

Global Solidarity Levies: A Practical Negotiation Framework to Finance the low-carbon Transition and Development [Preview on Aviation]

This article serves as a preview of a forthcoming full report, to be published in the second half of 2025. Please cite this work and its relation to the future report as follows:

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Introduction

Climate change is an existential threat to humanity, posing irreversible risks to ecosystems, livelihoods, and global stability (Bolton et al., 2020). Despite much progress in climate awareness and policy development, the international policy agenda has been hampered by growing geopolitical fragmentation and shifting priorities among major global players. As a result, we find ourselves in a world where comprehensive global coordination remains elusive.

Nonetheless, this article argues that it is still possible to make meaningful progress by designing targeted global solidarity levies—such as a tax on international aviation, a sector that significantly contributes to carbon emissions. Such a levy can act as a sectoral carbon tax and, if adopted by a coalition of willing countries, can raise substantial resources. Crucially, the revenues generated could be redistributed to less developed countries that are most vulnerable to climate impacts, creating a win-win outcome for their sustainable development and transition to carbon neutrality.

To support this approach, this article – a preview to a forthcoming report (see citation above) – first proposes a structured theoretical framework and process for practical negotiations to form a climate club, with a focus on the aviation sector. It then presents the early-release of a robust quantitative tool—a technical simulator of the levy’s operation—to allow participants to evaluate potential revenue outcomes, sensitivity to policy parameters, and fair redistribution mechanisms. This simulator will ultimately be expanded to other economic sectors and activities, thereby serving as a practical negotiation and assessment tool for countries willing to engage in global solidarity levies.

I. Why do we need global solidarity levies?

Building on the theory of clubs (Buchanan, 1965) as applied to environmental challenges (Nordhaus, 2015), and moving beyond the idealized notion that a global carbon tax alone can address climate change (Rosenbloom et al., 2020), the forthcoming report *Global Solidarity Levies: A Practical Negotiation Framework to Finance the Low-Carbon Transition and Development* (Pereira da Silva et al., 2025) proposes a pragmatic framework for financing the low-carbon transition through a targeted set of international levies.

Drawing from a theoretical distinction between traditional international taxation, global taxes, and solidarity-based fiscal instruments, the forthcoming report conceptualizes “global solidarity levies” as coordinated but nationally administered taxes, earmarked for global public goods such as climate mitigation and adaptation, especially in vulnerable developing

countries. Unlike idealized proposals for global taxes – which require supranational authority and remain politically elusive – solidarity levies operate within the bounds of national sovereignty, with revenues collected domestically but committed to shared international purposes. They bridge the gap between voluntary transfers (such as aid) and coercive regulatory frameworks, allowing coalitions of willing countries to lead through credible, redistributive mechanisms.

Against this backdrop, this article and the forthcoming report to which it belongs seek to inform and enable practical progress of the Coalition for Solidarity Levies, a group of 14 countries¹ committed to “support[ing] solidarity levies as part of the solution to close the climate & development finance gap” (GSLTF, 2024).

II. The case of a global solidarity levy for the aviation sector

Among the levies considered by the Coalition for Solidarity Levies, a tax on international aviation has garnered the strongest consensus, as it is both environmentally justified and economically efficient.

The aviation sector is particularly well-suited to global solidarity levies, meeting the two key criteria outlined in the report for optimal international tax bases. First, its value creation is inherently international (by definition, international flights involve at least two national jurisdictions), making an international tax mechanism more politically acceptable and legitimate, as it does not exclusively benefit a single country's citizens. Second, the sector represents a relatively high risk of tax avoidance when taxed unilaterally (e.g. airline companies could reroute flights or shift stopovers to neighboring countries to bypass stand-alone national measures).

Moreover, the report underscores aviation's role in global inequality. Air travel remains a luxury for the global minority: only 11% of the world's population flew in 2018, with just 4% participating in international travel (Gössling and Humpe, 2020). The top 1% of frequent flyers account for over half of commercial aviation emissions (Ibid). This concentration of benefit and burden supports the equity case for levies that redistribute from affluent emitters to climate-vulnerable populations.

The case for taxing aviation is strengthened by the fact that international aviation has largely evaded carbon pricing and fuel taxation regimes, through various legal exemptions, outdated bilateral treaties, and geopolitical resistance. Existing international climate agreements have consistently delegated responsibility for aviation to the International Civil Aviation Organization (ICAO), whose focus on offset-based mechanisms (e.g., CORSIA) is widely viewed as insufficient (Keen et al., 2013; T&E, 2019; Neiva et al., 2021). In contrast, a solidarity levy

¹ List of countries here: <https://solidaritylevies.org/support-us/>. This coalition is supported by the work of the Global Solidarity Levies Task Force, established after COP28 and led by the Coalition's co-chair countries—Barbados, Kenya, and France—alongside a high-level expert group, representatives from key partner organizations, and a secretariat hosted by the European Climate Foundation (ECF).

approach could generate stable revenues, send credible policy signals, and embody a commitment to climate justice.

