Die Junge Akademie

# Statement

Berlin, 28 October 2020

## Proposal for promoting sustainability in academia through the reduction of travel

**A statement by Die Junge Akademie, drafted under the leadership of Anna Cord, Valerie Domcke, Astrid Eichhorn, Jonas Peters, Michael Saliba, Fabian Schmidt**

A significant part of the carbon budget of scientific and scholarly work is used up by $CO_2$ emitted due to travel. To give an example, a single return flight from Frankfurt to New York leads to 2.5 tonnes of $CO_2$ emissions.[1] By way of comparison, the IPCC estimates the total amount of $CO_2$ that may still be emitted before irreversible consequences occur to be only about 500 gigatonnes.[2] This corresponds to about 1.8 tonnes of $CO_2$ per person and year between now and 2050.[3] This simple calculation shows that we researchers need to seriously rethink our travel habits.



Online conferences and workshops offer a clear alternative to travel, but are often met with reservations. For example, within Die Junge Akademie, the scepticism regarding online participation in our three-day general assembly was initially considerable. However, due to COVID-19 restrictions, the spring general assembly session 2020 had to be held completely virtually. This "experiment" went surprisingly well, hence our conclusion: Sometimes you just have to try!

In this paper, we list concrete proposals aimed at individual scientists and researchers, funding bodies, conference organisers, universities and research institutions. Where possible, we supplement these with personal experience and explain where we see difficulties as well as room for improvement. Concrete practical advice, including recommendations for technical implementation, is listed in a separate appendix that will be updated continuously.[4] In a short outlook, we highlight that changing our travel culture also represents a major opportunity to achieve greater diversity.

Before we introduce concrete proposals, let us emphasise one key point: There is not much time to take the measures needed to curb or reverse the changes our climate is undergoing. Rather than despairing in the face of the magnitude of this challenge, it is important to rea-

1 Calculation: atmosfair.de.
2 It is estimated that a carbon budget of 580 gigatons emitted after 1.1.2018 will result in global warming of 1.5 degrees Celsius compared to 1850-1900 temperatures. This estimate does not account for earth system feedback, which could result in a further reduction of the available carbon budget. An accurate estimation of the carbon budget depends on a number of additional factors, see https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter2_Low_Res.pdf (retrieved 29 September 2020) for additional references and details. Estimates of up-to-date emission budgets for 2018, 2019 and 2020 are based on http://www.globalcarbonatlas.org/en/CO2-emissions (retrieved 29 September 2020).
3 This number is based on the medium variant estimate for population growth, https://population.un.org/wpp/Download/Standard/Population (retrieved 29 September 2020).
4 https://www.diejungeakademie.de/aktivitaeten/projekte/praxistipps-weniger-reisen/

lise that even a small change in behaviour is significantly better than no change at all – perfectionism can be counterproductive to valuable attempts.

## For individual researchers

We will start with concrete suggestions which all researchers, regardless of their career stage, can implement immediately. These are aimed at reducing personal $CO_2$ emissions and initiating a rethink on a systemic level.

A researcher's schedule contains many trips per year, some of them international, with invitations to speak at group seminars or conferences, to attend collaboration meetings, and, for some research areas, to join field trips. All of these journeys add up, so that nowadays research work is often done on aeroplanes or in the last row of conference rooms, between preparing a lecture and claiming a reimbursement. Rethinking, prioritising and reducing this high number of trips will not only be good for the environment, but will also open up more time for concentrated work and creative freedom for new research ideas.

1. **Virtual seminars (external).** We propose that researchers who receive an invitation to speak at an in-person meeting such as a group seminar or colloquium should critically evaluate whether the event in question could be replaced by an online meeting. If that is the case, we propose that they should first inquire whether they can hold their presentation online. This could save the speaker a significant amount of time as well as reducing emissions and saving money for the organiser. The talk can then also be more easily made available to the public (or to a more limited group of people) at a later date, significantly extending its reach. We encourage researchers to try out new formats for virtual informal discussion, e.g. a "virtual get-together for drinks" to replace dinner with the speaker after their talk. If the request for an online talk is denied, it is worthwhile to ask: Is the scientific benefit of the trip worth the travel time? Who will be attending and what common interests do they share? It is worthwhile to calculate the travel time in advance. Would a longer and therefore more intensive meeting with fellow scientists perhaps be more valuable?

2. **Virtual seminars (internal).** We propose an increased focus on experts from nearby institutions, supplemented by virtual seminars with external speakers. The reduced time commitment required to participate in virtual seminars makes it easier to attract renowned scientists from all over the world as speakers. At the same time, it provides scientists who cannot travel easily, e.g. for political, financial or personal reasons, with an opportunity to present their work.

