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Still Flying in the Face of Low-carbon Scholarship? A Final Call for the CSEAR Community to Get on Board

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ABSTRACT

Socio-ecological crises in the Anthropocene are shaking the assumptions, norms and practices of many disciplines. The climate emergency and the COVID-19 pandemic have substantially disrupted academic work and life with calls to return to normal, embrace change and many other options in between. Here, we invite critical discussion and reflection amongst the Centre for Social & Environmental Accounting Research (CSEAR) community on our collective reliance on international in-person conferences and associated air travel. In doing so, we seek to highlight the ways in which our intellectual and practical endeavours are increasingly being shaped by both the climate crisis and debates around post-pandemic academia. We also report on the results of a (pre-pandemic) survey of the CSEAR community, which reveals highly differentiated patterns of air travel, echoing global patterns of dependency and inequality. Following this, we outline various practical solutions that have been proposed or introduced at individual, institutional and community levels. These include recent grassroots campaigns which have sought to mobilise opinion around the issues and explore different practices and modes of organising knowledge production, as well as the work of other academic communities attempting to enact commitments to lower their carbon emissions. Finally, we briefly outline the wider contours around low carbon scholarship and conclude by considering whether this is sufficient to contribute to collective efforts for scholarship for sustainability.

1. Introduction

As the global climate crisis intensifies, the environmental impact of aviation is becoming a matter of increasing concern. The industry is currently estimated to be responsible for around 3.5% of anthropogenic climate change, effectively putting it within the top ten most polluting countries (European Commission 2021). Meanwhile, governments have declared climate emergencies and made commitments to 'net zero' targets, while the

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aviation industry has responded by seeking to reduce emissions and become 'carbon neutral' by 2050'.[1] Scientific evidence of the impact of air travel has also gained increasing public visibility, especially in the wake of high-profile activist campaigns to mobilise public opinion about the scale of the climate crisis and the need for urgent action. Shifting public attitudes surrounding air travel are epitomised by the emergence of a new Swedish word: *flygskam*, or 'flight shame' (Banis 2019). Changing attitudes are also influencing consumer behaviour, with demand for some short-haul routes in Europe falling, while traffic on equivalent express rail services is forecast to rise (UBS Bank 2020).

Despite this, however, aviation and associated emissions have been allowed to grow, even in countries with seemingly ambitious net zero commitments, while the cost of flights has fallen to historic lows (US Department of Transportation 2020). Furthermore, despite blanket travel restrictions imposed in 2020 as a result of the COVID-19 pandemic reducing aviation emissions by up to 60%, passenger air traffic is already recovering rapidly, especially at a domestic level (IATA 2021). Going forward, aviation's relative share of overall emissions is still projected to increase steadily, consuming anything from a quarter to more than 100% of total allowable carbon emissions by 2050 (UNEP 2020).

The problem of continued growth of the aviation industry at a time of climate emergency is compounded by the related issue of climate *justice*. Contrary to the popular perception of air travel as a ubiquitous form of mass transportation, at least in developed countries, there are in fact dramatic inequalities in public consumption of air travel. Even within a wealthy country such as the UK, estimates suggest around 70% of flights are taken by just 15% of the population (Devlin and Bernick 2015). Similar highly differentiated patterns have been found elsewhere (Hopkinson and Cairns 2021; Ivanova and Wood 2020), while the extent of this inequality may also be increasing (Büchs and Mattioli 2021). More generally, it is estimated that only around 10% of the global population fly anywhere annually, while the wealthiest 1% of the population are responsible for half of all global aviation emissions (Gössling and Humpe 2020).

Forming part of this relatively small but highly aeromobile population demographic, and of particular interest to this paper, is academia itself. Academia's position as a carbon-intensive profession reflects the privileges and subsidies enjoyed by many research-active staff, with opportunities to attend international conferences, conduct fieldwork, and support efforts to generate impact as part of the super-mobile population of the global north (Parker and Weik 2014). A substantial body of research has examined and critiqued the overall environmental impacts of universities (see, for example, Arsenault et al. 2019; Li et al. 2021), while concerns about the specific issue of academic conference travel were first raised more than twenty years ago (Høyer and Naess 2001). However, interest in the latter issue then seemed to stall, with further studies only emerging more recently, in areas such as geography (Nevins 2014), transport geography (Caset, Boussauw, and Storme 2018) and transport history (Passalacqua 2021). A similar pattern is perhaps evident in relation to both CSEAR and the wider sustainability accounting community, where important early work (Milne 2007) prompted little in the way of follow-up studies. In this context, we would suggest that renewed interest and intervention on this subject is surely long overdue.

