University of BRISTOL

Cabot Institute for the Environment
2023-2024 Impact Report

July 2025

University of Bristol

Cabot Institute

for the Environment

Contents

Message from the Director, Professor Guy Howard

Dear Friends,

It has been a productive few months at the Cabot Institute for the Environment as we make substantial progress on delivering our three-year strategy. I'm delighted to share some highlights of our recent work and introduce this year's Impact Report, which showcases the fantastic research projects supported through your philanthropic donations.

I would like to thank alumni and friends for their kind contributions to the Seedcorn Fund which has enabled new interdisciplinary connections, novel methodologies, further funding opportunities and career progression. In this report you'll find out how you've championed research projects that make a real difference; from improving biodiversity conservation in Amazonia to enhancing plant pollination with micro-drone swarms to developing novel breakwaters to protect UK coastlines.

Alongside our Cabot Institute for the Environment projects, we have been co-developing solutions focused research with other University Research Institutes (URIs). We are currently working on two joint initiatives: Climate Change and Health, in collaboration with Elizabeth Blackwell Institute, and Personal to the Planetary, in collaboration with the Brigstow Institute.

Our work on Climate Change and Health included funding three projects tackling emerging issues and which strengthen the research capacity at the University. Two of these projects have finished, but we continue to work on a neglected tropical disease, Leptospirosis, strongly influenced by climate. Our initial research in Brazil is leading to the development of major new research bids.

The Personal to the Planetary project involves 10 fellows who form a cohort of researchers, community groups, individuals and artists. The initiative has been a great opportunity to share knowledge and best practices across our research institutes, developing a new approach to collaboration. The cohort are currently planning a publication series due to be released this summer.

We continue to prioritise opportunities to convene and connect our internal research community through events and workshops, and after a successful pilot year, we announced a second open call for applications to our Cabot Community Events Fund. We funded seven community events for 2024/2025 including 'Can Games Teach?', 'Hope and Optimism in the Planetary Crisis', and a 'Symposium on Climate, Health and Law'. These are excellent opportunities to bring our internal community together to focus on an interdisciplinary environmental topic.

This feeds into one of our strategic pillars: our inclusive and vibrant research community culture. Dr Adrian Flint, Associate Director for Research, is leading on the delivery of this pillar to support, facilitate and catalyse connections to enable new research and partnerships.

Our educational offer continues to have significant impact, and a recent audit of MScR alumni demonstrated it has been instrumental in enabling a wide range of graduate career pathways, particularly providing effective preparation for PhD studies. We also found that 45% of MScR students presented their work at academic conferences and/or have published on their MScR research in academic journals within 3 years of completion. We recently launched a new video to promote the programme if you would like to find out more.

Finally, we continue to find new ways to raise awareness of our environmental research to public audiences. Notably we attended 'Tipping Point', an installation by the artist Luke Jerram, hosted at the University of Bristol's Botanical Gardens. Institute team members helped build connections with researchers and increase public awareness of research on issues such as wildfires. We are currently preparing for our largest public event of the year, our Cabot Institute Annual Lecture and Research Showcase 2025 on "Rethinking food and nutrition for the planet", which will take place on Wednesday 8th October 2025 at We The Curious. We hope you are able to join us.

Thank you for taking time to read about the projects we have been able to support through the Seedcorn Fund. This would not have been possible without the generous donations from our community of alumni and friends. I hope you enjoy reading about the difference this support has made.

Yours sincerely,

Professor Guy Howard

Cabot Institute for the Environment Director

Seedcorn Fund: Projects funded 2023-24

Voices of Amazonia: knowledge co-production to enhance environmental policy and practices

Project team: Dr Filipe Machado França (School of Biological Sciences); Dr James Palmer (School of Geographical Sciences); Dr James Ferreira Moura Junior (School of Biological Sciences); Professor Sabina Ribeiro (Federal University of Acre, Brazil); Professor Fernando Schimidt (Instituto Federal de Educação, Ciência e Tecnologia de Goiás); Professor Leandro Juen (Universidade Federal do Pará, Belém, Brazil); Professor Thaísa Michelan (Universidade Federal do Pará, Belém, Brazil); Professor Juliana Schietti (Federal University of Amazona, Brazil); Professor Fabrício Baccaro (Universidade Federal do Amazonas, Brazil); Dr Rafaella Maciel (Federal University of Lavras, Brazil); Dr Lis Stegmann (Embrapa Amazônia Oriental, Brasil)

