

Taxing Aviation: Policy Implications of Climate Science

Giedrė Lideikytė Huber

Aviation is one of the rare sectors where pollution has been rising unchecked for decades while taxation has stood still. Fuel taxes are levied on the use of motor vehicles. In many countries, electricity generation is now subject to carbon pricing through emissions trading systems or carbon taxes. Yet international flights still escape kerosene taxes, are often exempt from VAT and benefit from other tax incentives or subsidies. These fiscal exemptions have become increasingly hard to justify at a time when climate science warns that emissions must fall rapidly.

In a previous blog, my colleague Peter Hongler showed how recent international court decisions confirm that governments have a legal obligation, from an international law perspective, to address polluting activities, including aviation. This contribution takes a different perspective. It examines what climate science tells us: why technological solutions will not suffice in time, why managing demand has become extremely important, and why taxation emerges as the most direct policy tool. In short, this piece does not revisit the legal basis for taxation, but highlights the scientific evidence that turns aviation taxation from a matter of political discretion into a matter of policy necessity.

To make that case, the blog sets out five reasons: aviation's climate impact is disproportionately large; technological fixes will not deliver adequate solutions quickly enough; climate science stresses that aviation demand must be balanced; taxing harmful activities is a long-standing and widely accepted practice; and reducing air traffic is not the same as "degrowth economics."

Climate Impact and Unequal Responsibility

Global aviation is responsible for roughly 2.5% of direct CO₂ emissions, and this share is rising. Yet this figure hides stark disparities: it averages emissions across countries with very high flight activity and those where most people never fly at all. Responsibility therefore falls disproportionately on jurisdictions with high levels of aviation demand — including Switzerland.

In Switzerland, aviation's impact is especially pronounced. Depending on whether international flights are included, CO₂ emissions from aviation represent around 10–13% of national totals.¹ When the non-CO₂ effects of contrails and nitrogen oxides are considered, aviation's contribution to Switzerland's total climate impact is estimated to rise to around 27%.²

What makes this particularly concerning is the pace of growth. The International Civil Aviation Organization (ICAO) projects that, without stronger policies, international aviation emissions could triple by 2050 compared to 2015 levels.³ This would consume a disproportionate share of the remaining global carbon budget — leaving less space for sectors such as agriculture or heavy industry, where alternatives are hard as well to find.

¹ Federal Office of Environment, Greenhouse gas emissions from aviation, <https://www.bafu.admin.ch/bafu/en/home/topics/climate/data/greenhouse-gas-inventory/aviation.html?>

² Neu, 2021.

³ ICAO, Trends in Emissions that affect Climate Change, <https://www.bafu.admin.ch/bafu/en/home/topics/climate/data/greenhouse-gas-inventory/aviation.html> last modification 15.04.2025.

The burden is also profoundly unequal. A small minority of affluent frequent flyers accounts for the majority of aviation emissions, while most of the world's population has never boarded a plane.⁴ This raises a simple fairness question: why should an elite form of mobility remain largely tax-free while its climate costs are imposed on everyone, particularly those who come from least developed nations that bear the largest brunt of climate change effects?

No Technological Fix Without Balancing Demand

The aviation industry often points to technological breakthroughs as the way forward. Research is important, but the reality is that none of the proposed solutions can deliver the deep emission cuts needed over the next two decades — the period that matters most for stabilizing the climate.

Take sustainable aviation fuels: despite years of discussion, they account for well below 1% of jet fuel use today. The first generation of biofuels has questionable climate benefits, and the more advanced synthetic fuels remain expensive and experimental. Hydrogen and electric aircraft attract attention as potential game-changers, but even in optimistic scenarios they are unlikely to be viable for long-haul flights before the 2040s.⁵ Efficiency gains in aircraft design continue, yet these modest improvements are consistently outweighed by the rapid growth in demand for flights.⁶

The conclusion is clear: there will be no technological fix in time for states to meeting any emission reduction goals such as the Paris Agreement Nationally Determined Contributions (NDCs), or in general, before climate change effects become irreversible. Innovation must continue, but relying on it as an excuse for business as usual means delaying climate action. As long as demand keeps rising, emissions will too.

This is also the mainstream view of climate science. The Intergovernmental Panel on Climate Change (IPCC) has emphasized that without demand-side measures, aviation risks overshooting its fair share of the global carbon budget. The International Energy Agency (IEA) reaches the same conclusion in its Net Zero by 2050 pathway, stressing that demand restraint is needed this decade.⁷ It also highlights that taxing GHG emissions beyond the CORSIA scheme is critical to reflect the climate impacts of air travel more fairly.⁸

Aviation Taxation: From Privilege to Policy Design

If demand must be balanced, aviation can no longer remain fiscally privileged. Taxation is one of the few instruments that can make aviation's climate costs visible to consumers while steering demand. Properly designed, it not only discourages unnecessary flights but also generates revenues for cleaner transport alternatives

Historically, there is nothing unusual about taxing harmful activities. Tobacco and alcohol are classic examples: both are taxed heavily to discourage harmful consumption and to cover the costs they

⁴ Gössling, Stefan, and Andreas Humpe. "The global scale, distribution and growth of aviation: Implications for climate change." *Global Environmental Change* 65 (2020): 102194.