Addressing the climate emergency requires significant transformation of the global knowledge economy (IPCC 2022). As universities develop strategies, academic

communities conduct research and students call for climate-related education, spaces for engagement with the climate emergency are being (re)configured (Davies, Broto, and Hügel 2021). Travel – particularly international aeromobility – is often seen as integral to collaboration and academic career progression as well as to developing connections with wider academic communities outside of one's own institution. At the same time, though, it is now the subject of widespread and sustained debate across academia (Bjørkdahl and Franco Duharte 2022; Glover, Strengers, and Lewis 2017; Nursey-Bray et al. 2019). The tensions heighten further when privilege, in terms of resources and associated support, is considered. The move to online conferences during 2020 was often heralded as more inclusive, enabling those with caring responsibilities or less resources to join, thus expanding participation from around the world (see for example, Graham 2020). Yet anecdotal insights suggest that the online experience is far from satisfactory, and there is a growing wish to reconnect through in-person conferences. While the pandemic forced a pivot to online platforms, our intention here is to stimulate conversations about the future of academic travel and conferences in post-pandemic academia. For a community committed to addressing social and environmental accounting research through its scholarship, we hope this piece contributes to efforts in research, teaching and engagement that support sustainability transformations.

2. Academia, travel and conferences in the global knowledge economy

Academia's carbon-intensive status is a reflection of our reliance on air travel, not just for international conferences but for many other aspects of research, teaching and learning. In particular, this includes students flying (typically long-haul) to (mainly) American, European and Australasian universities, for whom international taught programmes have become a huge export industry (see for example, Baer 2022; Bound et al. 2020). In addition, there are countless international partnerships and overseas campuses, which depend not only on student aeromobility, but also on flying faculty. While travel has long been part of academic life (Gärdebo, Nilsson, and Soldal 2017), its scale and intensity have both accelerated in recent years. The situation in academia is symptomatic of how air travel is fundamental to meeting the demands and expectations of the globalised knowledge economy. A recent study estimated that air travel alone can account for 30% of an institution's overall carbon footprint (Arsenault et al. 2019), which would make it the single largest source of work-related emissions in academia. Air travel's relative share of overall emissions is also likely to rise further, as institutions find (easier) ways to reduce the carbon intensity of the rest of their operations.

This growing evidence base around the impact of overall travel in different settings within and across academia provides important new visibility and insight around both the overall emissions of conferences, their distribution across participants, as well as the role of various underlying factors or motives involved. While some readers will already be familiar with the basics of carbon literacy at the level of individual travel options, it is worth outlining them briefly here. A typical scenario involves planning a conference trip where several different transport options are available. For example (admittedly one rather more familiar to academics working in Europe), a trip from London to Glasgow, a distance of around 600 km, can be undertaken via short-haul flight or express rail connection. While the flight is often assumed to be faster and cheaper than

the train, this is not necessarily the case: ticket prices for both modes can vary hugely depending on how far in advance they are purchased, while overall journey times are actually very similar.[2] Compared to questions of time and cost, however, the difference in carbon footprint between each option is unambiguous: the flight incurs around 160 kg of emissions, while the equivalent for the train journey would be just 23 kg.[3] Meanwhile, a long-haul return flight from London to Singapore would incur an emissions footprint of around one metric tonne of carbon.[4] To better understand the scale of this impact, we can restate it as equivalent to around a fifth of the UK's current per capita average annual carbon footprint. We can also expand our scope beyond individual travel to consider other academic activities. Studies have sought to measure carbon emissions using specific conferences as the reporting entity, with sobering results: the largest international meetings create a footprint equivalent to the weekly emissions of a city the size of Edinburgh (Klöwer et al. 2020).