Awarded: £4,998

Fund impact: Large multi-stakeholder workshop / Leveraged £1.8 million further funding / Influenced lead academic's career direction

The challenge

Improved relations between evidence and policy are urgently needed to tackle the climate and biodiversity crises. Amazonian ecosystems are among Earth's most bio-culturally diverse and make invaluable contributions to climate change mitigation through carbon storage. Yet, multiple stressors threaten Amazonia's socio-ecological resilience, highlighting the need for more coordinated, joined-up efforts between multiple actors to reduce these threats.

The project

To inform efficient policies and practices that safeguard nature, we need knowledge co-production that brings diverse voices, combines multiple disciplines and aligns key scientific evidence with societal needs. This is particularly true for biodiversity conservation, but it is rarely done in Amazonia.

To address this science-policy gap, this project delivered a Science-Stakeholder workshop bringing together key scientists, Indigenous leaders and decisionmakers to collaboratively identify and prioritise the most pressing questions for biodiversity conservation in Amazonia. The knowledge co-production approach meant they were able to break down boundaries across disciplines and sectors to promote an atmosphere for collaboration.

How the fund helped

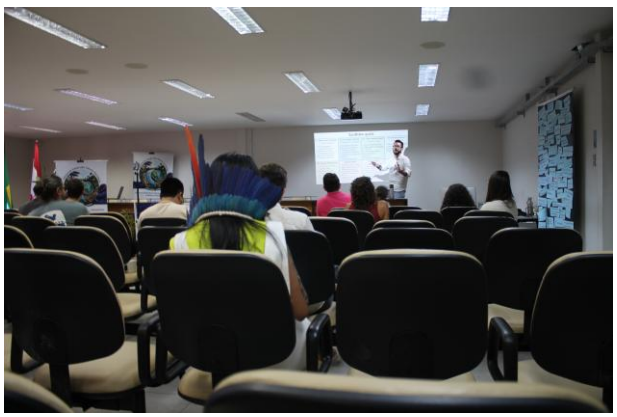
Large multi-stakeholder workshop

The workshop funded through the Cabot Institute seedcorn fund was held alongside the launch event for the INCT-SinBiAm network. This is the National Institute of Science and Technology in Synthesis for Amazonian Biodiversity. By combining funding and delivering the events together, they were able to include more participants such as indigenous community leaders, park managers, and environmental decision-makers.

The workshop involved smaller group activities that used participatory methods to engage attendees such as gathering stakeholder-driven questions to inform written outputs and future grant applications. It also created a valuable space to explore potential funding opportunities, including a brainstorming session that generated a wide range of ideas to take forward. Ideas include: integration of social and natural sciences; understanding people / nature relationships; and training of local students and future generations.
The team wrote a blog about the workshop in summer 2024.

Leveraged further funding

Participants went on to submit 12 grant applications which built on ideas developed at the workshop. The workshop was used as evidence of researchers working closely with decision makers and partners. Photos taken during the event added value to the grant applications by demonstrating the collaborative working. Several attendees who would not have been able to participate without the seedcorn funding were later included as collaborators in the applications.



Dr Filipe Machado França and Professor José Julio de Toledo, UNIFAP, were co-Principal Investigators on the largest grant application. They were awarded R$13,534,800 (Brazilian dollars), equivalent to £1.86 million, to establish the Advanced Centre of Research-Action for Conservation Restoration of Amazonian Ecosystems (CAPACREAM). The overarching objective of CAPACREAM is to establish environmental health parameters that align with the needs and aspirations of local communities and inform conservation and restoration strategies for Amazonian socio-biodiversity and ecosystems.

