



Academic aeromobility post-COVID 19

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Academic aeromobility post-COVID 19

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Academic aeromobility in the post-pandemic future

Without downplaying the negative impacts of COVID-19, the resulting rapid and widespread uptake of virtual ways of working and an almost wholesale elimination of flying has allowed us to observe alternative work arrangements and question what the future of university work might look like. As the higher education sector recovers from the pandemic, now is the time to solidify and extend ways of working that reduce air travel. This report explores what is needed to catalyse action to retain low levels of flying.

Until COVID-19, working life in higher education was becoming increasingly temporally and geographically distributed. Long-distance business travel, particularly air travel, became a normal part of university business, field trips, conference attendance, and international knowledge exchange (1–4). However, participation in air travel, and the consequences of non-participation, are uneven, intersecting with other inequalities linked to disability, gender, race, and class (5,6). Therefore, reducing air travel presents an effective means of reducing universities' emissions and an opportunity to establish inclusive and accessible ways of working.

The Tyndall Centre aims to inform society's transition to a low-carbon and climate-resilient world, and this includes looking inwards at the practices taking place in higher education (7,8). The ESRC Centre for Climate Change and Social Transformation (CAST) aims to understand how moments of change – including extensive disruptions, like COVID-19 – can inform sustainability transitions (9). These aims informed the design of this project, which undertook a literature review and a workshop with academics from around the world to explore the theme 'academic aeromobility post-COVID-19'.

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Background: Business air travel in higher education

Prior to 2020, business air travel contributed substantially to the total carbon footprint of universities. Consequently, there has been growing pressure on universities to reduce business travel and match efforts to reduce emissions arising from their estates and operations. Latter and Capstick (10) argue that as leaders in scientific understanding and substantial contributors to the economy, higher education institutions are responsible for acting on climate change and shaping broader societal responses.

From the perspective of reducing aviation, there have been few other moments of change quite so profound as COVID-19. Government responses to the pandemic substantially restricted travel overall, and particularly business air travel (11). Changes that had not previously been thought possible on such a large scale, occurred very suddenly. Le Quéré et al. (12) estimated that in regions in strict COVID-19 confinements, aviation emissions were 75% lower than those pre-pandemic. Overall, total emissions for the aviation sector were almost 50% below 2019 levels during 2020 and 2021, and re-uptake is expected to be gradual (13).

Collaboration and co-working during COVID-19

Throughout COVID-19, collaboration and remote communication have been enabled by the rapid uptake of virtual and digital ways of working (14). Most in-person academic events were cancelled as virtual events became the most reliable option. Circumstantial necessity and co-evolving social norms have helped virtual encounters standardise across higher education (15). As a result, COVID-19 has catalysed reflection on physical co-presence and the possibilities for reducing costs and improving accessibility with effective virtual working (15,16). Many scientists did not perceive the forced flight stop to have a detrimental effect on research and academic collaborations (15).

Aeromobility in academia in a post-pandemic future appears uncertain. If air travel is to remain low, there is a need for immediate action by higher education institutions, funders, partners, and societies to implement measures to maintain alternative ways of working. The SARS-1 pandemic demonstrated that air travel patterns could return to pre-pandemic levels within a few months (17). Therefore, to maintain current practices, it is imperative to reflect on lessons learnt, best practices, and actions that could support the continued decoupling of academic practices and air travel.

Workshop proceedings: Academic aeromobility post-pandemic

In March 2022, The Tyndall Centre for Climate Change Research and ESRC Centre for Climate Change and Social Transformation hosted a virtual workshop involving 65 participants representing 50 institutions, 19 countries, and various roles and career stages. The workshop centred around the challenge of how to retain low levels of flying observed during COVID-19 while ensuring that issues of diversity, equality and inclusion are also addressed.

The workshop focused on three key challenges:

- 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?