While literacy around these issues is slowly improving, their visibility and impact on travel plans remains at best marginal in many cases. As many other commentators have observed, the underlying reason for this ongoing oversight is not surprising. Academic events such as conferences, and their associated travel, are widely regarded as offering an array of perceived benefits across the career spectrum and to society more generally (Hansen and Pedersen 2018; Poggioli and Hoffman 2022). Anecdotally, many justifications are given for air travel in academia, including notions of 'being there', networking, career development, and being intertwined in systems of professional and institutional evaluation. The combined weight of these justifications poses an inevitable and significant barrier to finding alternatives to carbon-intensive ways of organising and attending conferences. It also illuminates the tensions arising where academics, academic communities and institutions are responding to the climate emergency as a systemic issue.

At the same time, however, recent studies have found that in-person conferences may be associated with disadvantages, including prohibitive costs, visa requirements and inequality in terms of access and means of contribution (Sarabipour et al. 2021). In addition, the lived reality of academic conferences can often fail to live up to expectations. This encompasses everything from delayed transportation and bad food, to more disturbing issues of inaccessibility, exclusion, inequality and harassment (Spicer 2005). Even some of the more specific justifications invoked to defend attendance at conferences may turn out to be largely unsubstantiated. For example, recent studies have found no evidence to support arguments that conference attendance is a necessary requirement for career development and promotion (Wynes et al. 2019), or that the dissemination of papers at conferences gains more citations (Chalvatzis and Ormosi 2020). More generally, academia's collective reliance on a carbon-intensive knowledge system is open to charges of apparent hypocrisy (Higham and Font 2020; Milne 2007; Wolff 2019), system justification (Feygina, Jost, and Goldsmith 2010) and climate delay (Lamb 2020; Lamb et al. 2020). For example, is not uncommon to hear academics defend the legitimacy and necessity of air travel by advocating non-transformative solutions such as carbon offsets, or by emphasising the downsides of disruptive change by arguing that change will be unjust or too costly. These justifications seem to resonate rather uncomfortably with critiques of organisational (un)sustainability in our own academic field.

Nevertheless, we should also recognise that these issues are more difficult and nuanced than they might first appear. Research suggests there may be conflicting dimensions of dissonance affecting the decision to fly, with individuals wrestling with their own environmental values on the one hand, against prevailing cultural and institutional norms on the other (McDonald et al. 2015). Meanwhile, propositions to use less carbon-intensive forms of transport (such as trains or ferries) may involve longer, slower and more costly journeys, highlighting other forms of privilege in terms of the resources (time, finances), capacity to detach from everyday responsibilities and the ease with which some can move across borders. Hence, the decision to fly less is also connected to wider issues of justice and privilege (Parker and Weik 2014).

Furthermore, any consideration of the issues surrounding academic travel must also recognise the extent to which things have changed since March 2020, which saw the almost overnight disappearance of conventional in-person academic conferences and associated travel as a result of restrictions imposed during the COVID-19 pandemic. In an attempt to fill the gap, a variety of online events and formats have appeared. Interestingly, these events seem to be promoted more on the basis of their greater accessibility, frequency and reduced costs, rather than their low-carbon credentials. Despite these claimed benefits however, enthusiasm for online conferencing appears to be waning. Initial evidence suggests that many of the benefits of in-person meetings and conferences are difficult or even impossible to replicate in a virtual setting. Much of this concern relates to the informal and relational aspects of in-person contact, which are important in building and sustaining a sense of belonging and community, and in providing the spaces which can spark not only friendships but creative conversations, collaborations and ideas (Brucks and Levav 2022). At the time of writing, with a gradual resumption of face-to-face interaction now under way, it seems clear that the post-pandemic future of the conference, and academic (aero)mobility more generally, has become the subject of significant debate.