The centre will be structured around three associated projects with research-action initiatives spanning nine states in the Brazilian Legal Amazon. These are:

1. MONIToring Amazonian biodiversity and environmental health (MonitorAm)
2. Integration of Traditional Knowledge for Conservation and Ecosystem Restoration of Amazonian BIOdiversity (SoCioBio)
3. Synthesis and Modelling for Amazonian Biodiversity and Ecosystem Conservation and Restoration (Syn-Mod)

The CAPACREAM team comprises 111 researchers and managers from 40 institutions, including 27 based in the Brazilian Legal Amazon.

Additionally, a further two projects followed and built on the workshop:

- Biodiversity Monitoring Network for Forests and Streams of the Eastern Amazon *Rede de monitoramento da biodiversidade das FLOrestas e Riachos da Amazônia Oriental* (FlorAmOr)
- Long-Term Monitoring of Socioecological Patterns in Eastern Amazonian Ecosystems *Monitoramento dos Padrões socioecológicos em Longo-prazo da Amazônia Oriental* (PELD-AmOr).

Impact on lead academic's career

This was the first time that Dr Filipe Machado França had collaborated with community leaders and indigenous people at the outset of a project. The collaboration enabled him to explore new ideas that would not have emerged without stepping outside his discipline. These were included in research plans and increased the likelihood of follow-on grants being successful.

The CAPACREAM grant was the largest amount of funding Dr Filipe Machado França has achieved to-date and has had a significant influence on his career.

Seedcorn funding supported Dr Filipe Machado França's career in several ways:

- Enhanced contact with different sectors and disciplines – strengthened multidisciplinary connections have resulted in more social scientists being named on his grant applications.
- Influenced his approach to science – at his own research scale but also the bigger impact through his role as a leader in the network. He now includes different disciplines and sectors in the research process. This helps to understand at the outset how conservation strategies and research will impact local people.
- Contributed to him becoming recognised for this area of research and led to being invited to give talks about policy impact.

"Seedcorn funding came at a pivotal stage in my career and allowed me to catapult my career forward. The timing of the funding was key as I was just starting out as a lecturer. It supported me to build new links with researchers in different disciplines and enabled me to strengthen existing links and networks. This changed the direction of my life and my way of working to a multidisciplinary research approach working with socials scientists with decision makers. I'm a strong advocate for seedcorn funding, because meaningful collaboration starts by bringing people together and creating space for relationships to grow.

Dr Filipe Machado Franca, Project lead

Structured porous breakwaters to protect UK coastlines from the effects of climate change

Project team: Dr Elias Arcondoulis (School of Civil, Aerospace and Design Engineering); Professor Andrew Hogg (School of Mathematics); Professor Richard Porter (School of Mathematics); Dr Rory Bingham (School of Geographical Sciences)

Awarded: £4,400

Fund impact: Attracted further in-kind funding / Presentation at high profile conference / Novel scientific finding / Further opportunities identified

The challenge

Climate change is causing more frequent and intense storms that are, and will continue, to erode and damage UK coastline infrastructure and impact coastal communities.

Immediate action is needed to protect coastlines from these extreme weather events. Solid and rubble breakwaters are widely used to diminish wave energy and protect sensitive coastal areas, yet these intrusive structures disrupt natural coastal flow process, such as longshore drift. This can lead to significant sand dredging costs and impede on tidal and sediment passage in salt marshes.

The project

The project involved an interdisciplinary approach with the Schools of Mathematics, Geographical Sciences and Civil, Aerospace and Design Engineering. The aim of this project was to develop a design methodology and pilot test a breakwater designed using structured porous media (SPM) that can perform as a breakwater while significantly reducing harmful environmental impacts.

Analytical models of micro-scale fluid mechanics around regularly spaced pores were developed to calculate pressure losses. As well as to understand transmitted and reflected wave energy onto and through SPM interfaces. These models were validated via a pilot test of an SPM-breakwater in a water flume, using local coastal wave data as inputs for wave energy.

