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International Civil Aviation Organization as a climate governance forum: an analysis of the Carbon Offsetting and Reduction

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Abstract

In 2016, States agreed to address international civil aviation greenhouse gas (GHG) emissions at the International Civil Aviation Organization (ICAO). The article describes the route to the agreement reached by ICAO's 39th Assembly and presents the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), in order to contextualize the scheme and point out some of its limitations. We situate the debate about the international regulation of emissions at ICAO taking into account the contribution of the aviation sector to the global environment, which requires the enlargement of the scope of analysis, in order to consider the ethical implications of the consequences of climate change to communities and to the environment. CORSIA could be considered a call to responsiveness of the aviation sector for its contribution to climate change. The results of negotiations so far indicate the agreement does not represent a sufficient and comprehensive response to the challenges posed to the global environmental system.

Keywords: Climate Change; Aviation; ICAO

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Introduction

In 2016, States agreed to address international civil aviation greenhouse gas (GHG) emissions at the International Civil Aviation Organization (ICAO). For the first time, an agreement involving emissions by a specific sector was reached, and the negotiation process occurred in an International Organization with the focus on aviation and not on environmental issues. Because of that, ICAO became an important forum of climate governance, with a relatively autonomous agenda of the United Nations Framework Convention of Climate Change (UNFCCC), the main traditional forum of climate negotiations. In this forum, the response to deal with climate change reflects some of the main actors interests involved and the principles and values of the ICAO.

The article describes the route to the agreement reached by ICAO's 39th Assembly and presents the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), in order to contextualize the scheme and point out some of its limitations.

The article begins with the theoretical framework of climate governance, which refers to the set of actions taken by state and non-state actors to deal with the issue of climate change. We situate the debate about the international regulation of emissions at ICAO taking into account the contribution of the aviation sector to the global environment. The international air transport emissions of GHG is of nearly 2% of the total amount of emissions, with projections of significant growth. Recognizing aviation emissions as contributors to change the global environment system also requires the enlargement of the scope of analysis, in order to consider the ethical implications of the consequences of climate change to local communities and to the environment. Then, we present the route to the agreement reached by ICAO's 39th Assembly, based on the ICAO's reports. After, we present the CORSIA's final design. Lastly, we point out some of its limitations from economic and environmental perspectives.

Theoretical framework: climate governance in the Anthropocene

We acknowledge in the literature of climate governance the theoretical framework of our analysis. Climate governance is a normative concept to refer to the set of actions taken by state and non-state actors to deal with the problem of climate change in different forums, from local to global level. In each of these forums, actors define issues of concern; they influence, demand or implement rules and programs; and act (hierarchically or not hierarchically) to produce impacts across borders (OKEREKE, BULKELEY & SCHROEDER, 2009). In doing so, they adapt their actions according to the forum – forums in which negotiations take place collaborate to define the result, because in these places actors share certain practices, symbols, behavior, principles and rules. In each international (or transnational) forum – for example, an International Organization –, specific relations of power take roll in way of governing and producing results.

The traditional forum of climate governance is the UNFCCC and specially its meetings, the Conference of Parties (COPs), which occur annually since 1992. But, considering the complexity of the issue and the international institutions involved in the climate change debate (RAUSTIALA & VICTOR, 2004), since 1992 several state and non-state actors have been dealing with the issue



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in other more or less institutionalized forums. In different forums, actors seek to influence other actors other more or less institutionalized forums. In different forums, actors seek to influence other actors in order to establish political and economic agreements based on their interests (AVANT, FINNEMORE & SELL, 2010). In different forum, different actors may be brought to the debate, with different shared principles and values to be taken into consideration.

In this sense, we address the ICAO negotiation process involving emissions of greenhouse gases from the aviation sector taking into account other relevant actors (other than States) to the negotiation process, without a pre-assumption of hierarchy among them, in order to highlight different interests and concerns that are not specific to the climate change debate.

Besides, we do not address the results of negotiations at ICAO based only on a cost-benefit analysis nor on the national interests involved – which are traditional approaches in International Relations field. Because climate change affects societies, and therefore encompasses international relations in a much broader sense, we find it necessary to recognize that the results of negotiations about aviation emissions have implications to the functioning of global environment system and it causes changes to communities and environments in different levels and in very different ways.

