in a large part thanks to my time at CAT. Signing up for a CAT Masters degree was the best decision I ever made – a fantastic experience full of practical and theoretical work and, most importantly, I was studying amongst some really interesting students and lecturers from a wide range of backgrounds. In the Welsh hills to boot!

I was working in grassroots local community development in Scotland before CAT. The housing conditions people were living in were shocking – some of the most vulnerable people were living in fuel poverty because their homes were hard to heat. Buildings were badly designed, which meant they were cold and damp and often had a lot of black mould. That motivated me to go to CAT to learn how to improve the built environment, where I also learned about the enormous impacts the construction sector has on the climate, the environment and people's health.

CAT gave me the time to experiment. I was able to use a lab to work on my dissertation, which first focused on scaling up industrial hempcrete (lime + hemp and clay + hemp) pre-cast blocks, and I learnt a lot of technical skills to help with choosing appropriate materials and systems for different buildings, systems and climates.

CAT was also useful in informing our current factory plans – we're working on how to turn it into a beautiful cleantech showcase over time, using renewable tech and good design principles.

I think the best thing about CAT is that it opened up a global network of like-minded people doing good work. The natural materials market continues to grow globally and we all need to work together to scale it up. We have a planet to cool! 

*IndiNature is looking forward to seeing hemp insulation in a lot more buildings this year. If you have a project in mind you can find out more at [www.indinature.co](http://www.indinature.co) or get in touch at [sales@indinature.co](mailto:sales@indinature.co)*

### The IndiNature timeline

- 2001-14:** Working in local community development motivates Scott to help provide people with better housing
- 2012-13:** Scott studies at CAT, conducting lab-based research on hemp insulation for his dissertation
- 2015-16:** Scott carries out deep-green retrofit and extension on family home using natural materials
- 2016:** Scott and three co-founders – Sam Baumber, fellow CAT graduate Euan Lochhead, and Ewan Mealyou – begin IndiNature
- 2017:** IndiNature wins Best Circular Economy Initiative
- 2018:** IndiNature places in top six of European Cleantech Startups
- 2020:** The company raises over £1,000,000 to date
- 2021:** The company secures a £100,000 grant for its biotech research partner University of Edinburgh
- 2021:** IndiNature starts outsourced manufacturing
- 2022:** IndiNature's first UK factory due to open



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# BUILD TIGHT, VENTILATE RIGHT

Reducing the amount of energy we use to heat our homes is one of the key ways we can tackle greenhouse gas emissions. **Joel Rawson** looks at the role of airtightness and ventilation in creating comfortable, energy efficient buildings.

Reducing heating demand is key to a zero carbon future, because it's then far easier to install enough renewable energy to meet the remaining demand. Upgrading insulation makes the biggest impact, but air infiltration also causes significant heat loss.

In CAT's 'Zero Carbon Britain: Rising to the Climate Emergency' report we recommend building new homes to the 'Passivhaus' standard or similar. That means stringent airtightness and mechanical ventilation with heat recovery (MVHR).

We also recommend a mass refurbishment of existing buildings. A whole house retrofit may well also lead to using MVHR to give good indoor air quality, but in some cases passive (non-powered) ventilation, or a mixture, may be enough.

## Unintentional vs intentional ventilation

'Build tight, ventilate right' is a long-standing energy efficiency mantra. The aim is to stop unintentional ventilation and instead provide intentional ventilation. Airtightness applies to the entire building fabric: gaps and cracks at the corners and edges where materials join, holes for pipes and cables, where joists penetrate a wall, and so on.

The benefits go beyond energy savings. The right approach to airtightness actually makes a house feel both fresher and more comfortable. The thermostat tends to be cranked up in a draughty house to counteract the cooling effect of incoming air flows. In contrast, with low air movement a home remains comfortable at a lower temperature.

With good airtightness, effective ventilation replaces stale air – including carbon dioxide, cooking smells, water vapour, dust, off-gassing (for example from new appliances), and so on. If a building isn't airtight enough, planned airflows for some types of ventilation won't work as intended.

In addition to draughts, 'thermal bypass' can cause further heat loss. This is when outside air gets past the



A blower door test can be used to measure non-intentional ventilation.

insulation layer and into spaces within the building fabric. The 'dot-and-dab' technique for quickly fitting plasterboard creates voids prone to thermal bypass. It also happens when spaces in a roof or intermediate floor aren't properly sealed when being insulated. As well as heat loss, these cold patches are at risk from mould growth.