How the fund helped

Attracted further funding and resources

Initial funding demonstrated the viability of the project idea and created momentum which led to further in-kind funding and resource. LaVision, a laser imaging systems company, contributed equipment and staff time. 'The DEEP', an education and conservation charity, invited Dr Elias Arcondoulis to give a talk and provided in-kind support for the wave-structure interaction experiments. Imperial College London and University of Plymouth both invited Dr Elias Arcondoulis to present his work and use their facilities to carry out experiments. An aerospace centre in Germany supported the project by conducting ancillary experiments.

Novel scientific finding

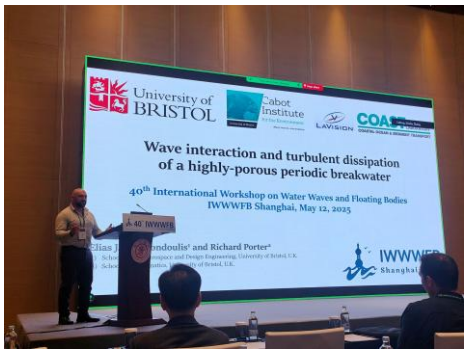
The porous breakwater was designed at small scale and the team were able to show that the structure can be mathematically modelled and validated. The researchers were pleased with how well the mathematical theory matched the experiments. This collaboration demonstrated a successful synergy between disciplines: one partner led the experimental work, while the other contributed mathematical modelling, resulting in insights that neither could have achieved alone.

A notable outcome was the production of visualisations of the porous breakwater which had not been done before. The visualisations are available to view on Linked In: Vorticity field visualisation and velocity fluctuation visualisation).

Six papers for publication in peer-reviewed journals are currently in progress with plans for submission in 2025.

High profile conference

The project team were delighted to have their abstract accepted for presentation at a high-profile conference. The 40th International Workshop on Water Waves and Floating Bodies in Shanghai, China (11 – 14 May 2025). This is the top conference in this field of research and was invite only, providing an excellent networking opportunity. The contribution was also published as a chapter in the Springer conference series book. You can read more about the conference here.



Opportunities in the pipeline

The project team are now writing a funding application for the Australian Research Council International Linkage Programme which would enable Australia-UK collaboration. The project has led to an ongoing collaboration with Imperial College London with plans to co-supervise a PhD student on a related topic.

“I am very grateful for the funding to support this project and to the funders for believing in and being open minded about the potential the project had. This allowed a national and international series of collaborations, lots of in-kind support and further opportunities; all arising from geometric growth of the initial donation”.

Dr Elias Arcondoulis, Project lead

A democratic listening circle for just transition in Bristol

Project team: Dr Emilia Melville (School of Computer Science); Dr Jack Nicholls (School of Sociology, Politics and International Studies)

Awarded: £4,975

Fund impact: Policy Briefing / Tested novel approach / New collaboration

The challenge

A group of community activists in Bristol has proposed a Just Transition Declaration for the city. The Declaration's 10 principles have been developed with grassroots communities in the city and presented to city governance organisations such as the Environment Board. It sits alongside Bristol's Climate Emergency and Ecological Emergency declarations. Together, these Declarations call for urgent change to the way things are done in the city.

Meeting and deliberating in the same ways that we always have may replicate existing problems, including existing systemic injustices of whose voices are heard most. Bringing methods which focus on listening into city governance spaces enables the potential for different ways of communicating. This could unlock new ways of acting - which is urgently needed in the context of climate change.

The project

Collaborating with the originators of Bristol's Just Transition Declaration, this pilot project has tested a novel approach to city-based agenda-setting discussions. The approach puts marginalised and disadvantaged communities in the centre of decision-making. It trials a different way of meeting, speaking and listening in civic conversations, which embodies the principles of Just Transition.

The approach is a Democratic Listening Circle based in traditions of indigenous governance practices, and roots in Quaker decision-making. Participants sit in a circle, and each person has an allotted amount of time to speak uninterrupted.

How the fund helped

New collaboration

Through this project, Dr Emilia Melville and Dr Jack Nichols have developed a new collaboration with the four authors of the Just Transition declaration. The authors are positioned in grassroots communities representing disadvantaged groups. They are Emma Geen, disability climate justice activist, Kirsty Tait, activist for marginalised geographic communities, Rachel Moffat, community energy activist, and Olivia Sweeney, Intersectional environmentalist.