As academics, we too have struggled to navigate the tensions around conference attendance and international travel. In the last decade, we have both flown to attend conferences and workshops, such as the Asia-Pacific Interdisciplinary Research in Accounting conference in Kobe, Japan in July 2013, or conduct fieldwork in Europe and Asia. In other cases, being based in Scotland, we have benefited from international conferences being held close to home, especially CSEAR's annual International Congress in St. Andrews, and the Interdisciplinary Perspective on Accounting conference in Edinburgh in 2018. Many other research events are held within the UK and can be accessed relatively easily by ground-based public transport. For both of us, the additional time away from home is also made possible only thanks to networks of care (paid and unpaid), which allow other responsibilities to be set aside as soon as one steps on to the train or plane. Now, after almost two years of working in a pandemic, the prospect of venturing towards an airport and embarking on a long-distance journey seems almost alien, evoking terror, excitement and nervous anticipation in equal measure. Recognising that carbon emissions are interwoven in academic life, we now turn to consider the importance of academic aeromobility amongst the CSEAR community as part of deeper exploration of how to shift to low-carbon knowledge production.

3. Academic air travel within the CSEAR community

In the context of recent wider empirical studies of the travel behaviour of research communities and personal experiences as discussed above, we were keen to explore these issues further within the CSEAR community. Conferences have been a major part of CSEAR's activities since its inception in 1991, with an annual UK-based event operating as an international conference for the whole community. Over the last two decades, the UK conference has also been being complemented by a growing number of events in Asia, Australasia, Europe, and North and South America. Until the blanket restrictions imposed in 2020 as a result of the COVID-19 pandemic, attendance at CSEAR conferences had continued without significant interruption along these lines, with seemingly limited and infrequent public consideration given to the emissions impact of travel.

In this regard, we would highlight especially the pioneering efforts of Jan Bebbington, who undertook a variety of initiatives in the 2000s, being one of the first to experiment with a virtual plenary address, delivering a pre-recorded presentation to a high-profile international conference (Bebbington 2010). Around the same time, other senior figures in the CSEAR community offered their own honest and provocative reflections on the size of their personal ecological footprints (Milne 2007). Since then, however, it would appear that further practical development of initiatives around conference organisation in the CSEAR community, especially in relation to travel, has largely fizzled out.

In 2020, an online survey[5] was sent out to all CSEAR members, as well as other interested non-members, via CSEAR's public Facebook and Twitter accounts. This survey was designed to gather views and experiences of CSEAR and its associated publication *Social and Environmental Accounting Journal,* to inform future activities of the CSEAR Directorate and Council. Included within this was a section devoted to academic travel. A total of 72 valid responses were received, which represents around a third of the CSEAR membership and 10% of the wider online CSEAR community.[6]

Respondents were overwhelmingly paid CSEAR members and were evenly split in terms of job status. The geographical spread of respondents took in six continents, with the majority coming from Australasia, Europe and North America, mirroring the location of many conferences held between 2016 and 2019. Overall, respondents took an average of three return trips to conferences in 2019. Short-haul flights were the most popular, with just under half of all travel undertaken this way. Train travel was the next most popular form of transport, used in around a third of all trips. Long-haul flights accounted for around one-sixth of travel overall.

Looking at the distribution of all types of flights across all respondents, significant inequalities soon became apparent: 70% of short-haul flights were taken by 24% of respondents, while the corresponding figures for medium and long haul were even more unevenly distributed. Here, 70% of medium and long-haul flights taken by just 10% and 13% of respondents respectively. Although these findings echo the sort of wider inequalities outlined at the beginning of this article, it is perhaps surprising to observe such an uneven distribution within a highly aeromobile population.

There were also interesting differences in the amount and type of travel across different levels of job status and geographical location. Respondents based in North America and Australia took the greatest number of long-haul flights, while Europeans took the most short-haul flights. Amongst respondents based in Europe,

greater use of train travel in some countries seemed to be associated with a lower usage of short-haul flights. In terms of patterns across job types, lecturers/assistant professors were the most active, travelling around 50% more than the overall average. Most of this travel consisted of short haul flights and train journeys. Professors did the most amount of long-haul flying, with an average of 0.8 return trips in 2019. This was twice the overall average across the sample, and ten times the average for doctoral students.

