



**UK Consortium on  
Sustainability Research**

## **UK-CSR Symposium ABSTRACTS**

Climate change: the contribution of UK universities to addressing climate change from a sustainability perspective

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Manchester Metropolitan University, Manchester

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### **The fastest warming place on earth: what can UK HEIs learn about climate change education from pedagogical practice in the High Arctic town of Longyearbyen?**

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What is happening in the climate of the High Arctic is having an impact upon all of us, now. Svalbard has a resident population of 2552 as of October 2021, but also bristles with researchers from across the world – up to a thousand a year, from over 30 countries, prior to the pandemic – its openness making it what the UK Arctic Office has termed the “an international research village”. Whilst hosting the rich diversity of biologists and geoscientists that one would expect of the region, there is sparse published research into the work of some of its climate educators, as a pedagogical project undertaken under such extreme and rapidly changing environmental conditions. This is a presentation of an initial study towards a paper that will explore implications for pedagogy and educational philosophy of the ways in which Svalbard’s tertiary education has been modified to reflect the imperatives of anthropogenic climate change (ACC) in a region already sharply feeling its effect. Svalbard’s Centres for Excellence in Education provide world-leading teaching in Arctic geoscience and biology and reflect the prioritisation of ACC beyond the curriculum and into student-led fieldwork, research and activity, as well as providing tailored masters and doctoral level taught courses. The intention of this part of the project is to investigate whether pedagogical insight can be drawn from the cutting-edge practice in Svalbard, for UK HEIs further behind in feeling ACC’s effects, whilst seeking to adapt curricula and teaching from a sustainability perspective.

### **Voices of the future: Collaborating with children and young people to re-imagine treescapes.**

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The project will co-produce a transdisciplinary and cross-sector, ‘lexicon of experience’ with children and young people to amplify the voices of children and young people in treescape management. The project employs co-production approach to combine children’s and young people’s perspectives with scientific and ecological knowledge of treescapes. It applies innovative methods, to co-construct knowledge with children and young people to evaluate the contribution of different treescapes to future climate mitigation. Using age-appropriate methods of quantifying carbon storage in trees and soils, the project will develop CYP’s understanding of how protecting, improving, and expanding treescapes benefits human society. The project brings transdisciplinary creative, social, and scientific approaches together to explore children’s and youth’s multicultural and multimodal engagement with treescapes management. It will explore across generational and transnational stories, to listen to unheard/unrealised past to optimise for a hopeful, equitable and resilient future. The project involves collaboration with early years, primary, secondary and HE institutions, regional and national partners to develop and test innovative models of co-production. It applies transdisciplinary and evaluative framework to explore how urban treescapes offer opportunities for learning, belonging, and hope to children and young people. The project will integrate children and young people’s knowledge, experiences, and hopes with scientific knowledge of how trees adapt to and mitigate climate change. This co-created knowledge will help to re-imagine treescapes that meet both environmental and human needs, including those of traditionally underrepresented in treescapes policy, pedagogy, and practice.

<b>Visual Images of Sustainability in Higher Education.</b>
Debby Cotton, Jennie Winter, Joe Allison, Rachel Mullee
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<p>In a world rich with visual stimuli, where imagery is fundamental to our construction and comprehension of ourselves, of nature, and of others, the ways in which sustainability is perceived can be strongly influenced by visual cues and images. Many universities have made significant steps towards decarbonisation on campus, in an effort to limit the impacts of climate change. However, this work is not always visible to students and staff, resulting in a lost opportunity for education about climate change. In this research, we explore how visual images of sustainability on university websites align (or conflict) with student and staff perceptions. We utilise auto-photography (using a photo competition to gain access to visual images of sustainability on campus) and photo-elicitation (through focus groups using photographs as a visual stimulus) to explore sustainability and climate change on a single HE campus. These methods allow the researcher to identify additional, often latent layers of meaning, offering a rich data set, and arguably creating a deeper understanding than traditional research methods. Grounded, visual pattern analysis (GVPA) is used to analyse the campus photos and compare them to a wider set of photos used to illustrate sustainability on university websites. We hope to draw out recommendations for raising the profile of climate change activities on campus.</p>