Beyond the focus on interstate political negotiations and agreements, it is relevant to situate the debate about the international regulation of emissions at ICAO taking into account the contribution of the aviation sector to the global environment. Air transport impact on economic activities may not be underscored, especially if one considers that it has interconnected societies in a much easier and faster way. Nevertheless, it has also collaborated to change the functioning of global environment system. Aviation emissions are not mere externalities to be taken into account at the service final prices. If we are reshaping the biosphere and, consequently, the way we live on Earth, it is important to frame the debate about emissions by the aviation sector both in a cost-benefit analysis and in its long-term impacts on the environment. Aviation emissions collaborate, to some extent, to change the global environment system, for humans and no humans.

In the most varied fields, scientific studies of climate change confirm an unprecedented transformation of the planet's biophysical conditions. This transformation is caused by the intensified human actions of exploration, production, consumption, disposal and final destination in the last five decades. This set of transformations motivated a group of scientists from the field of geology to propose we would now be in the Anthropocene (see CRUTZEN, 2002), a new epoch of the history of our planet.

Over the last century, we, humans, have modified the physical conditions of the planet by promoting transformations in the soil and eliminating countless life forms (biodiversity), extracting ores and committing more than half of the water available for consumption, overexploiting the oceans with fishing activity and burning fossil fuels. We release into the atmosphere high quantities of greenhouse gases, create materials not absorbed in natural cycles of regeneration, among other transformations caused by human action. This would indicate the beginning of this new geological age, the Anthropocene, marked by the possibility of extinction of the human life on earth caused by humans .



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The accumulation of knowledge in relation to these transformations and the recognition by the field of geology, as well as of the climatology, sustains that what gives cause to them is the human action. In that sense, it is recognized that the cause for recent climate change is "anthropogenic", a term used in the 1992 UNFCCC. This finding is central to the field of international climate policy, insofar as, since it has been caused by human actions, it is a matter of political actions. It is a result of wills, choices and power relations that affects human and nonhuman beings in a specific and complex way (CUDWORTH & HOB DEN, 2013).

Therefore, studying climate policies (as the regulation of emissions from aviation) requires us to enlarge the scope of analysis, considering some of the consequences to communities and environments, besides ethical implications of the distribution of these consequences. The Anthropocene approach

emphasizes an integrated perspective of evolving social-ecological systems that require not only active management of human influences, but also the adaptation of human societies to inescapable changes. The governance of such societal adaptation processes, from local to global levels, pose formidable challenges for policy (BIERMANN, 2016, pp. 2).

The literature about the Anthropocene challenges traditional International Relations approaches to take into account the limits of a state-centric economic lens that assumes a narrow anthropocentric view about the changes in the global environmental system. In this sense, "No longer can the discipline deny these interconnected risks, threats, and physical effects, or maintain an obsolete image of the world built upon clean divisions between humans, states, and global systems" (HARRINGTON, 2016, p. 4).

Among the challenges to IR field, the studies about International Organizations may be engaged in offering more consistent analysis and inspections, and not framing climate policies as a simple management of States wills achieved by the limited logic of the 'least common multiple' (VIOLA et al. 2013). As a consequence of this approach in our analysis, we find it necessary to reflect about the results of negotiations at ICAO not only to States and societies involved, but also to the global environmental system.

Finally, this exercise of extension of the elements to be taken into account must include time as a central issue of concern. The result of an international negotiation process is not the same if it provides the chance for postpone measures that has significant economic impact to the industry sector, for example, or if creates mechanisms that perpetrates environmental harmful practices because of diluted deadlines for entering in force. Some sense of urgency of results must be considered, due to the consequences and implications that aviation emissions cause to the global environmental system.

The response from the international aviation to climate change

The International Civil Aviation Organization (ICAO) was created in the 1940's by the Chicago Convention, aimed first and foremost at promoting the harmonization of norms and procedures related to safety, security, facilitation and economic development of air transport worldwide (ICAO, 1944). As a specialized sectorial United Nations agency, ICAO sets up the so-



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called Standards and Recommended Practices (SARPs), which are included as Annexes to the Convention. Once adopted by the Organization, an international standard becomes legally binding to all its member States (OBERTHÜR, 2006).

Most of the ICAO work has been primarily focused on the more technical regulation of the air transport. Composed by an Assembly, which conveys in a triennial basis, and a permanent Council with a restricted membership, all the ICAO decisions are founded in the recommendations of technical commissions, especially the Air Navigation Commission. Due to this very nature, it may be argued that consensus is frequently achieved by ICAO members as there is a common interest to promote connectivity and integration in the sector.