3. **Project and collaboration meetings.** We suggest experimenting with online communication and allowing time for informal online discussion (as also occurs during in-person meetings). This opens up room for the development of new ideas. At the same time, many project discussions can easily be held online; the travel time saved can even be put to good use as time spent directly on advancing the project. Simultaneous work on a project (a "sprint") motivates the participating scientists, even if they are located in different places.

4. **Travel by group members.** In their role as group leaders, researchers have an important influence on the travel behaviour of their group, both when approving business trips and as role models. We propose active and critical reflection on the travel culture within working groups with the aim of raising awareness, highlighting the option of online presentations and reducing the pressure on early career researchers to accept every invitation.

5. **The choice of the means of transport** is crucial. You may want to set a rule of thumb for yourself to avoid case-by-case decisions, especially when your calendar is very full. More and more scientists are committing to forgoing air travel if the distance is less than 1000 kilometres or the same journey by train takes less than 8 hours.[5] Comfortable night trains run on many routes within Europe.

## For funding bodies

We identify three specific areas where funding bodies can start to initiate a $CO_2$ reduction in travel within the scientific community:

6. **Start-up finance for online formats.** Seminar series, workshops and conferences which are partly or completely online could receive special financial support – e.g. to invest in the necessary technical equipment. This will not only explicitly promote formats that are less $CO_2$-intensive, but will also encourage researchers to critically reflect on their practice with regard to $CO_2$ emissions when organising events.



7. **Limitation of the number of conference presentations.** The number of (international) conference presentations made is often taken as a measure of scientific impact. This counteracts the goal of $CO_2$ reduction. Just as the DFG (German Research Foundation) has limited the number of listed publications per principal investigator to only ten per research proposal, we suggest that each research proposal (or CV) should only include a limited number of conference presentations. This would also make for a more intense and rewarding experience at the conferences that were attended, benefiting both speakers and participants.

8. **Promotion of research.** The following scientific questions should be promoted and addressed in more depth from a sociological and psychological perspective: What stands in the way of successful online communication? How can it be improved further? What approaches can be taken to develop an adequate “online culture of communication”?

## Conference organisation

The organisation of conferences differs from discipline to discipline, with a wide range of options depending on the number of participants, sponsors or the reputation of a conference. Nevertheless, there are some general ways to make conferences more sustainable.[6]

5 See https://climatewednesday.org/selbstverpflichtung (retrieved 29 September 2020) as well as https://www.diejungeakademiehttps//www.diejungeakademie.de/fileadmin/user_upload/Dokumente/aktivitaeten/interdisziplinaere_zusammenarbeit/20200128_Statement_CO2-Kompensation_EN.pdf (retrieved 29 September 2020). An additional overnight stay in a hotel generates about 20 kg of $CO_2$. See https://www.atmosfair.de/wp-content/uploads/vdr_reportingstandard_teil2_30032016.pdf (retrieved 29 September 2020).

6 Naturally, online meetings require power, which can result in $CO_2$ emissions. Yet, according to https://www.sciencedirect.com/science/article/abs/pii/S0140366414000620?via%3Dihub (retrieved 29 September 2020), they use just a fraction of the power required for traditional meeting formats.

9. **Online presentations by invited speakers.** Presentations can be given online using appropriate software – either at a physical conference venue or solely online if the entire conference happens online. In our experience, the acceptance rate for invitations to an online presentation can be higher, thus increasing the chances of attracting the best possible speakers.

10. **Online participation.** If all conference presentations are streamed or the conference takes place via online meeting software, not all participants need to be present in person. There are various possibilities for interactive online participation using simple technology, for example via instant chat, message boards or video and teleconferencing tools. Thus, scientists for whom travel is difficult or impossible for family, health, financial or visa reasons can still participate in scientific dialogue on an equal footing. This benefits everyone involved. Given today's technological possibilities, it is hardly justifiable to deny online participation to researchers who cannot travel to the conference due to visa requirements, family obligations or lack of financial means.

11. **Local hubs.** Local hubs can be organised for conferences which involve both online and offline participation. A conference may even be organised with multiple locations by setting up several local hubs.

12. **Poster sessions.** Even poster sessions can successfully be held online. For example, short poster flash talks can be uploaded to a website as videos together with the poster itself. Discussions of the posters can be held in chat rooms, via online video conferencing tools or virtual reality software and on Twitter, and can thereby reach a wider audience beyond the conference participants.



13. **New networking opportunities.** A common argument for why personal presence at a conference is so important is the informal discussion during coffee breaks and conference dinners. An online event makes it possible to introduce new forms of networking opportunities not available at traditional live events. If all participants in an online meeting are randomly divided into small groups (e.g. 3-5 people) for "online coffee breaks" in order to chat informally, e.g. via a video conferencing tool, the conference participants will meet a wider range of new people and new contacts can be established. This format was very well received at several workshops and conferences organised by some of the authors.