## Measuring airtightness

The first step is to know your starting point by having an airtightness test. Then you can set a target for improvement and a strategy to achieve it.

Airtightness in older buildings varies a lot, and you can't tell just by looking. Using thermal imaging during a test helps to identify heat loss from air leakage, by comparing cold spots visible during the test to those when unpressurised. A local energy agency or community organisation may be able to provide an initial survey.

A blower door test shouldn't be very disruptive or expensive. Existing ventilation points like extractor fans, trickle vents, and flues are sealed. A powerful fan extracts air to create a pressure difference that amplifies air infiltration, allowing you to measure non-intentional ventilation. You may want the test to give two measures:

- Air permeability relates to the surface area of a building. It's used in UK building regulations. The units are cubic metres of air per hour per square metre of surface area:  $\text{m}^3/\text{h} \cdot \text{m}^2 @ 50\text{Pa}$  (tested at 50 Pascals pressure).
- Air changes per hour (ach) relates to the volume of a building. It's used in high standards such as Passivhaus ( $1\text{ach}@50\text{Pa}$  for retrofit) and AECB retrofit ( $2\text{ach}@50\text{Pa}$ ).

These could be very different, especially for a less compact layout with a high surface area. When speaking to contractors make sure you're both talking about the same measure.

## Aim and strategy

Once you have a baseline, you can decide on an airtightness target that is practical for your project, considering also the type of ventilation you'll then need.

A typical modern house probably has an air permeability of about  $5\text{m}^3/\text{h} \cdot \text{m}^2 @ 50\text{Pa}$ . Some older homes are similar, but many are much leakier. Recommendations vary, but for mechanical ventilation to be appropriate you'll probably want less than half that. However, MVHR proponents say that the dedicated air intake means it saves energy even if airtightness is only to a reasonable level.

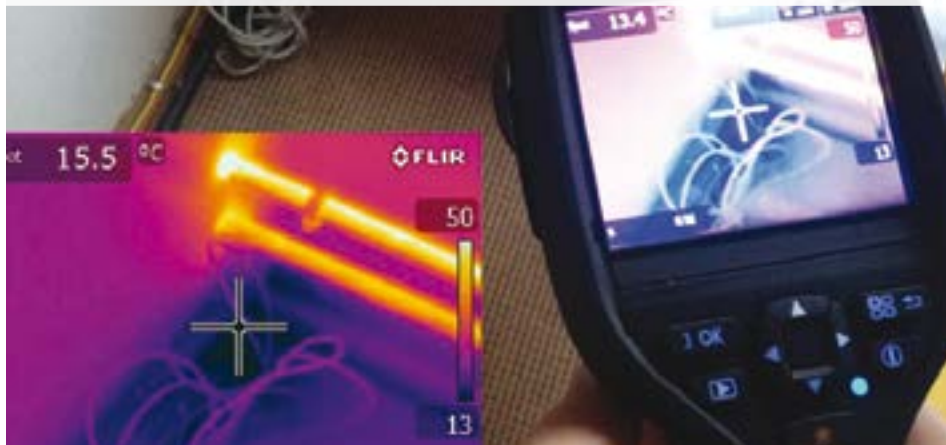
To deliver a more exacting target you need an airtightness strategy. This specifies where the airtight layer will be, with details for all the junctions, gaps and holes. When going for a tested standard, set your target to give a bit of margin for error.

## Hitting the target

Make sure that the target and strategy are clear to your architect and builders, because effective ventilation depends on it. Because attention to detail is vital, you need a good relationship with contractors and they must be fully engaged with the process. Stringent airtightness is still new to many in the UK, and having a 'no blame' culture allows you to get mistakes fixed before it's too late.



Thermal imaging can be used to find cold areas where air is coming in – as shown by the dark patches around the cables (the light areas are hot pipes).



There are special tapes and grommets for sealing junctions and problem areas, such as where electricians and plumbers run pipes and cables out of the building or into an uninsulated loft. Other weak points include recessed lights and the loft hatch. For some older houses secondary glazing might be a less costly option than replacement glazing for getting the required airtightness at window frames.