Taken together, these patterns provide some insight into the uneven overall distribution of flying amongst survey respondents. However, they also need to be put into greater context. For example, while senior academics in North America and Australia appear to be responsible for the vast majority of long-haul flying within the CSEAR community, there are clearly some important circumstances underpinning this. While rail travel is generally a feasible option in Europe, it is far less straightforward elsewhere. Even in North America, the existence of rail infrastructure between large cities is likely to be overtaken by other more important constraints that shape how academics within specific communities interact with each other. Academics in more 'niche' communities may find themselves with no choice but to travel a long way to find opportunities to meet like-minded colleagues and friends.

The survey also identified some interesting ways in which travel behaviour may be linked to underlying factors and motives. Respondents in job groups which travelled the most also reported higher levels of concern about the downsides of giving up travel. Frequent travellers were also more likely to justify travel as being necessary for their career development, while this group was also less likely to be constrained by other personal commitments, such as caring responsibilities.

Finally, respondents were also asked about the extent to which they had made changes to academic travel. Just under half had reduced the number of flights they had taken in the last 12 months, while around a third had used alternative modes of transport if that was available. Going further, 10% reported that they had given up travelling to international conferences altogether. At the same time however, 20% of respondents had made no changes to their travel habits.

These findings indicate that a highly differentiated pattern of academic air travel exists within the CSEAR community, to an extent that also mirrors the wider inequalities outlined earlier. Those in the CSEAR community who fly most frequently also tend to occupy high status roles in North America or Australasia, and have fewer caring responsibilities. While these findings do need to be put into (geographical) context, prior studies also suggest that this group of frequent flyers are more likely to rely on justifications to overcome the cognitive dissonance associated with conflicting actions and principles (McDonald et al. 2015). This may be increasingly difficult when, as we have already noted, some well-worn arguments may be challenged (Chalvatzis and Ormosi 2020; Wynes et al. 2019) or become associated with discourses of climate delay (Lamb et al. 2020). On a much more positive note, however, our evidence suggests that within the CSEAR academic community, a significant shift towards less carbon-intensive travel behaviour is ongoing, and that this was under way even before the events of 2020 and the COVID-19 pandemic. In the next section, we explore significant developments more broadly that have been pivotal in developing low-carbon scholarship.

4. Recent initiatives towards low-carbon scholarship

In the absence of enforced restrictions or policies, one plausible explanation for the noticeable change in travel behaviour within the CSEAR community is changing social norms. Increasing numbers of individuals are making the proactive decision to find alternatives to flying or reduce their attendance at some conferences. As we briefly highlighted in our opening remarks, wider public opinion is becoming increasingly aware of notions of *flygskam*. Of further relevance here are the various grassroots initiatives and policy proposals that have emerged in recent years, which seek to challenge the prevailing dominance of air travel in academia and to mobilise support for alternatives, not just in terms of less unsustainable means of travel, but also other methods of presenting, conferencing and networking.

The Tyndall Centre for Climate Change Research has been a driving force in the development of principles and practices for the academic community to decarbonise its research culture (Le Quéré et al. 2015). The initial version of the travel strategy document (Tyndall Centre for Climate Change 2015) established a simple set of guiding principles, decision-making flowchart and reporting tool. These materials were designed to be used in a self-guided and self-monitoring way to manage an individual's travel emissions, by weighing up the potential benefits and downsides of conference attendance, and also conference organisation.

Since then, however, the focus of attention has increasingly shifted towards institutional rather than individual change. This has in part been driven by the campaigning activism of new grassroots social movements, such as the Stay Grounded network.[7] Similar campaigns have also emerged within academia, including the Flying Less campaign, Organisation Scholars for Future and NoFlyClimateSci.[8] These campaigns provide a wide range of additional resources and materials as well as online petitions and pledges. The Stay Grounded network started in 2018 and now includes more than 170 member organisations. The network has outlined a number of major policy steps it argues as necessary to radically transform transportation. Informed by broader notions of climate justice, Stay Grounded's manifesto extends beyond seeking a modal shift in passenger transport, towards calling for a more fundamental rejection of further growth in mass long-distance tourism and work travel. The Flying Less campaign started in 2015 and has since attracted over 1,000 academic signatories to its online pledge, as well as the formation of local groups in major universities.[9] The OS4Future movement began in 2019 with a pledge to reach the EGOS conference in Edinburgh by low-carbon alternatives to flying. OS4Future's emergence in the critical management and organisation studies field is especially notable as being perhaps the closest example to the CSEAR community of grassroots campaigning around air travel.