14. **Payment models.** Online conferences are less expensive for the individual, but can attract a much larger number of participants. During the transitional period, this can make it more difficult for conference organisers to calculate costs. One way to resolve this is to design new fee models that allow paid online participation in existing structures, or to introduce a publication fee for conference proceedings.

15. **Travel incentives.** A reduced conference fee for participants travelling by train, bus or bicycle will provide an incentive to reduce the $CO_2$ emissions caused by a traditionally organised conference and bring the topic of climate protection to the fore among the participants.

## For universities and research institutions

16. **Greater use of available technology.** Streaming rooms (for giving and attending online lectures) should be established, with stable and fast internet connections and conference-compatible firewall configurations, cameras, directional microphones and suitably trained staff, as well as rooms for online and hybrid (offline and online) conferences. The rooms should be made available to all members of the institution, if requested. This necessitates an easy-to-use booking system.

17. **Support for online conferences.** Universities and research institutions can encourage their researchers to take part in online conferences and even organise these themselves. For example, online conferences could be provided with special financial support.

18. **Improved incentives.** In appointment and tenure-track procedures, as well as in the allocation of funds, no distinction should be made between traditional and online lectures. Furthermore, the organisation of online conferences can be taken into account as a positive factor.

19. **Joint action.** Universities and research institutions convey the voice of their researchers to the outside world. By joining forces, they can amplify their success and ensure that conference organisers are forced to guarantee adequate opportunities for online participation in the future.



20. **Doctoral defences and appointment committees.** Participation in doctoral defences and appointment committee meetings is also possible online, subject to clarification of the legal framework. Initially, this could be allowed for at least some of the participants.

21. **Online platform.** A platform for all members of the university, especially doctoral and postdoctoral researchers, could collect information on this topic. It could serve as a hub for brainstorming and developing new ideas for online formats. Experience gained with online formats for teaching, workshops, conferences and administration during the coronavirus pandemic could also be collected and further developed here. Universities and research institutions should provide their staff with guidelines on how data protection issues can be given adequate consideration in online seminars and conferences.

22. **Emission targets.** Universities and research institutions should set themselves concrete targets for the percentage by which their $CO_2$ emissions will be reduced. This can be combined with rewards or even (financial) sanctions for individual units or groups that make a particularly large or small contribution, respectively, to achieving the goal. This requires a calculation of the institution's carbon budget. Yet this calculation alone will not lead to a reduction in emissions. It should therefore always be linked to an ambitious but realistic reduction target.

23. **University-wide rules.** Universities can introduce binding university-wide rules that aim to give travel activities a more sustainable focus.[7]

7 See for example https://www.qu.uni-hamburg.de/cluster/climate.html (retrieved 29 September 2020).

## Outlook: A transformation of travel culture as an opportunity for greater diversity

The “travel culture” prevalent in the scientific community, at least before COVID-19, with frequent and long-distance trips, not only leads to high greenhouse gas emissions but also to less diversity among researchers. Researchers for whom travelling presents greater hurdles, for example for family, health, or physical reasons, are excluded. The Global South (regions outside Europe, North America, Australia and East Asia) is systematically disadvantaged, both since the financial resources available for travel by researchers are typically much more limited and since visas are required much more frequently. Visa applications sometimes require long-term planning, involve additional expenses, and have no guarantee of success.

We see the shift towards increasing online communication in the academic world as a unique opportunity to better involve significant groups of previously excluded researchers. This will not only benefit the researchers concerned. Greater diversity among participants will also lead to a more innovative, more creative and ultimately more successful scientific community.



Die Junge Akademie
an der Berlin-Brandenburgischen Akademie der Wissenschaften
und der Nationalen Akademie der Wissenschaften Leopoldina

Die Junge Akademie wurde im Jahr 2000 als weltweit erste Akademie für herausragende junge Wissenschaftlerinnen und Wissenschaftler ins Leben gerufen. Ihre Mitglieder stammen aus allen wissenschaftlichen Disziplinen sowie aus dem künstlerischen Bereich – sie loten Potenzial und Grenzen interdisziplinärer Arbeit in immer neuen Projekten aus, wollen Wissenschaft und Gesellschaft ins Gespräch miteinander und neue Impulse in die wissenschaftspolitische Diskussion bringen. Die Junge Akademie wird gemeinsam von der Berlin-Brandenburgischen Akademie der Wissenschaften (BBAW) und der Nationalen Akademie der Wissenschaften Leopoldina getragen. Sitz der Geschäftsstelle ist Berlin.

diejungeakademie.de  Junge_Akademie  diejungeakademie