<b>Art for climate change in, around, and through institutional spaces: possibilities and modalities.</b>
Tony Wall and Ann Hindley
Liverpool John Moores University
<p>Art has a heritage of provoking reflection and reflexivity around how people and organisations relate to and impact the planet. Some art forms contest and problematise the planetary impact of institutional spaces, including museums, libraries, and galleries, and critique the formal power of such structures to damage people and planet. This study extends this cultural symbolic analysis to university spaces, where it is argued that such spaces have become legitimately bound by a number of agendas including, for example, psychologically safe space with rationalised free speech. As an alternative, this study draws from a four year study of art works designed to question climate change from a sustainability perspective in university spaces. It finds that playful art enables deep reflection on social norms related to university decision making, and the role of own behaviour as part of that wider pattern of culture. It is proposed that university spaces should promote modalities of engaging in provocative art as a pathway to longer term thinking and acting.</p>

<b>The Carbon Literacy for Universities and Colleges Toolkit: A first step in responding to the climate crisis.</b>
Rachel Dunk and Jane Mörk
Manchester Metropolitan University
<p>It is now widely recognised that we are facing a climate crisis, with an urgent need to take strong action to achieve net zero emissions and avoid the worst impacts of climate change. However, the scale of change required is challenging, and success will require participation from everyone, whether active or passive. Developing a zero-carbon culture is therefore critical to meeting climate targets, where enhancing climate literacy is a first step on this pathway.</p> <p>In common with the sector, Manchester Met faced the challenge of how to offer climate literacy training to all members of the university, irrespective of disciplinary background. To facilitate this, in 2015 we developed our innovative peer-to-peer Carbon Literacy for Staff and Students training programme, with an online version subsequently being developed in response to the COVID-19 pandemic. In 2020, we released our Carbon Literacy for Universities and Colleges toolkit to maximise the speed and ease with which climate literacy training can be adopted across the sector. In this paper we share our experience of developing and rolling out the toolkit. This will include an overview of the toolkit, learner outcomes, and consideration of some of the challenges in rolling out training at scale.</p>

<b>Climate Literacy for all! An exploration of the impact of Carbon Literacy training for students and staff in a UK Higher Education Institution.</b>
Steve Cayzer, Hannah Hogarth, Eliane Bastos, Nicki Schantz, Clare Power and Tianqi Lu,
University of Bath
<p>As part of its whole institution response to climate change, the University of Bath offers all incoming students Climate Literacy training (CLT) accredited by the Carbon Literacy Project and developed using MMU's Carbon Literacy for Universities Toolkit. This paper shares a mixed method analysis of the findings from 2021-2022, the first time CLT was offered to all incoming students as part of induction at a Higher Education institution in the UK. Pre and post survey data was collected from participants with a range of disciplinary backgrounds who attended the training workshops. Follow up interviews with a smaller number of participants were conducted 6-9 months after completing the training to gain further insight into participants' engagement with the pledges committed as part of the course. The results enable evaluation of the effectiveness of the training, both in terms of the estimated carbon emission reductions as a result of the training, and in terms of the potential of a whole institution initiative to instigate positive behaviour change. We share insights from our experience delivering this programme, including lessons learned and aspirations for the future, and offer suggestions for other Higher Education institutions planning similar projects.</p>