These questions reflect the complex relationship between aeromobility and work in higher education, whilst foregrounding the urgency and scale of emissions reduction required. The answers are partial, intended to provoke further discussion and inspire action to reduce emissions. In the following sections, we summarise discussions from the workshop and connect these to academic literature.

Reducing aeromobility and increasing inclusivity

COVID-19 has shown that although imperfect, remote working can be efficient, effective and collaborative (15). Virtual events have increased access to remote spaces without travel, making them more diverse and reducing the burden on participants (16,18). Though it unlikely to be possible or appropriate to wholly eliminate air travel from academic work, we propose that most air travel can be avoided by reducing the distance travelled, the number of trips, and the number of people flying. This discussion explored what "essential" air travel means and how it could be prioritised.

Defining "essential" is complex, however recognising the full range of impacts travel has – on the environment, individuals, groups, and institutions (e.g., administrative burden) – helps to weigh the value of the trip against the benefits. Remaining air travel should prioritise the inclusion of peoples, regions and institutions that have fewer opportunities to be present at academic forums. In addition, the benefit of travel should be deliberately increased by planning multi-purpose trips.

Table 1: Actions to prioritise and reduce air travel

Make reducing flying a priority	Focus on reducing the number of trips, the number of people flying, and the overall distance travelled.
Maximise the purpose of a trip	Combine visits, reduce number of people, combine multiple engagements (seminars, virtual working) to maximise benefit of travel and reduce trips.
Model best practice	Leaders within institutions should prioritise air travel avoidance and ensure appropriately ambitious institutional goals and support structures enable others to follow their example.
Decentralise ways of working	Explore models for geographically dispersed delivery of research, teaching and other engagements that enable the benefits of corporeal interaction while reducing travel.
Re-imagine academic work	Involve staff throughout higher education in imagining a future of work that challenges cultural norms and practices that prioritise aeromobility. Implement ideas.
Prioritise overcoming inequalities	Air travel should be exceptional and increase the participation of individuals and communities who benefit most (consider career stage, gender, class, race, nationality, and geography).
Leverage change through every role	Identify opportunities in every role to support the transition away from air travel. Embed throughout all related policies and ways of working to support action.
Increase job security	Reduce travel related to networking and recruitment by retaining staff.
Build on experience	Identify engagements that have been effectively conducted remotely and virtually during covid and prioritise their continuation, with improvements as needed.

Revisiting the literature: Inequality, accessibility, and justice associated with aeromobility in higher education

Though improving, academic work is highly unequal in terms of gender, race, class, nationality and geography (5,6,19). Academic aeromobility is also subject to these inequalities. Subsequently, discussions about aeromobility cannot be detached from reflections on accessibility, justice, and inclusion in higher education (5). For example, caregivers and academics with limited visas are less able to travel and participate in person than others (19). Male researchers tend to travel more for work, as gendered differences persist in parenthood, so long absences from home become more disruptive for female workers (20). Similarly, academic seniority has been reported to lead to significantly higher travel footprints (21–23). Addressing structural inequalities could be more effective than individual action to reduce aeromobility (24).

Geographical location mediates access to infrastructures (e.g. rail links), and remoteness can mean few alternatives to flying if virtual participation is not accommodated (6). Hopkins (1) proposes that measures to reduce flying ensure continued access for remote institutions to networks and collaborations by increasing resources, empowering remote and underfunded institutions, and addressing factors that incentivise academics and students to migrate away from these regions (6,25–27).

Kreil (28) advocates that the discussion about the future of academia with reduced aeromobility must evoke justice towards future generations, and include voices and opinions within academia that have been historically excluded.