Tested a novel approach

The funding enabled the project team to pilot a novel approach to public dialogue. They ran two Listening Circles which took place on 25 March 2024. The morning workshop was for community members facing poverty, exclusion and climate vulnerability. The afternoon workshop was for "early adopter" organisations who had signed the Just Transition Declaration. The findings show that deep-rooted conflict, mistrust and polarisation can begin to shift when people are truly listened to. Project outcomes are summarisied in a Policy Brief which includes key insights, reflections on the process, and policy implications.

Policy Brief

The Policy Brief titled "Slowing Down to Move Together: Democratic Listening Circles for a Just Transition" is available on the PolicyBristol website.

"The funding enabled us to test a powerful approach to listening deeply to each other. To trial a method that lets people hear common humanity is particularly strong as it helps to depolarise. It allowed connection between people who see the world differently and supported a group of people grappling with the implementation of just transition."

Dr Emilia Melville, Project co-lead

Sanitation and hygiene after the pandemic in China and India and their influences on antimicrobial resistance: a scoping review

Project team: Dr Tingting Zhang (Bristol Medical School); Dr Christie Cabral (Bristol Medical School); Professor Helen Lambert (Bristol Medical School); Dr Anisha Nijhawan (School of Civil, Aerospace and Design Engineering)

Awarded: £6,109

Fund impact: Valuable experience for Early Career Researcher / Nurtured international partnerships / Led to opportunities for publication and funding

The challenge

Antimicrobial resistance (AMR) is a global public health threat and has a disproportionate impact in low and middle-income countries due to their higher burden of infections. Although Water, Sanitation & Hygiene (WASH) behaviours are key strategies for reducing the incidence of infections in the AMR Global Action Plan, their application at community level is overlooked by most policies. Also, WASH strategies primarily focus on interrupting faecal-oral transmission and controlling intestinal infectious diseases.

During the COVID-19 period, numerous sanitation and hygiene policies were introduced at community level by authorities across the world. This highlights WASH's new role in controlling respiratory tract infections and suggests its implementation for AMR, as improved WASH should reduce transmission of infections and thereby reduce antibiotic use. At the same time, extensive use of chemical measures may have other adverse consequences for health and environment, including development of AMR.

The project

The project team conducted a scoping review of policy and literature focusing on China and India. Both countries experienced massive changes in infection control (e.g. use of chemical measures and encouraging hygiene behaviours) due to the pandemic.

As a result of the project, the researchers have a better understanding of how good sanitation and hygiene policy and practices, at the community level, can have implications for AMR. Additionally, they project aimed to find evidence on influences of new sanitation and hygiene on AMR.

How the fund helped

New collaborations

A close collaboration between researchers in the Bristol Medical School and the School of Civil, Aerospace and Design Engineering has been formed. Seedcorn funding allowed the time needed to build a strong working relationship. They are planning to work together on further funding applications.

The funding also supported researchers at the University of Bristol in strengthening their collaborative relationship with researchers at the University of Indonesia.

Valuable experience for early career researcher

Dr Tingting Zhang gained valuable experience as Principal Investigator on a project, honing skills in team leadership, developing external partnerships, and managing project finances. Additionally, she planned and chaired workshops with senior staff, further enhancing her expertise. She now has the confidence and experience to lead future grants, collaborate on grant applications, and expand her professional network.

Research findings and policy implications

The findings highlight that WASH is a crucial component in containing AMR, yet this connection has not been widely reflected in policy. While numerous policies focus on WASH or AMR individually, integrated approaches remain rare, with only six policies in India and China addressing them together.

One potential reason for this disconnect is the fundamental difference in how these fields operate. WASH is typically infrastructure-focused, whereas AMR is rooted in health sciences and healthcare. Each discipline uses differing terminologies and methodologies which adds challenges to working together. However, to improve AMR containment, policy approaches will need to increasingly consider AMR and WASH together.