⁵ Mukhopadhaya, Jayant, and Dan Rutherford. "Performance analysis of evolutionary hydrogen-powered aircraft." *International Council on Clean Transportation* (2022)..

⁶ IPCC AR6 WGIII, Ch. 10 (2022) -double check

⁷ <https://www.iea.org/energy-system/transport/aviation>

⁸ IEA, Recommendations, last update 16.04.2025.

impose on public health.⁹ Today, it would be unthinkable to imagine a fiscal system without such excise taxes. Environmental taxes are newer, but they follow the same principle. Carbon pricing, fuel levies, and waste charges are now common in many jurisdictions and increasingly accepted as normal fiscal tools. They are pragmatic, not radical: they align prices with reality.

Aviation should be treated the same way. Air travel continues to benefit from historic exemptions on fuel and consumption taxes — a distortion that undermines fiscal fairness. Aligning prices with environmental costs would correct this imbalance and strengthen incentives for airlines and manufacturers to invest in cleaner technologies. Emissions trading systems (ETS) in the EU and Switzerland have recently been extended to aviation, providing an indirect price signal. Yet their effectiveness in curbing demand is contested. Oesingmann (2022)¹⁰ shows that the EU ETS has so far had no statistically significant effect on intra-European passenger flows, whereas ticket taxes do produce measurable reductions. ETS may therefore help incentivize efficiency improvements, but it cannot substitute for direct fiscal measures such as kerosene taxation or VAT if the goal is to balance demand.

The central question is no longer whether aviation should be taxed — that case has been made by science, economics, and law alike. The real debate now is about design: Should kerosene be taxed directly? Should VAT apply to international tickets? Should revenues be earmarked for low-carbon transport?

Balancing Demand for Aviation Is Not “Degrowth”

Industry critics sometimes argue that reducing aviation demand equates to “degrowth economics.” But this conflates an ideological stance with a targeted policy intervention. Degrowth broadly questions growth itself¹¹; shifting demand away from aviation is about reallocating resources to cleaner sectors.

Evidence shows such a shift is possible—and beneficial. For example, according to a recent study on European rail service improvements, replacing some short-haul flights with high-speed rail can reduce air travel by around 12%, and night trains can shift traffic from air to rail by over 10%.¹² Similar findings are confirmed by other studies.¹³ In other words, the journeys still happen, but in a less polluting way.

Less aviation could also bring positive externalities that support prosperity: cleaner air around airports, reduced noise for neighboring communities (increasing their value), and less congestion in the skies. These are measurable welfare gains that are rarely captured in GDP statistics but matter greatly for quality of life.

⁹ <https://www.who.int/activities/raising-taxes-on-tobacco>

¹⁰ Oesingmann, K. (2022). The effect of the European Emissions Trading System (EU ETS) on aviation demand: An empirical comparison with the impact of ticket taxes. *Energy Policy*, 160, 112657.

¹¹ Eoin McLaughlin, Degrowth: is there any consensus on whether it might be a good idea?

¹² Oesingmann, K., & Ennen, D. (2025). The impacts of high-speed rail expansion on short-haul air passenger transport—Evidence from German domestic and international traffic. *Case Studies on Transport Policy*, 101549.

¹³ Sola Zheng, ICCT, The bullet train to lower-carbon travel, March 29, 2022, <https://theicct.org/aviation-rail-shift-lower-carbon-mar22/>.

In short, managing aviation demand is not about limiting prosperity but about correcting an imbalance. Aviation has long benefited from exemptions and subsidies that kept prices artificially low. Bringing prices closer to their true climate costs does not hinder growth; it levels the playing field and can foster investment in cleaner transport and innovation in the aviation sector itself. Over time, a shift toward more efficient and sustainable mobility could support both environmental goals and broader economic development.

Conclusion: From Anomaly to Necessity

Aviation taxation is overdue. The sector contributes disproportionately to emissions, technological solutions will not deliver quickly enough, and climate science underlines the need to manage demand. Fiscal history shows that taxing activities with significant external costs is normal practice. In this context, aviation taxation is not only legally required but, in light of scientific evidence and fiscal tradition, a logical step in policy design. Properly structured, it can also encourage innovation and investment in cleaner technologies, supporting both sustainability goals and long-term economic development.

Importantly, more sustainable pricing could also strengthen the aviation industry itself. The sector is among those most vulnerable to climate change, facing increasing disruption from extreme weather, infrastructure stress, and rising operating risks. Taxation that helps to reduce emissions and finance adaptation therefore also serves the long-term resilience of aviation.