<b>A curriculum topography approach to learning about climate change in higher education.</b>
Tristan McCowan
University College London
<p>Learning about climate change is widely recognised as an important outcome for higher education students. However, there is uncertainty as to the best way to incorporate issues of climate into the curriculum, whether as a stand-alone module, through infusion across courses, through interdisciplinary provision, or informal activities. Furthermore, there is resistance in some quarters to introduction of this content, on account of the contested values involved, the overcrowding of the syllabus, and lack of specialist experience. This paper addresses the arguments for including climate change in the higher education curriculum, assessing the different forms of learning needed by citizens and professionals, the role of the university as institution, and the different potential forms of integration. The paper puts forward a proposal for a topography approach, one that sees the role of the university not as teaching climate change, but as curating a diverse environment of learning experiences. The proposed framework sees learning as being distributed across three spaces (classroom, campus and community) and characterised by features of access, control and connection. The paper then draws out examples of curriculum topographies in practice in diverse contexts.</p>

<b>Preparing university students for a perfect storm! An experience in curriculum development on skills for a sustainable environment at Ulster University.</b>
Farshad Amiraslani and Adrian Moore
Ulster University
<p>There are growing concerns regarding the impacts of climate change on every economic, social, and ecological dimension at the global level. Universities are regarded as the forefront of this realm for educating future professionals in various disciplines. Universities' curricula could be potential and dynamic avenues to expand the knowledge and skills of students. This paper provides a first-hand experience of developing a specialised Module that has been modified to reflect the needs of future graduates. The Module firstly comprises two consecutive weekly sessions discussing new trends of current career needs in the marketplace and the best ways for preparing a targeted CV and covering letter. The Module then covers weekly introductory lectures on relevant subjects in morning sessions, followed by group seminars on topics related to the lecture content. During each weekly afternoon session, students are asked to research and think in groups about sustainable planning strategies for a specific forested area. Then, they are expected to present their findings and identify an area most suitable for a constructed wetland. A fieldtrip to a local wetland provides a better on-the-ground experience for contemplating the real-world situation. The Module assesses students through a final group presentation, an individual write-up based on their presentation and a CV and mock interview component.</p>

<b>Aviation and Climate Change - Bringing Hard Science to the Sustainability Debate.</b>
David Lee, Susanne Becken
Manchester Metropolitan University, Griffith University, Australia
<p>Aviation represents a uniquely difficult, yet critical economic activity, to mitigate its carbon emissions and other effects on climate. International aviation (65% of the global total) is not a component part of the Paris Agreement since it does not fall under states' nationally determined contributions (NDCs) yet arguably is covered by the overall objective of Article 2, and the 'greenhouse balance of sources and sinks' of Article 4. Prior to the pandemic, aviation was growing strongly, at around 5% per year in terms of revenue passenger kilometres with an accompanying growth in CO<sub>2</sub> emissions of 3% per year. In addition, aviation has other warming effects on climate, principally through emissions of nitrogen oxides and the formation of contrail cirrus. Passengers potentially have the opportunity to 'offset' their emissions of CO<sub>2</sub> although the means by which this is done is poorly communicated and of limited value in terms of real emissions reductions. We examine these issues in relation to the objective of 'net zero' by 2050, and the overall mitigation possibilities for aviation, including the rarely-discussed issue of demand reduction. Understanding the scale of the aviation emissions that relate to the university sector and ensuring best consensus science is accounted for are argued to be fundamental to university engagement in this issue.</p>

<b>Public Value, climate change, and sustainability in Cardiff Business School: A holistic approach.</b>
Peter Wells
Cardiff Business School
<p>Fundamental to our legitimacy and credibility in our research and teaching on climate change, carbon emissions and the wider sustainability agenda, is the need to enact change in our own operations. Since 2014 we have progressively introduced a Public Value ethos to our core activities such that we now focus on five grand challenges: decent work; responsible innovation; future organisations, good governance, and fair and sustainable economies (Kitchener, 2019). The result is a transformation into an organisation with a purpose (Kitchener and Delbridge, 2020). This transformation is deeply pervasive, increasingly informing our internal processes such as recruitment and promotion, our courses at undergraduate and post-graduate levels, our research focus, and our external engagement. This paper will show how we seek to evidence the Public Value transformation as a vibrant and contested discourse, with specific reference to the problematic issue of academic staff flying on university business.</p> <p>References</p> <p>Kitchener, M., 2019. The public value of social science: From manifesto to organizational strategy. In <i>Public Value: Deepening, enriching, and broadening the theory and practice</i> (pp. 300-315). Routledge.</p> <p>Kitchener, M. and Delbridge, R., 2020. Lessons from creating a business school for public good: Obliquity, waysetting, and wayfinding in substantively rational change. <i>Academy of Management Learning &amp; Education</i>, 19(3), pp.307-322.</p>