Further opportunities

A paper has been drafted for submission to a peer-reviewed journal such as ‘Health, Policy and Planning’. A follow-on funding application, jointly submitted with Dr Tingting Zhang’s international partner in Indonesia, was made to the International Science Partnership Fund for £25,000.

" Thanks for the support – it’s a great opportunity for early career researchers. It was very helpful for my career development.”

Dr Tingting, Project lead

Harmonious Coexistence: Enhancing plant pollination with micro-drone swarms while safeguarding insect populations

Project team: Georgios Tzoumas (School of Engineering Mathematics and Technology); Alex McConville (School of Engineering Mathematics and Technology); Professor Chris Preist (School of Computer Science); Professor Jane Memmott (School of Biological Sciences); Dr Christoph Grueter (School of Biological Sciences); Hannah Romanowski (School of Biological Sciences); Professor Tom Richardson (School of Civil, Aerospace and Design Engineering); Dr Sabine Hauert (School of Engineering Mathematics and Technology); Khulud Alharthi (School of Computer Science); Henry Hickson (School of Engineering Mathematics and Technology); Avgi Stavrou (School of Engineering Mathematics and Technology); Mickey Li (School of Engineering Mathematics and Technology); Georgios Tzoumas (School of Engineering Mathematics and Technology); Elliot Scott (School of Engineering Mathematics and Technology); Matimba Swana (School of Engineering Mathematics and Technolog)y; Daan Scheepens (University College London); Kirsten Syris (University of Reading)

Awarded: £4,620

Fund impact: Proof of concept / New collaboration / Presentation at conference

The challenge

Pollination is a crucial ecosystem service vital for preserving plant communities, both wild and agricultural. With pollinator species populations declining, plant reproduction suffers, leading to a loss of biodiversity and impacting dependent ecosystems.

Furthermore, as the planet's population continues to rise, there is an increased need for pollinators for food production. Traditional artificial pollination is slow and time-intensive, limiting its scalability. While hiring

beehives is an option, it may not suit all plant species and has been shown to spread disease, further contributing to the decline of natural pollinator species. Innovative robotics technology has the potential to address this challenge.

The project

The project explored the environmental, technological and ethical implications of using innovative robotics technology to address these challenges.

The team set out to investigate bio-inspired strategies used by insects - particularly bees - for pollination, with the aim of translating these natural methods into a novel approach using swarms of micro-UAVs (Unmanned Aerial Vehicles). This work explored their potential for both pollination and pro-pollinator seed dispersion across a range of indoor and outdoor environments.

The team aspire to build more sustainable agricultural pollination techniques, whilst boosting insect populations, pro-pollinator plants, and ecosystems.

How the fund helped

New collaborations

The cross-disciplinary team included ecologists, biologists, and roboticists from the PROTEAS group at the Bristol Robotics Laboratory, along with collaborators from ecology and environmental groups. Convening this group at an online workshop was a significant milestone in the project. It brought together individuals who would not normally collaborate, thereby bringing together the different perspectives and knowledge needed to address the challenge. Preliminary discussions included:

- The impact of UAV swarm pollination on biodiversity
- Life cycles of deployed robots
- Social and ethical implications of this approach.

Proof of concept

The project tested the feasibility of using micro-drone swarms for almond pollination and found that they could perform tasks like a real bee. Foraging algorithms were designed to guide the UAVs toward plants using environmental cues.

While most of the work was conducted in simulation due to limited field trial opportunities, the team procured key hardware, including two RealSense cameras, to support future testing. They also investigated how drones might carry pollen and the importance of distinguishing between male and female flowers – highlighting the essential role of having biologists on the team.

New ideas have been generated because of the seedcorn funding and consequently three new MSc projects have been proposed. The team are currently exploring follow-on funding opportunities.

Presentation at conference

On behalf of the PROTEAS team, PhD candidates Khulud Alharth and Avgi Stavrou gave a presentation titled “Utilising Collective Intelligence for Plant Pollination through Human and Robot Teams” at the AI for

Collective Intelligence (AI4CI) conference. The presentation outlined planned next steps which include field trials to verify the effectiveness of the micro-UAV swarm, and continuing to collaborate with social and environmental scientists.