Environmental issues, in its turn, were seen a very narrow perspective and were only inserted on ICAO's agenda in the 1970's. The first volume of Annex 16 on Environmental Protection was intended to restrict noise disturbances from aircraft while the second volume dealt with the emission of heavier gases that affected local communities. The response from the organization for those topics was to foster the improvement of aircraft engines technology taking into account the three pillars: technological feasibility, environmental benefits, and economical reasonability (ICAO, 2016a).

Although climate change was not even part of ICAO discussions, the contribution of international aviation to the overall Greenhouse Gases (GHG) emissions cannot be disregarded. Estimations of the international air transport contribution to the total GHG emissions account for approximately 2%; however, the IPCC prospects indicated that this amount could reach more than 5% until 2050 (Figure 1), if no mitigation action was adopted by the sector (IPCC, 1999).

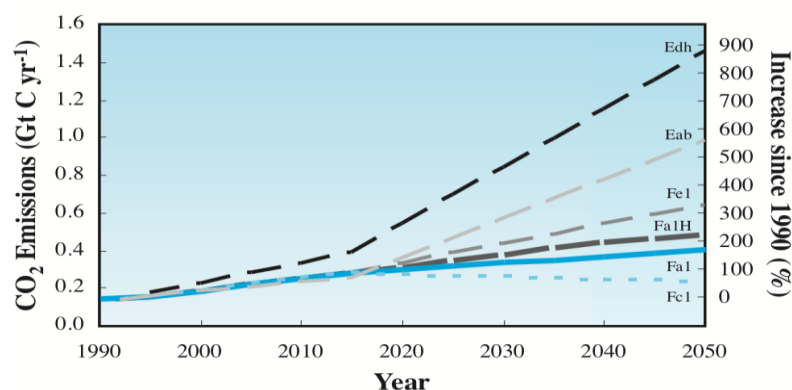


Figure 1: Total aviation carbon dioxide emissions resulting from six different scenarios for aircraft fuel use. Emissions are given in Gt C [or billion (10^9) tonnes of carbon] per year. To convert Gt C to Gt CO_2 multiply by 3.67. The scale on the righthand axis represents the percentage growth from 1990 to 2050. Aircraft emissions of carbon dioxide represent 2.4% of total fossil fuel emissions of carbon dioxide in 1992 or 2% of total anthropogenic carbon dioxide emissions. (Note: Fa2 has not been drawn because the difference from scenario Fa1 would not be discernible on the figure.)

Source: IPCC, 1999



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As the international climate regime was becoming more consolidated, though, ICAO was called for taking more incisive steps towards more ambitious measures to curb its GHG emissions. Even if no mentioned on the United Nations Framework on Climate Change (UNFCCC) was directly made on the international transportation, the Kyoto Protocol clearly gave the mandate to negotiate a comprehensive agreement to curb GHG emissions from the international aviation to the respective sectorial organization, i.e. to ICAO. Article 2(2) from the Kyoto Protocol established the following:

The Parties included in Annex I shall pursue limitation or reduction of emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels, working through the International Civil Aviation Organization and the International Maritime Organization, respectively.

In the early stages, ICAO was very reluctant in fulfilling this mandate, and the reasons for that impasse are threefold. Firstly, for its very nature, emissions from the international transport are very difficult to allocate among states. As most part of the emissions ends up the upper atmosphere, the questions that arise were how to designate responsibilities among members states on a certain international route operated by a specific airline (OBERTHÜR, 2006). The second reason for the ICAO inaction was the high influence that the industry exerts on its member states. The International Air Transport Association (IATA) is an observer member at ICAO and very fiercely advocates for the industry interests in many of its technical and high-level meetings. And, last but not least, ICAO is a very technical specialized UN agency aimed at harmonizing the standards on the civil aviation field that hardly had to deal with highly sensitive issues. When called to take actions on a less consensual and more political discussion with many conflictive interests, the Organization came to a kind of deadlock on how to conciliate its cornerstone principle of non-discrimination as enshrined in the Chicago Convention with the precepts consolidated in the UNFCCC.

At first step to limit or reduce the environmental impact of aircraft engine emissions, ICAO took the easiest route, placing especial emphasis on the use of technical solutions related to operational and technological measures. In this regard, emissions reduction should be achieved by a framework consisting of economically efficient and technologically feasible strategies, such as better air traffic management, fuel efficiency, technological improvement in engines and in ground equipment (ICAO, 2007a). At this stage, no long-term goal or target of CO₂ emission reduction was adopted by the Organization.