At a policy level, academic institutions are beginning to respond, with Lund in Sweden one of the first universities to introduce an innovative travel policy in 2018 to reduce work-related emissions. Since then, many other universities and sector bodies have begun to follow this lead.[10] Looking across these developments, the key dimensions of low-carbon academic culture are quite straightforward and still largely reflect the early work of the Tyndall Centre. This includes the prioritisation of travel-free virtual meetings where possible, as well as using ground travel for any face-to-face meetings, especially those at a domestic level but also further afield if possible. Decisions about travel

should be made on a consistent and measured basis and justified on the basis of both the benefits and costs of attending, with low-carbon options always favoured if possible. Details of the costs, emissions and mode of travel should also be monitored and used to set targets to progressively reduce the carbon intensity of travel (indeed this is now a requirement for Wellcome Trust funding[11]).

At a broader level, however, interventions to bring about a transition towards low-carbon academia become rather more complex and problematic, not only in terms of the more immediate and practical issues which arise, but also in relation to the wider implications of sustainable forms of academic scholarship in the context of the global knowledge economy. From a more practical perspective, individual and institutional interventions may need to be supported by more collective endeavours to understand carbon-related impacts and dependencies of aeromobility; encourage greater uptake of virtual meetings; and reduce the number of In-person events, especially those which might involve long-haul travel.

To this end, an increasing number of research communities have engaged in more extended pieces of self-reflection around decarbonising academic conferences. For example, Etzion, Gehman, and Davis (2022), echoing the work of Klöwer et al. (2020), advocate a 'federated' model in which in-person conferences are scaled down and operated on a more regional basis, with technology also deployed within face-to-face sessions to enable virtual participation. Other considerations to enhance conferences include utilising virtual formats for international conferences and local or regional meetings, and supporting networking and engagement through digital platforms (see Sarabipour et al. 2021). Not only might such measures reduce carbon footprints, but they may also reduce inaccessibility due to cost and travel restrictions. Such issues recently came to the fore in relation to travel to the United States at the time of the Trump administration, as well as in connection with United Kingdom's departure from the European Union.

Reflecting more expansive conversations around academic aeromobility, the Tyndall Centre for Climate Change Research hosted a virtual workshop in 2022, which explored how to retain the low levels of flying observed during the pandemic while ensuring that important matters such as diversity, equality and inclusion might also be addressed. The subsequent report, *Academic aeromobility post-COVID-19* (Zeferina and Hoolohan 2022), identifies three key challenges for the future of academic work (5):

- What does 'essential' air travel mean and how should it be prioritised to reduce emissions while increasing accessibility, justice, and inclusion?
- What structural and cultural changes are needed in higher education to decouple aeromobility from academic work?
- How can reporting, monitoring and target-setting support a reduction in flying, and how do we ensure that fact-finding does not hinder action?

The remainder of the report offers a useful synthesis of a range of ideas and potential actions (see Table 1) which institutions and scholarly communities might consider:

These questions and proposed actions may seem more feasible for some individuals and institutions over others depending on factors including career, location, financial and caring considerations. Nevertheless, as we conclude this commentary, the final section draws on the Tyndall Centre's report to consider what the CSEAR community

Table 1. Summary of proposed actions to reduce academic aeromobility (adapted from Zeferina and Hoolohan 2022).

Actions to prioritise and reduce air travel	Cultural changes to decouple aeromobility from academia	Actions to ensure reporting results in reduced flying
Make reducing flying a priority	Improve virtual ways of working	Use centralised booking systems
Maximise the purpose of a trip	Provide additional accommodations for virtual work	Improve data on travel purpose and alternatives
Model best practice	Normalise avoidance of flying	Standardise data collection
Decentralise ways of working	Make land-based travel the default	Adopt emissions reporting standards
Reimagine academic work	Include emissions in evaluations criteria	Set ambitious targets
Prioritise overcoming inequalities	Allow travel budgets to be reallocated	Consider using travel budgets
Leverage change through every role	Support low-carbon travel	Use alerts in booking systems
Increase job security	Disassociate 'busyness' from excellence	
Build on experience		

– one that is committed to mobilising accounting scholarship to enable a more sustainable society[12] – might do to better understand and decouple scholarship from high carbon impacts.