"Thank you. Through the funding we have shown that we can explore how robots can help the environment and address serious issues around climate change. It was a huge opportunity to bring people together to work on a project they care about. It enabled us to purchase hardware to test out our theories and to present our work at a conference."

Dr Georgios Tzoumas, Project lead

Understanding urban neighborhood microclimates in an era of global climate change

Project team: Dr James Duminy and Dr Rodolfo Bezerra Nóbrega (School of Geographical Sciences); Dr Martin De Kauwe (School of Biological Sciences), and Beca Phillips (PhD candidate)

Awarded: £4,623

Fund impact: Developed novel method / New collaboration / Career development for PhD candidate

The challenge

Cities are key drivers of climate change through the generation of greenhouse gas emissions and through the intensification of local warming via the urban heat island effect. International accords such as the Paris Agreement and Sustainable Development Goals (SDGs) emphasize that bespoke urban interventions are critical for an effective global climate change response.

Understanding and acting on climate change at the city and neighbourhood scales calls for appropriate methodologies and detailed knowledge of how urban environments (including greenspaces) will respond to – and potentially help ameliorate – global environmental changes.

Given that urban and natural landscapes coexist as complex open systems, insights from both scientific disciplines (e.g. biological science, hydrology and ecology) and social scientific fields (e.g. urban geography, planning and governance) are required to generate appropriate interdisciplinary knowledge of the interactions between urban ecosystems, built environments and neighbourhood-level microclimates.

The project

Insights and methodological techniques from different disciplines (physical, biological and environmental sciences; urban social sciences) were mobilised to develop a novel approach to examining neighbourhood microclimates in cities.

The team took measurements of the daily water use of urban trees. The aim of these measurements was to better understand the tree's cooling capacity and look at how trees contribute to regulating Bristol's microclimates. The was complimented by qualitative work which involved observing how people interact with trees in public spaces in cities.

How the fund helped

New collaborations

This offered a first opportunity for Dr James Duminy, whose research focusses on cities and urbanisation, to work with other academics in the science faculty; Physical geographer Dr Rodolfo Bezerra Nóbrega and Biologist, Dr Martin De Kauwe. The interdisciplinary conversations and relationship building is a tangible outcome of this funding. The group now plan to work together to co-author papers and write grant proposals to scale up the work.

Developed novel methodology

A large proportion of the funding was used to purchase sophisticated field kit with wireless technology. This equipment includes:

- Dendrometer - measures tree growth
- SEB flow sensor – measures water consumption of trees and how this relates to temperature.

The funding has enabled initial exploratory work which has provided the team with a good understanding of the topic and the opportunity to develop a novel methodological approach. The new method can be used to explore future interventions that regulate temperatures in cities. It could be scaled up to develop a detailed understanding of the relationship between warmer temperatures and the hydrological cycle associated with trees. For example, to determine which trees are better at regulating temperature and which offer most shade.

Opportunity for PhD researcher

PhD candidate Beca Phillips, who studies the concept of smart cities, was invited to work on this project. Using observations and sketching, Beca gathered qualitative data on how people use trees in the city of Bristol. Her involvement in the project demonstrated her ability to work on a broad range of thematic topics and issues, using a variety of innovative methods and conceptual approaches. This was included on her CV when she successfully applied for a teaching position in the School of Geographical Sciences (from September 2024).

The project also led to a networking opportunity as Beca presented at a Royal Geographical Society conference in London.

Follow on ideas and next steps

The team will collect more measurements in summer 2025. With additional data to support the findings, they plan to publish the work and organise a co-production workshop. The workshop will bring together delegates from local and national government with academics including those working on climate change and health. The ambition is to have a network of monitoring around the city of Bristol and to help improve predictions of future heat risks and vulnerabilities.

" Funding of this type, which is flexible and supports exploratory work, is rare. It provides the opportunity to create new interdisciplinary links which wouldn't otherwise be possible. Small pots of money like this one are needed to get the ball rolling before looking at larger funding pots. This type of bridge funding is so valuable for experimental, innovative exploratory work."

Dr James Duminy, Project lead

University of BRISTOL

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