Taxing the global aviation sector could serve as a successful example of how to design, negotiate, agree on, and implement a Global Solidarity Levy to finance the low-carbon transition and development. It has the potential to generate substantial revenue, attract broad participation from countries, and be gradually extended to others.

III. Methodology and preview of potential outcomes generated by the Aviation Simulator

Methodology

To support negotiations around the adoption of global solidarity levies, this report introduces a simple, transparent revenue simulator for a number of potential levies. The simulator models the expected revenues of different levies – such as from air ticket and aviation fuel taxes, as previewed in this article – under various scenarios of geographical participation, tax rates, and demand responses.

This revenue simulator can therefore serve as a practical tool for negotiation, offering a data-driven foundation for different coalitions of countries. By illuminating who contributes, who benefits, and how much is at stake, it helps convert abstract principles of solidarity into quantifiable value propositions, making climate clubs organized around levies more attractive, credible, and inclusive.

At its core, the simulator evaluates a range of aviation levy scenarios using empirical data on flight volumes, passenger distributions, ticket classes, and fuel consumption. The design of the simulator draws from established literature on international environmental taxation, as well as lessons from existing ticket levies such as the French Unitaïd tax². The model incorporates:

1. **Fuel and Ticket taxes:** Users can choose between a fixed per-ticket levy, a fuel-based excise tax, or hybrid schemes that combine the two. Both designs strike a different balance between behavioral incentives and revenue generation, and they are compatible both individually and in combination.
2. **Geographical Scope of Levy Participation:** The simulator allows for variation in coalition size – from unilateral implementation to broad multilateral adoption – and models the resulting effects on revenues. Revenue estimates are provided for 109 countries.
3. **Differentiation by Ticket Class and Destination:** To embed progressivity and environmental targeting, the model adjusts tax incidence by ticket class (economy vs. business/first class) and by whether the flight is domestic or international. The aviation fuel tax can also be differentiated between domestic and international flights.
4. **Demand Response and Scenario Testing:** The simulator includes a number of parameters intended to estimate the short-term reduction in aviation demand due to the introduction of a levy. These optional parameters will be available for users in the

² See for instance: https://www.diplomatie.gouv.fr/IMG/pdf/summary_evaluation_france_unitaid_en-27-11-23_cle0cf24c.pdf

final version of the simulator and will allow for the creation of scenarios representing different political and economic conditions.

Preview of possible scenarios and results

The report outlines several scenarios estimating potential revenues from each levy. Each scenario combines different tax rate options (high, medium, and low) with assumptions about demand response (optimistic, central, and pessimistic). The tax rates for each scenario were taken from real-world examples of existing taxes. The estimates of the potential demand response were taken from the literature (Chassin, 2013; Fukui and Miyoshi, 2017), i.e. they do not reflect the opinions of the authors of this article and forthcoming report.

Tax rates for the fuel tax were based on existing rates in Hong Kong, Japan and Canada, while tax rates for the ticket taxes were based on existing rates in the United Kingdom, France, and the international Solidarity Air Passenger Levy which has been adopted by a number of countries. The exact rates are shown in Box 1, and in the online simulator preview (drawn from Neiva et al. (2021) and European Commission (2019)).