### Ventilation types

Mechanical ventilation with heat recovery (MVHR) extracts warm stale or moist air, generally from the bathroom and kitchen. A heat exchanger transfers the heat to incoming fresh air for other rooms. The filtering of incoming air is an advantage where outdoor pollutants are a concern. MVHR should have very low running costs, saving much more energy than it consumes. However, as a decent Passivhaus-certified system will cost a few thousand pounds, the retrofit must be to a suitable standard to make it worthwhile.

Ventilation that only extracts air needs very good airtightness and careful design to draw enough fresh air in to where it's needed (through trickle vents or similar). In a well-draught-proofed house, passive ventilation depends for success on manually adjusting windows or other inlets as required. You can supplement a mostly unpowered approach with a small heat recovery fan for the bathroom (perhaps also the kitchen).

### Pitfalls

Passive or mechanical ventilation can fail to deliver if there are mistakes in the design or installation or if it's not maintained – resulting in a stuffy, humid and unhealthy house. A successful approach must work under normal living conditions, for example don't rely on leaving bedroom doors open.

Poor design or installation of a


mechanical system could make it noisy. Large diameter ducts and a low air resistance heat exchanger keep the noise and energy use of fans very low. Rigid ducting is preferable to flexible, which may be easier to install but tends not to perform well. In general, flexible ducts lead to more noise, are harder to clean, and don't last as long. For heat recovery to work efficiently, the MVHR unit and ducting should be within the insulation layer, not in an uninsulated loft where they'll lose heat.

Check the maintenance required to keep a ventilation system efficient and healthy, and that there's access for this. For example, with an MVHR system you'll need to check the filters every

few months and clean or replace as necessary. Replacement paper filters might cost £10 to £15. You may need a more thorough servicing and cleaning of the heat exchanger and fans every few years.

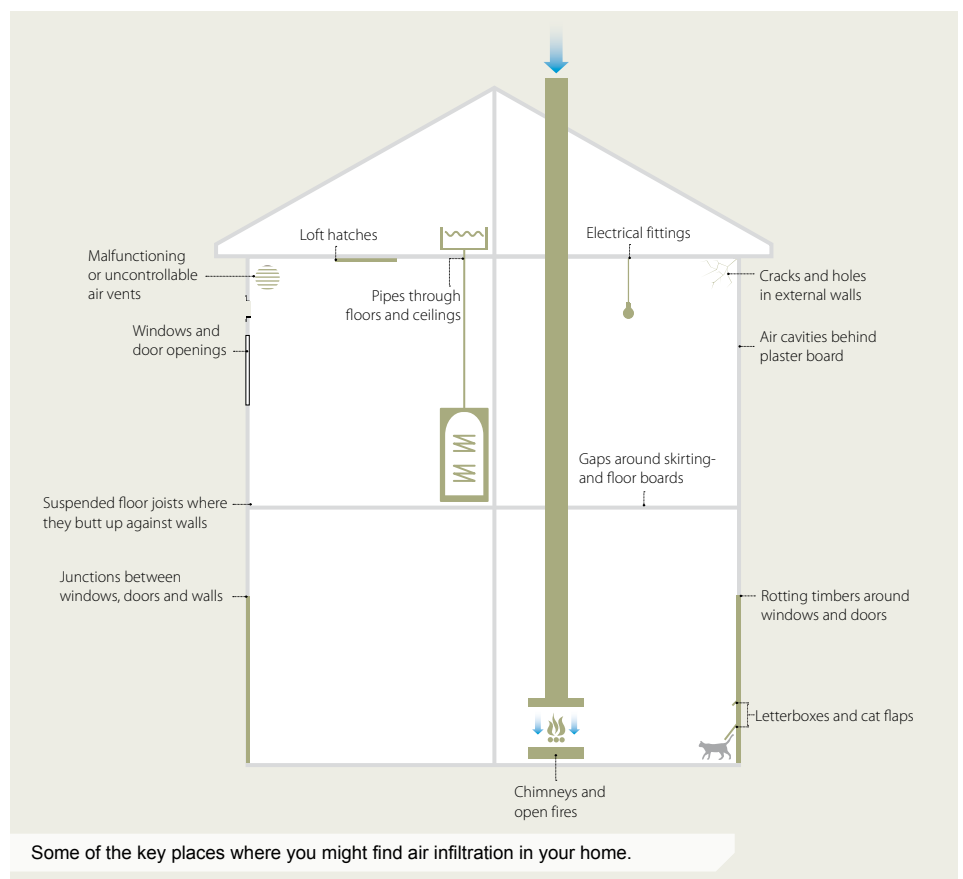
### Finding help

Getting good advice upfront should give big savings later. Local community-based organisations are ideal as trusted intermediaries – bringing together householders and local tradespeople, and supporting both. At the moment, there are organisations like this dotted around the UK, with more gradually springing up. There are also bodies like the AECB (Association for Environment Conscious Building) and Passivhaus Trust that list professionals trained to high standards.

