Air Miles Reduction Strategy at the Department of Geography, UZH

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1. Introduction

Exchange is key for the advancement of science. When travelling, we collect scientific data, meet our peers, connect ideas, receive and give education, build networks and develop our careers. However, academic travel frequently involves long-distance flights, contributing to greenhouse gas emissions and fueling global warming.

Universities across the globe have begun to face the problem of academic air travel and promote campaigns to fly less and reduce their carbon footprint. At UZH, the Executive Board decided to reduce flight-related greenhouse gas emissions by 2030 by more than half. Additionally, the Executive Board recommends that faculties set more ambitious reduction targets. The Department of Geography has had a pivotal role in UZHs efforts to reduce academic air travel. In 2017, the GIUZ launched the air miles monitoring group to quantify and evaluate air travel at the department. Thus far, the secretariats of the research divisions have collected all business air travel paid by UZH or related third party projects through the reimbursement system for the years 2017 - 2021. The first three years (2017- 2019) build the reference period for monitoring and setting the reduction goals. Now, we need to take concrete action to reach these goals.

Reducing greenhouse gas emissions should be a primary focus of our department. As geographers, we actively contribute to climate change research, exploring the physical and social consequences of a warming world. At the same time, we fly much because our research activities are often overseas. We firmly believe that the GIUZ should act on its values and strive to reduce its flight-related carbon footprint. This document briefly outlines the air miles reduction strategy for the Department.

2. Air miles reduction goals

In June 2019, the GIUZ Direktorium agreed on an air miles reduction goal of 25% by 2025. The air miles monitoring group defined how to implement the reduction goal in practice.

- **Target:** We express the target in air miles (total and per capita).

- **Baseline:** We compare all future air travels against the mean air travel during the reference period 2017-2019. We derive the actual reduction from the three-year-running-mean compared against the baseline.
- **Reduction goal:** We reduce air miles (both in total and per capita) at GIUZ by 25% by 2025, following a linear reduction path.

In 2021, the UZH Executive Board decided on even more ambitious university-wide goals on air travel. Specifically, the UZH's flight-related greenhouse gas emissions must not exceed 60% of the pre-pandemic level (average of 2018/2019 as baseline) by 2022. They must decrease afterwards by at least 3% per year compared to the previous year, amounting to a total reduction of flight-related emissions of at least 53% by 2030.

Figure 1 shows the observed flight-related CO2 emissions at the GIUZ (blue line), the GIUZ target (green line) and the UZH target (red line).