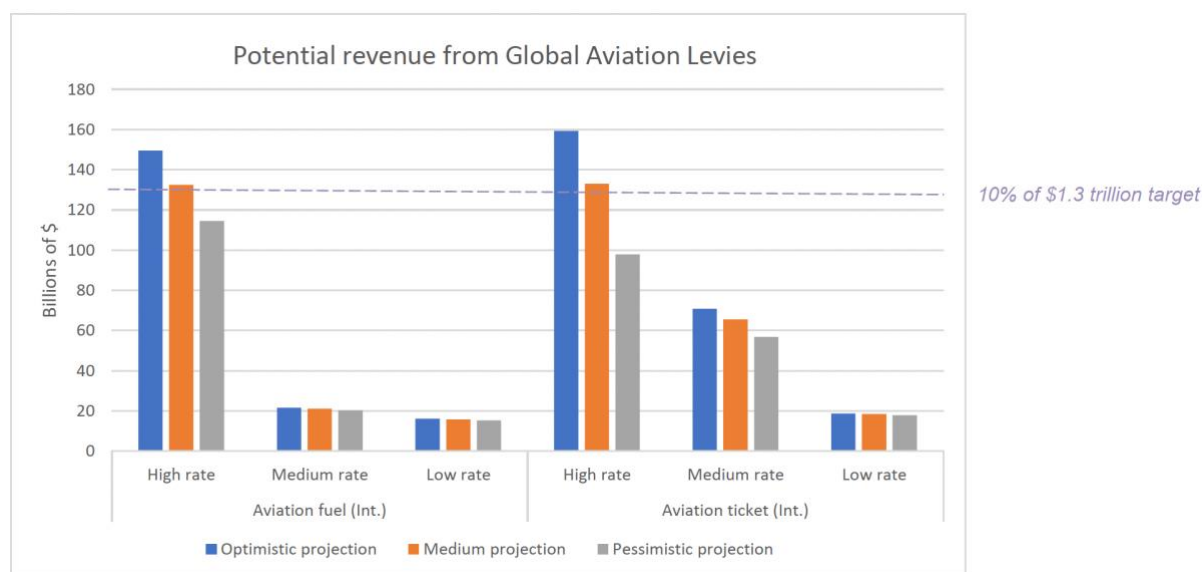
Box 1 High, medium and low tax rates used in scenario analysis for aviation levies

	Rates	Source
Aviation fuel	332 \$/t CO2	Hong Kong fuel tax
	47 \$/t CO2	Japan fuel tax
	35 \$/t CO2	Canada fuel tax
Aviation ticket <i>Domestic Economy</i>	16,9 €	UK ticket tax
	7,4 €	France ticket tax
	2,63 €	Solidarity Air Passenger Levy
Aviation ticket <i>Domestic Premium</i>	33,8 €	UK ticket tax
	30 €	France ticket tax
	20,27 €	Solidarity Air Passenger Levy
Aviation ticket <i>International Economy</i>	104 €	UK ticket tax
	40€	France ticket tax
	7.51€	Solidarity Air Passenger Levy
Aviation ticket <i>International Premium</i>	228.8 €	UK ticket tax
	120 €	France ticket tax
	63.07 €	Solidarity Air Passenger Levy

The initial results for globally adopted fuel and ticket levies on international flights are provided in Figure 1. The estimates indicate that moderate tax rates could raise around \$20 billion a year via a fuel levy and over \$60 billion through ticket taxes. More ambitious tax rates for both levies could raise over \$300 billion a year combined. Even more revenue can be raised by taxing domestic flights, an option which is included in the simulator.

While this simulation is global – i.e. encompassing a theoretical adoption by all countries across the world – the simulator also allows for the generation of multiple scenarios by forming specific coalitions of countries.

Figure 1 Annual revenue from global aviation fuel and ticket levies on international aviation under various demand-response scenarios



III. Conclusion and Outlook

The case for an international aviation levy rests on a convergence of technical, normative, and political arguments. Technically, the aviation sector represents a coherent, underutilized fiscal base with significant revenue potential. Normatively, taxing air travel aligns with climate equity: those who fly more – and emit more – contribute more to climate change. Politically, the sector's international structure makes it a natural candidate for club-based solutions, where early adopters can lead by example without requiring universal consensus.

As detailed in the forthcoming full report *Global Solidarity Levies: A Practical Negotiation Framework to Finance the Low-Carbon Transition and Development* (Pereira da Silva et al., 2025), this approach complements rather than competes with broader climate finance and carbon pricing frameworks. It demonstrates how targeted, evidence-based solidarity instruments can mobilize resources in a fragmented world, with aviation serving as a critical first step.

As illustrated in Figure 1, an ambitious worldwide implementation of a solidarity levy on the aviation sector could generate sufficient revenue to help meet the \$1.3 trillion climate finance target set at COP29. Of course, a more realistic scenario – with fewer countries joining the initiative and potential reactions from economic agents (e.g. reduced flying or tax avoidance) – could result in lower revenues. However, even raising 10% of the \$1.3 trillion target would represent significant progress, especially if these revenues are complemented by other levies already explored by the Global Solidarity Levies Task Force, such as those on maritime shipping or financial transactions.

The aviation simulator released alongside this preview is both a diagnostic and a design tool. It supports policymakers, civil society, and researchers in crafting context-specific levy schemes that are technically sound, politically feasible, and ethically grounded. In doing so, it aims to advance the dual goals of climate ambition and climate justice. Ultimately, this

simulator will be expanded to cover other economic sectors and activities, becoming a practical negotiation and assessment tool for countries committed to implementing global solidarity levies.

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