<b>The Climate Emergency in Business, Community and Campaign Groups - Driving Change for the Common Good.</b>
Simon O'Leary, Agnes Gulyas, Sarah Lieberman, Matthew Ogilvie and David Bates
Canterbury Christ Church University
There is widespread acceptance that a climate emergency exists and attention has been given to large-scale actions that governments can take and small-scale actions for individuals. However, limited attention has been given to the groups that form society in between. This includes businesses, community and campaign groups, and it is these that form the focus of this research. This multidisciplinary research aims to identify what motivates and drives groups such as these to act on climate change while also identifying what drives choices of inaction. Many people want to impact beyond their individual contribution, but often cannot see the way. This project helps to understand the importance of group level actions and bottom-up initiatives in addressing the climate emergency. It also informs about those factors that drive groups such as these to act, as well as those factors that do the opposite. This ongoing research is assessing current knowledge and gathering empirical data on motivations for climate action across businesses, community and campaign groups. This involves focus groups with representatives from each set to explore what spurs groups into action and what deters action.

<b>Meeting stakeholder needs through authentic assessment of Carbon Literacy and digital skills.</b>
Ann Hindley
Liverpool Business School
<p>Tourism employers are keen that graduates are work-ready but they are often lacking needed sustainability knowledge (Carlisle, Zaki, Ahmed, Dixey &amp; McLoughlin, 2021) and digital skills (Carlisle, Ivanov, and Dijkmans, 2021). Devlin and Samarawickrema (2022) identify the grand challenges, local and interdisciplinary context as increasingly important to effective university teaching. In a Web of Science search only 322 articles were returned for the period 2018-2022 with teaching, learning, assessment and digital in the abstract. When climate change was added, this reduced the number of papers returned to two.</p> <p>An innovative approach to teaching, learning and assessment builds a tourism module around climate change and digital skills. The Level 6 module content embeds Carbon Literacy and includes concepts ranging from the circular economy to net zero and Smart Cities to Virtual Reality. The content cuts across the six transformation areas of sustainable development: climate change, decarbonisation, and energy; smart cities; food biosphere and water; consumption and production; digital revolution; human capacity and demography. The authentic assessment has successfully utilised free App designer software with which the students conceptualised a Mobile App that aims to improve visitor experience and simultaneously increase awareness of carbon literacy.</p> <p>References</p> <p>Carlisle, S., Ivanov, S. and Dijkmans, C. (2021), "The digital skills divide: evidence from the European tourism industry", <i>Journal of Tourism Futures</i>, Vol. ahead-of-print No. ahead-of-print.  <a href="https://doi.org/10.1108/JTF-07-2020-0114">https://doi.org/10.1108/JTF-07-2020-0114</a></p> <p>Carlisle, S., Zaki, K., Ahmed, M., Dixey, L., &amp; McLoughlin, E. (2021). The imperative to address sustainability skills gaps in tourism in Wales. <i>Sustainability</i>, 13(3), 1161.</p> <p>Loureiro, S. M. C., Guerreiro, J., &amp; Ali, F. (2020). 20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach. <i>Tourism Management</i>, 77, 104028.</p> <p>Marcia Devlin &amp; Gayani Samarawickrema (2022) A commentary on the criteria of effective teaching in post-COVID higher education. <i>Higher Education Research &amp; Development</i>, 41:1, 21-32, DOI: 10.1080/07294360.2021.2002828</p>