Whether upgrading your own home or involved in a retrofit project with your local community or council we can point you to local organisations, listings, case studies, and technical advice. See CAT's information web pages at [www.cat.org.uk/info](http://www.cat.org.uk/info) or contact me for more advice. 

### About the author

*Joel Rawson is CAT's Information Officer, providing free and impartial advice on a wide range of topics related to sustainability. He first came to CAT to volunteer in 2001, and graduated with a CAT Postgraduate Diploma in 2013. You can email Joel at [info@cat.org.uk](mailto:info@cat.org.uk)*



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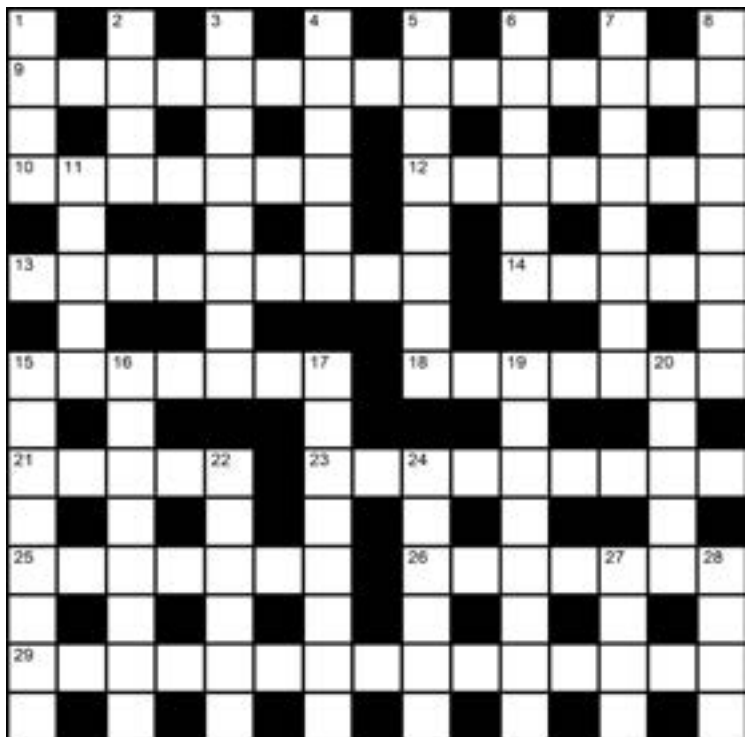
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# Cryptic crossword by Brominicks

<http://www.brominicks.wordpress.com>



## To enter:

Name: \_\_\_\_\_

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The first correct entry pulled from a hat wins a £20 voucher for the CAT EcoStore - [store.cat.org.uk](http://store.cat.org.uk).

Please send your completed crossword entry by July 31st 2021 to *Clean Slate* Crossword, Centre for Alternative Technology, Machynlleth, Powys, SY20 9AZ.

Solution will be published in the next issue of *Clean Slate*.

119 winner: **Rachel and Carol Lindley**

## Across

- 9 Black-and-white suit? (4,3,4,4)
- 10 Report awful place keeping enclosures unfit for a dog? (4,3)
- 12 Artist, not one paid much, originally (7)
- 13 Motor company with two fast growing plants (9)
- 14 Issue arising from Devil's Bridge crossing beginning to wobble (5)
- 15 Catholic society put in request for chorister's outfit (7)
- 18 Penny found in antique case, a forgery? (7)
- 21 Annoyed about United backing football competition (5)
- 23 Side of 14 (5-4)
- 25 Don't come in here to have a look, said Spooner (4,3)
- 26 Singer with the White Stripes? (4,3)
- 29 Dropping out of college to work for Swiss refinery? (9,6)
- 7 What has a strangely sahara-like interior? (8)
- 8 Creature returning to sleep during summer (3,5)
- 11 Spotted animal near hotel climbing banks of African estuary (5)
- 15 Verify attendance at playwright's broadcast (5,3)
- 16 Fabric worker used to furnish police station? (8)
- 17 Horny kid transfixed by Greek goddess (8)
- 19 Snacked regularly, getting covered with bread and peanuts (8)
- 20 Rule church leader goes against before long (5)
- 22 Boozer welcomes customers, the first from Liverpool (6)
- 24 Good cooker needed for farmhouse (6)
- 27 Guide to city that's full of characters? (1,2,1)
- 28 High score, four out of five? (4)