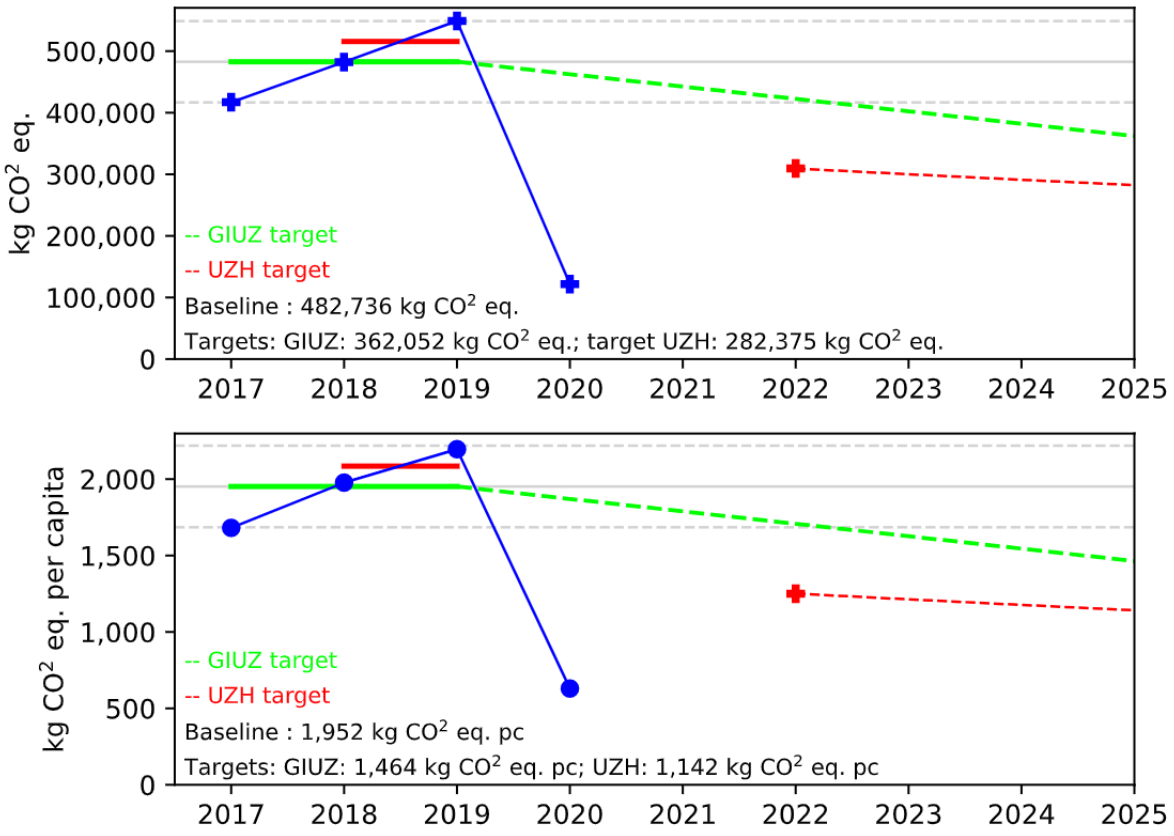

Figure 1: Flight-related CO2 emissions at GIUZ between 2017 and 2025 (projected). CO2 emissions (blue line) massively decreased in 2020, both total (top) and per capita (bottom). The GIUZ goal is to reduce air travel by 25 % by 2025 on a linear reduction path (green line), compared to the average during the reference period from 2017 to 2019. The UZH goal aims to reduce air travel by 53% by 2030.

The recent UZH-wide decisions on air miles reduction and the decrease in air travel post-Covid-19 call for a re-evaluation of our reduction goals. Specifically, the

Department must decide whether it wants to a) stick to its initial target, b) adopt the stricter UZH target or c) retake the leading role and aim for even more ambitious reduction goals. Similarly, we must also discuss how to implement the reduction goal in practice and align the target and the baseline to the UZH standard (e.g. reduce CO2 emissions instead of air miles).

3. Air miles monitoring

The GIUZ air miles monitoring group (part of the GIUZ Sustainability Task Force) aims to quantify air travel at GIUZ, creating the empirical basis for developing and evaluating reduction strategies.

The monitoring consists of the following steps:

- Data collection: The secretariats of each research division collect all business air travels paid by UZH or related third party projects through the reimbursement system.
- Air travel statistics: For each air travel, we collect statistics based on a standardised template, providing information about the route (e.g. origin, destination, air miles, date), the research division, and the purpose of travel. We compute air miles/kilometres and CO2 equivalents.
- Data Analysis: We evaluate the air travel statistics. For data protection, we aggregated all results at the level of the research divisions.
- Reporting: We summarise the results in a short report for the attention of the GIUZ Direktorium. Before publication, we discuss the report with the UZH Data Protection Department.

In the first half of the monitoring period (2017-2019), we saw a steady 30% increase in air travel at the Department. Following Covid-19 travel restrictions, air travel decreased by more than 80% in 2020. With travel restrictions gradually being lifted, we expect air travel to rise again in 2022.

Scenarios
We developed future travel scenarios and evaluated their impact on air miles reduction. We found that long-haul flights (> 10,000 km one way) have the most influence on air miles. We reach the GIUZ reduction target by reducing ultra-long flights by 90% alone. In contrast, a reduction of short, inner-European flights is almost negligible. We still miss the GIUZ target clearly by avoiding short flights to destinations within 1,000 km. We also find a strong influence when inviting fewer guests arriving by plane and incentivising conference attendance in Europe over overseas.

Reduce air miles, not research
Recent studies show that academics fear reducing air travel might harm their

academic work. We need to take these fears seriously and ensure that air miles reduction does not compromise the quality of the research activities at the Department. The air-mile data confirm that travel needs differ between research divisions, calling for a balanced mix of measures tailored to the individual divisions and units. At the same time, we need to communicate that a concerted effort on reducing flight-related greenhouse gas emissions can establish the Department's leading role on this critical topic in the community and give positive impulses for our research.