Cultural changes to decouple aeromobility from academia

Recent developments in higher education have been driven by internationalisation, with impacts for research, teaching, and governance. Consequently, academic aeromobility is sustained practices involved in funding, ranking, governance, and collaboration. In this context travelling by land or not travelling at all becomes difficult, costly and inconvenient, resulting in a countermovement of individuals deliberately avoiding flying and appeals from institutions to encourage individual members of staff to fly less (29,30). This discussion explored the wider changes needed across higher education to support transition away from flying. This discussion includes consideration of reducing the ‘necessity’ for academic travel (real or perceived)(8) and developing virtual and digital alternatives to travel.

Table 2: Actions to enable cultural changes in higher education

Improve virtual ways of working	Evaluate virtual ways of working and improve so that they become more effective, efficient, and inclusive. Experiment with platforms that prioritise interaction and collaboration.
Provide additional accommodations for virtual work	Space, resources and funding are needed to facilitate effective virtual working (e.g. quiet spaces, funding for decentralised conferences).
Normalise avoidance of flying	Create forums to share advice and experiences within and between institutions to normalise avoidance of flying.
Make land-based travel the default	Make land-based options standard in travel booking systems and highlight carbon impact of air travel.
Include emissions in evaluations criteria	Reformulate evaluation criteria in all aspects of higher education, so that impact on emissions is considered alongside measures of success (e.g. impact, collaboration, income).
Allow travel budgets to be reallocated	Incentivise underspending on air travel. Allow unutilised travel funds to be transferred into funding for staff time, research expenses, communication, or investing in virtual work.

Support low-carbon travel	Provide easy access to funding and support that compensates for time and financial costs incurred while travelling by land.
Disassociate busyness from excellence	The pace of work affects travel mode and frequency. Unsettle the idea that a busy staff member is an excellent staff member, slowing the pace of work to reduce travel.

Revisiting the literature: motivations and virtual alternatives for aeromobility in higher education

Over many decades, higher education has developed ways of working that are highly dependent on aeromobility (1), becoming locked-in to air travel (25). Although the relationship between aeromobility and performance has been questioned (29), mobility is widely considered to enable successful workforces (31), and facilitate knowledge acquisition and sharing (32). Researchers perceive aeromobility to be essential for career progression (1,25), and in-person interactions seen as pivotal to building understanding and strengthening bonds among collaborators (15,25).

Conferencing is a major motivation for academic aeromobility (33,34). Finding effective virtual forms of engagement requires further investment, particularly to facilitate less formal, organic interactions between participants (4,28). Virtual events have reduced disruption on personal routines and care duties (18), although it is necessary to adapt working practices to overcome different challenges to enable full virtual participation (virtual conference leave, funding for away rooms) (4). For example, digital immigrants in the academic community report more difficulties in adapting to digital settings (35). Space, resources, and funding should be provided to organisers to explore and prepare platforms and content and collect user experience feedback to improve platform and tools.

Kreil (28) concludes that the deep entanglement between notions of good academic work and mobility are structurally embedded in institutional expectations and governance. Higham et al. (4) suggest that the wider involvement of higher education's stakeholders is needed to address some of these issues. Sustained structural reconfigurations will be required to realign ways of working and governing higher education with sustainable practices, including actions to decarbonise mobility (1,2,7). The entanglement between air travel and academic practices is a recent trend that is related to the rising availability of low-cost carriers (36).

Finally, international staff affiliated with academic institutions may face additional dilemmas, between staying grounded and staying connected with their social, professional and family circles that may be dispersed over multiple countries (37,38). Without wider changes to working practices in higher education, staff in universities have limited agency to reduce travel (30,39), and individual avoidance risks negative consequences (37).

Effective reporting to reduce air travel emissions

Holistic and transparent reporting can help reduce emissions. However, monitoring and accounting alone are insufficient to catalyse change (40). Presently, reporting and target setting are limited in a variety of ways: data is incomplete (and difficult to complete), data is insufficiently granular to enable consideration of equality and inclusion, and the widespread use of relative targets creates the possibility that emissions reductions will be insufficient to deliver absolute reductions in line with the climate emergency framing (7). This discussion considered what effective reporting to reduce emissions looks like, exploring reporting challenges and identifying those that must be overcome to reduce flying in higher education.