5. From low-carbon conferences to sustainable academic scholarship

Thus far, we have explored wider debates around the climate emergency and academic culture, focusing on conference and associated travel as a key site for the CSEAR community to engage with the climate emergency. In tracing recent developments in CSEAR events and conferences, it is also important to recognise that CSEAR members have already developed examples of low-carbon and inclusive scholarship: through online webinars hosted by Charles Cho (Schulich) and Ericka Costa (Trento); reading groups hosted by Matt Sorola (Toulouse); PhD webinars hosted by Jan Bebbington (Birmingham and now Lancaster); as well as several online CSEAR conferences in 2021, including in Spain and Australia. These initiatives underline the important role of collective efforts to accelerate the transition to low-carbon academic culture, and in doing so highlight the huge, and as yet largely untapped, potential for CSEAR conference culture and associated travel to be reconfigured in a similar way.

Reflecting on the insights gleaned across scholarship on academic aeromobility, we suggest that changes involve consideration of both academic culture and practice (Poggioli and Hoffman 2022). It is imperative to discuss how academics communicate, the purpose(s) of conferences and what forms of presence and participation are needed (Lassen 2022). Such discussions may involve understanding the impacts of virtual conferences,[13] the complexity of academic work as well as efforts to shift individual, community and institutional practices. Drawing together insights, Table 2 outlines possible steps the CSEAR community might take, to reduce air travel emissions in the post-pandemic space.

While we have sought to consider the scope for collective efforts, we must recognise the institutional contexts in which moves towards low(er)-carbon scholarship are undertaken. Many universities are dealing with the impact of the pandemic and associated public health measures curbing travel, particular that of fee-paying students. Such disruption also demonstrates how the high-carbon model of higher education needs to change

Table 2. Suggested actions within the CSEAR community to reduce air travel emissions (drawing on Zeferina and Hoolohan 2022).

Key actions	Possible practical steps within the CSEAR community
Model best practice	Leadership within the CSEAR council and conference organisers to: • Practise low-carbon travel • Create high quality online conference experiences • Establish structures allowing others to follow their example
Decentralise ways of working	Explore possibilities for decentralised/regional approach to conferences that retains the benefits of in-person interaction while reducing travel
Reimagine academic conferences and collaboration	Challenge cultural norms by imagining alternatives and implementing ideas Consider holding in-person conferences on a biennial or triennial basis with virtual conferences at other times
Prioritise overcoming inequalities	Prioritise air travel in favour of individuals and communities that benefit most, taking account of career stage, gender, class, race, nationality, geography etc.
Improve virtual ways of working	Identify effective virtual engagements conducted during pandemic and prioritise their continuation Experiment with platforms that encourage interaction and collaboration
Improve data on travel options to/from conferences	Collect data on CSEAR conference travel to allow for more granular reporting and understand where alternatives may be needed Provide details on alternative modes of travel to conferences as standard Encourage/support conference attendees to document costs of academic mobility Enhance literacy around carbon impacts of virtual communication[a]
Consider using carbon budgets	Set an overall conference carbon budget Set targets for gradual carbon reduction going forward

Note: [a]The environmental impacts of Internet use have been investigated with a recent study suggests that environmentally responsible behaviour continues in the use of virtual communication. For example, small actions such as turning off video during a virtual meeting can reduce environmental footprints (Obringer et al. 2021).

if the sector is to contribute effectively to climate action in the Anthropocene. Pledges and commitments to net-zero campus or sustainability teaching are commendable, but more work is required to understand the wider knowledge production system in which academic work is situated and identify creative low-carbon responses.