Future coordination

At GIUZ, we report travelled air miles and CO2 emissions in total and per capita. However, we aim to reduce air miles to induce a change in travel behaviour rather than incentivising a switch to airlines with the currently lowest purported CO2 emissions. The recent university-wide actions push for a reduction in CO2 emissions instead, calling for coordinating our efforts with UZH to harmonise our target and baseline.

In the long run, we plan to integrate our initiative in the UZH-wide air miles monitoring. However, we will continue monitoring air miles at GIUZ at least until the end of 2022, as the necessary infrastructure is still unavailable in the university's resource planning software (SAP).

Scope and workload

Air miles monitoring has impacted the reimbursement system and travel regulations at GIUZ. In addition, it has considerably increased the workload on project members who contribute voluntarily and unpaid. We believe that researching climate change comes with the responsibility for action, which has inspired us to spearhead the fight against flight-related greenhouse gas emissions at UZH. However, we see the initiative at a turning point, where it cannot be sustained with voluntary work alone. We have detailed our vision for the future of air miles monitoring at GIUZ in section 5.

4. Air miles reduction strategies

There is a wide range of potential reduction strategies. In this chapter we explain six strategies in more detail and as a summary in the table below.

Reduction Strategy	*Strengths*	*Weaknesses*	*Opportunities*	*Threats*
Communication	appeals to the scientific curiosity	leverage might be weak	inspires future initiatives	nothing changes
Volunteer measures	appeals to self-responsibility	lack of leverage and enforcement	could inspire bottom-up initiatives	nothing changes
Regulations	can be adjusted to empirical evidence,	perceived paternalism,	none	GIUZ turns into a totalitarian

	provides clear guidelines, without additional effort for units and groups	additional administrative effort, legal hurdles		nightmare
Incentive tax	adapts to reduction path	administrative effort, legal hurdles	generates funding for countermeasures	tax is perceived as an annoying but tolerable cost
Cap and trade	leaves responsibility at the units	administrative effort for units, time-intensive, legal hurdles, incentivises academic inactivity,	flourishing trade of emissions across public sector	exuberant complexity renders the system useless
Offsetting	easy way out without consequences	easy way out without consequences	none	nothing changes

Table 1: Air miles reduction strategies, their strenghts, weaknesses, opportunities and threats.

4.1 Communication

Communication is a fundamental starting point and an essential requirement for all reduction strategies. For a broad acceptance of air travel reductions, communication needs to be honest, transparent, positive, inclusive, and coherent. It needs to focus on both an internal and an external audience. Good communication should address the following topics:

- It reports on the current air travel reduction goals and strategies and helps develop guidelines bottom-up, encouraging all employees at GIUZ to collaborate.
- It highlights the benefits of air travel reduction for work time and quality.
- It does not lead to discrimination and addresses diversity and inclusiveness, e.g., showing that online formats can increase participation for families or people with other responsibilities.
- It provides platforms for open discussions and exchange.
- It respects the special need of junior researchers to build an international network.
- It focuses on the constructive and positive, ensuring individuals are not blamed for their travel behaviour.
- It reports and rewards good practices, e.g. renunciation of travel or sharing air miles within organisational entities, and promotes follow-up initiatives.

4.2 Volunteer measures

Rather than imposing regulations, the Department appeals to individual responsibility. The research units and the groups implement measures

independently. The Department takes a mentoring role and supports the volunteer incentives by

- communicating air miles statistics and the reduction goals and suggesting effective strategies to reduce air travel
- recognising and awarding best travel behaviour
- providing tools and support for finding best travel connections regarding both price and emissions, e.g., through services such as routeRANK (https://www.routerank.com/) or Flying NetZero (https://www.climpact.ai)

4.3 Regulations

The Department passes evidence-based, relevant and effective regulations to reduce flight-related emissions.