Table 3: Actions to ensure that reporting results in reduced flying

Use centralised booking systems	Centralised booking systems enable more effective tracking of travel and are a way for universities to introduce travel priorities.
Improve data on travel purpose and alternatives	Collecting data on travel purposes allows for more granular reporting, helping to understand where additional measures are needed to replace travel.
Standardise data collection	A common process for collecting and reporting emissions is required to enable sector-wide monitoring of travel emissions.
Adopt emissions reporting standard	A standardised method of converting trip data into carbon emissions is needed to enable comparison between institutions. This should include radiative forcing factors, and procedures to estimate and report international student/staff air travel.
Set ambitious targets	Ambitious targets catalyse action and provide impetus for science-based initiatives.
Consider using carbon budgets	Carbon budgets could help relate travel approvals to absolute emissions reduction targets. Downscaling a sector-wide budget requires consideration of historical participation in higher education, and future representation of remote communities.
Use alerts in booking systems	Highlight carbon emissions and compare with benchmark / alternatives while booking travel journeys.

Revisiting literature: Air travel policies in academia

Monitoring and systematically analysing air travel data is a pioneering practice led by a minority of institutions (41), but becoming more common. However, analyses performed are primarily based on data collected by travel agencies, which misses the travel information required to assess the purpose of the trip and the background of the traveller (42). There is little consistency in different institutions' approaches, and limited evidence of actions being implemented to ensure that targets are met (7). In 2015, the Tyndall Centre for Climate Change Research published (43), one of the first strategies to limit air travel within an academic setting and one that has informed

multiple others (44). Similarly, academic societies have reflected on the travel and emissions associated with their in-person gatherings (45–47), and several initiatives were launched, such as a blog (48), a collaborative research project (49), or a network of academics (50).

Unprecedented public interest and action (e.g. youth movements such as Fridays for Future) driven by concerns about climate change have made many institutions prioritise emissions reduction (51). Nevertheless, academic institutions cannot claim to be carbon neutral without tackling air travel emissions (14). Accounting of carbon budgets is necessary to define air-travel reduction targets that are specific, proportionate and transparent (42). These carbon budgets should enable differentiation of travellers based on the purpose of the trip, the institution and the individual (4,14,38,52).

Concluding comments

After two years restrictions on travel in higher education, and despite considerable target-setting and action planning within universities, there is a risk that pre-Covid rates of business air travel will resume. Urgent deliberate action to decouple aeromobility from academic work is needed if the sector is to embed sustainable ways of working and ensure that historical and ongoing inequalities are addressed.

Academic aeromobility is deeply entangled in academic culture and practices. Currently, discursive and material politics occurring at multiple scales support working practices that are highly uneven, driven by the logics of internationalisation and neoliberalism that are prevalent in higher education (1). Therefore, sustainability policies must look to engage on a broad range of expectations, policies and structures to detach aeromobility from academic work (34).

COVID-19 has shown that rapid and drastic changes are possible and working practices in higher education can be effectively detached from air travel. This project has compiled ideas and literature to spark changes, build alliances and implement effective action to reduce air travel. The examples throughout this report are neither exhaustive nor uncontentious but demonstrate the depth and range of actions needed to decouple higher education from aeromobility. They also highlight that much of the debate on flying-less is centred on research-intensive institutions in the Global North, raising important concerns about fairness and ongoing inclusivity in higher education. It is therefore essential that we continue to reflect on how emissions can be reduced while also addressing inequalities in academic work.

Additional materials

This workshop involved 65 participants from 50 institutions, 19 countries, and various roles and career stages. A list of participants is available here: <https://tinyurl.com/2p84cn39>

A Padlet produced for the workshop is filled with opinion comments, links and further resources shared by participants and available here: <https://tinyurl.com/yc7tp52>

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