As we acknowledged at the outset of this commentary, the challenges facing the CSEAR community may be disruptive, and may provoke upset or denial. They will also require imagination and creativity, which, after more than two years of working in a pandemic, may be in short supply. We recognise that travelling again to international conferences will be attractive to many, and that to even entertain the possibilities of low-carbon alternatives such as train or bus may be practically difficult or disruptive in terms of time or cost. Beyond the challenges of travel, the ongoing pressures and precarity of academic work can also overshadow talk of low-carbon scholarship, which may smack of privilege and detachment (coming, as this article does, from two promoted and tenured academics with relatively stable employment prospects). Conference attendance and associated travel is often considered as a pre-requisite for career progression and regarded as essential for academic work, one of the perks of the job, offering opportunities to disconnect from everyday institutional life, venture to far-off places, meet friends old and new, and discuss research away from the pressures of teaching and administrative work. Calls to scale back or rein in academic travel may be perceived as thinly-veiled attempts at cost reduction, as well as a further erosion of both professional autonomy and a central pillar of academic knowledge production (Lassen 2022).

Nevertheless, addressing the climate emergency change requires transformations in scholarship and wider knowledge production economy. The CSEAR community have long experimented in light of socio-ecological concerns, and the COVID-19 pandemic has already led to committed individuals within our community working hard to strengthen connections across the community. It is imperative that these insights and experiences inform future post-pandemic plans for academic travel and conferences. To this end, we invite the CSEAR executive council and wider membership to view this paper as a small step in a process of self-reflection on how we can collectively explore ways of reducing our conference footprint, whilst preserving all of the benefits we enjoy from our meetings, online and in-person, together.

Notes

1. See, for example, the Fly Net Zero commitment of the International Air Transport Association at their 77th Annual General Meeting https://www.iata.org/contentassets/dcd25da635cd4c3697b5d0d8ae32e159/iata-agm-resolution-on-net-zero-carbon-emissions.pdf (Accessed 15 November 2021).
2. In October 2021, the Campaign for Better Transport staged a 'plane versus train race' from Piccadilly Circus in central London to George Square in Glasgow city centre. In the end, the contestants involved arrived less than two minutes apart, debunking the myth that short haul air travel is faster between cities, once connections and other elements of the journey are taken into account. See https://bettertransport.org.uk/plane-vs-train-race-london-glasgow-competitors-arrive-two-minutes-apart.
3. Estimated figures based on the UK Government's published CO2e emissions factors for electric trains (London Euston – Glasgow Central) and domestic flights (Heathrow – Glasgow). See https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021.
4. Estimated figures for Heathrow – Singapore based on the International Civil Aviation Organization's Carbon Calculator. See https://www.icao.int/environmental-protection/CarbonOffset/.
5. A report containing the original survey questions and the headline findings can be obtained via CSEAR's website at https://www.csear.co.uk.
6. As of December 2021, CSEAR had 190 paid members and over 800 followers on the private CSEAR Facebook Group.
7. See https://stay-grounded.org.
8. See https://flyingless.org, https://os4future.org and https://noflyclimatesci.org.
9. For example, the Oxford FlyingLess Group was formed in 2019, and has produced some useful resources including a podcast series (https://t.co/RzcOw07OxU).
10. We would highlight especially the Environmental Association for Universities and Colleges (EAUC), which was formed in 1996 and has around 300 institutional members across the UK and Ireland. In 2015, and in partnership with the UN Higher Education Sustainability Initiative, the EAUC established the Global Alliance of Tertiary Education and student Sustainability Networks. For more information, see https://www.eauc.org.uk/global_alliance.
11. A sector-wide initiative in conjunction with the EAUC Carbon Coalition in the UK and Ireland (see https://www.eauc.org.uk/carbon_coalition).
12. For a summary of CSEAR's aims and objectives, see online: https://csear.co.uk/about.
13. For example, Obringer et al. (2021) suggest teleconferencing, including the use of high-quality videos, can emit up to 1 kg of carbon dioxide per hour per delegate and the impact extends beyond the conference itself as many recordings are stored digitally. By comparison to our chosen example of travelling from London to Glasgow (short-haul flights 160 kg CO2e; train 23 kg), such impacts may seem negligible. Nevertheless, experimentation of virtual alternatives requires further accounting and reporting of associated environmental impacts alongside investigation of experiences of delegates and conference organisers.

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