- Long-haul flights: Flights exceeding a distance threshold need central approval.
- Invited guests:
  a) The Department limits the air travel budget for inviting guests.
  b) The Department ceases air travel payments for non-UZH employees while still covering board and lodging. This measure forces guests to book their travel on their own financial and emission budgets, incentivising hosts and invitees to coordinate workshops, conferences and meetings.
  c) The Department ceases to cover flight costs for guests for specific purposes, e.g. either the external PhD evaluator arrives by non-airborne means of transport or attends the defence virtually.
- Minimum stay: The Department requires a minimum academic stay to cover flight costs. Alternatively, it requires a minimum scientific contribution to cover flight costs, e.g. active presentation at a conference rather than just attendance.
- Prioritise the local: The Department prioritises local, non-airborne travels. For example, funding for in-person attendance is restricted to European conferences and only exceptionally granted for conferences overseas. Student excursions are limited to locations that can be reached by non-air born transportation or short-haul flights. Local and regional research projects are prioritised, as they can also be carried out without flights.
- Case-by-case evaluation: all air travel need to go through screening to ensure they comply with the reduction goals at the Department.
- Quota: The Department limits the number of air miles per research unit.

Regulations require enforcement, i.e. an administrative body imposing sanctions for those who do not follow the rules and potential rewards for those who do, entailing considerable administrative effort. Regulations could be lifted for specific groups, e.g. early-career scientists.

4.4 Incentive tax

The Department raises an incentive tax, a price on flight-related CO2 emissions, high enough to impact individual travel behaviour. The tax is collected for each flight during reimbursement through the UZH travel office. The Department estimates the annual tax based on current air travel and the reduction goal. There are different possible implementations of an incentive tax:

- Raise tax for each flight and reimburse the total revenue to all employees.
- Raise tax for each flight, reimburse only the amount up to the reduction goal, and direct the excess revenue to countermeasures advancing climate neutrality of the UZH.
- Raise tax for each flight and direct the total revenue to countermeasures advancing climate neutrality of the UZH.

Countermeasures could cover the costs of a sustainability coordinator or promote public transportation for commuting.

4.5 Cap and trade

The Department limits the air miles budget per research unit (cap) and enables the exchange of air miles between units (trade). Trade could be possible at different levels, e.g. between employees, units, departments, faculties, or university-wide. Cap and trade can be based on pure market price or include an additional tax (see above). The system could value different types of travels differently and grant waivers or discounts, e.g. for early career researchers. Implementation of cap and trade requires a central trading system, entailing considerable administrative effort.

4.6 Offset air travel emissions

The Department compensates for its emissions by funding an equivalent carbon dioxide saving elsewhere. GIUZ should strive to change travel behaviour rather than incentivise modern indulgence sellings. Thus, offsetting can only complement the measures mentioned above.

5. Recommendations and avenues forward

Reduction strategy

We recommend a mixed strategy to tackle flight-related greenhouse gas emissions at GIUZ, with an initial focus on communication. The Department issues a white paper with best practice examples and concrete and relevant recommendations to reach the reduction goals, based on the empirical findings from air miles monitoring.

Following, the Department implements a step-wise reduction strategy comprising a) volunteer measures, b) regulations, and c) an incentive tax. Volunteer measures lack

the leverage and enforcement of regulations but appeal to self-responsibility, vital to gaining initial support for action. The Department evaluates the measures' effectiveness yearly and switches to measures with more leverage if the reduction goal is missed. It will be essential to act quickly, should the initial strategy be ineffective. Here, the white paper will play a crucial role by suggesting best practice examples that can turn into templates for volunteer measures, lowering the workload on individual groups, and providing recommendations that can quickly turn into regulations. Finally, an incentive tax could complement the measures, balance the offset between the status-quo and the reduction target, and generate funding for countermeasures.

Avenues forward

All current project members contribute voluntarily and unpaid to the air miles monitoring at GIUZ. However, we see the initiative at a turning point, where it cannot be sustained with voluntary work alone.

We suggest funding a coordinator position to implement air miles monitoring at GIUZ.

Reducing academic air travel has become a key objective across universities. At the UZH, the GIUZ is recognised as a pioneer in air-mile monitoring and invited to share its expertise for implementing a university-wide solution. However, the air-mile initiative does not stop with practical implementation. The topic of adapting human mobility to a warming world has the real potential to become an important research avenue of the Department in and of itself. How can universities reduce flight-related emissions without compromising the quality of education and research? Or, more generally, how can humanity adapt its mobility needs to counter climate change without compromising its quality of life?