## Down

- 1 Caps, shirts and jumpers? (4)
- 2 Conclusively identify some eminent Nepali printmaker? (4)
- 3 City against getting into how pudding race could be introduced? (8)
- 4 King Edward with skin ultimately covered in mud (6)
- 5 Bill in personnel supports son that's not so smart (8)
- 6 Fuses together in three seconds? (6)

## Clean Slate 119 Solution




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# Your legacy can change the future



## Tanya Hawkes, CAT Legacy Officer

When you decide to write your will, your values and beliefs can live on through CAT's work. CAT has 50 years of leadership on the most pressing environmental issues, which we will continue to develop and build on far into the future. We will remain realistic, positive and solutions-focused, inspiring new generations to make the world a greener, healthier, fairer place to live.

### People like you fund our work through gifts in wills

A third of CAT's income comes from people like you. People inspired by a new vision for the future. And a third of our supporter income comes from gifts in people's wills. We couldn't do all the vital work that you are reading about in these pages without these gifts.

These gifts help us in so many ways. Some of it is unglamorous but essential and necessary to ensure the continuation of our visitor and educational centre, for example maintaining buildings or paying electricity bills. Some of it ensures the salaries of our committed, hard-working teams. And – so importantly – income from gifts in wills is the lifeblood of our education, our short courses on all aspects of sustainability, the research in our graduate school and our Zero Carbon Britain team working tirelessly across the UK and beyond to make Zero Carbon Action Plans a solid reality.

Money is not why we do this work – far from it – but money can be one tool that we

use to help transform society.

A large part of this happens because of people like you who remember us in their will and want to do something good and long lasting with their earnings.

### Leaving a gift in your will

As CAT's legacy officer, and having made a will myself, I know that loved ones come first. I also know how important privacy can be. There's no need to tell us about your gift, but doing so can help us plan future work with more confidence. What you tell us will always remain strictly confidential.

We will never pressure you to leave a gift, but I can offer honest and impartial advice about ways to leave a gift and what we would use your gift for.

I can also discuss ways that you might like your gift remembered at CAT. Whether by having your name displayed or by marking a place where your loved ones can remember you.

We would always recommend talking to a solicitor about your plans for making a will.

If you would like to chat over how your gift would be used at CAT, please do feel free to call me for an informal and unpressured chat.

In the meantime here are some examples of the different ways that people have left gifts to CAT in their wills.

**Residuary** – A residuary gift is what is leftover once gifts of money and items have been distributed to loved ones. This might be the whole of the residue, or a

portion of it.

**Pecuniary** – A pecuniary gift is a fixed sum of money. Some people ask for it to be index-linked to ensure it retains its value over time. You can discuss this with a solicitor.

**Specific** – This might be an object of value, like a painting, a library collection, a house or jewellery.

The gifts in wills we receive at CAT are as varied as the people who support us – a house, a valuable object, a small percentage of a family home, or a sum of money. Some of those people have their name displayed on our low carbon buildings, some have slate plaques on our visitor circuit. Some have a quiet place where their loved ones placed their ashes. Some prefer to remain anonymous.

Whatever way you might like to leave a gift in your will to CAT, we will make sure that it is remembered in the best way possible – by inspiring future generations to implement positive, practical solutions to the most pressing environmental issues.

*We will transform your legacy into a hopeful future.* ☺

*P.S. If you have left a gift in your will to CAT, or intend to, I'd love to be able to thank you properly and hear your story. I'm hoping to make some short videos and leaflets with real life stories from our supporters. Please do call or email me for a chat if you would be interested in taking part. You can contact me at [tanya.hawkes@cat.org.uk](mailto:tanya.hawkes@cat.org.uk) or on 01654 704950, Monday to Thursday.*



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