The perspective though that the European Union would adopt unilateral actions to include intracontinental flight that had as origin or destination an European country was a trigger factor for a more incisive response from ICAO (GONÇALVES, 2016). Following the EU Directive 2008/101/EC, non-European countries and the industry rejected any unilateral action from states or grouping of states that could entail a patchwork of different regulatory frameworks and, thus, could increase transactional costs for airlines (ICAO, 2007b; ICAO, 2007c; ICAO, 2007d; ICAO, 2007e).

The more incisive response from ICAO came by the Resolution A37-19, in which Member states resolve to establish the global annual average fuel efficiency improvement of two per cent

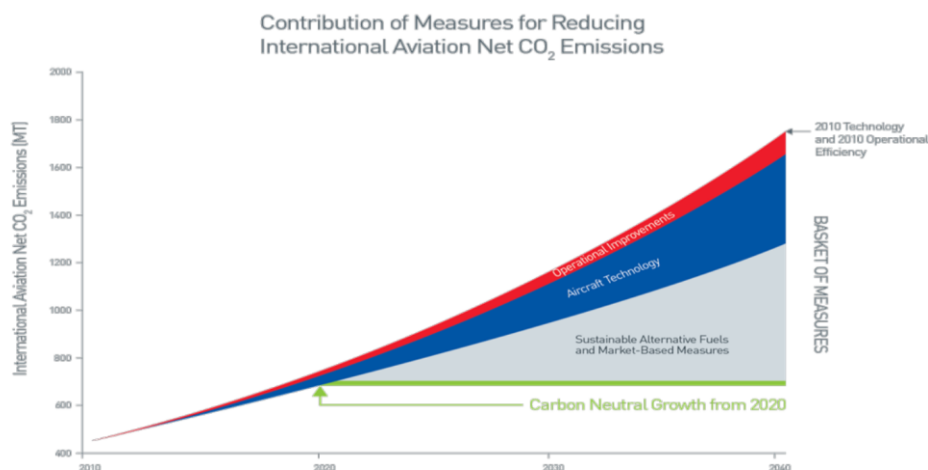


until 2020 and an aspirational global fuel efficiency improvement rate of two per cent per annum from 2021 to 2050. In addition, consensus was reached towards the global aspirational goal carbon neutral growth from 2020 onwards (ICAO, 2010). As important as those goals are for the global effort to address climate change, ICAO has not introduced any restriction on the economic growth of the sector, as no reduction emission target was not even considered by states. The economic feasibility had prevailed over more environmental ambitious measures.

States were also asked to submit, on a voluntary basis, their action plans where information related to the set of measures in order to reduce their CO₂ emissions should be compiled. This document had two main objectives. Firstly, it should assist ICAO to evaluate the level of effectivity of the aforementioned goals; second, it should be a means to assess the need for assistance from its member states. Nevertheless, the document was nothing but a letter of intentions as no required measures was set forth by the Organization.

According to ICAO's projections (figure 2), though, only operational and technological advancement would not be sufficient to help the sector to achieve its neutral growth target. Even considering the new stricter CO₂ emission standard for new aircraft engines to be produced from 2023 onwards, inner solutions will have to be complemented by a basket of measures so as the international aviation can achieve neutral carbon growth. Along with the sectorial measures and the intensive use of sustainable alternative fuels, it became evident that the increasing demand for air transport will push the sector to offset its emissions from some kind of market-based measure (i.e. cap-and-trade scheme or revenue mechanism).

Figure 2 – Growth emissions prospects for international aviation and the contribution of measures for reducing CO₂ emissions



Source: ICAO, 2017.

As the response from ICAO was lagging behind to what was expected from some of its Members (i.e. European states), the European Union threatened to in the EU ETS all international flight overpassing the European territory from 2016 onwards. The prospect of creating a patchwork of different offsetting schemes regionally prompt ICAO to act more incisively. The



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industry interest became aligned to the adoption of a global response to climate change not only because it would be more cost-efficient but also because it was clear that the industry could not sidestep the issue any longer. A compromise was reached under ICAO on a stop-the-clock-policy. The European Union would wait for ICAO to move forward in designing a global MBM scheme aimed at reducing or offsetting emissions from international aviation (EC, 2012).

ICAO decided, therefore, to develop a global MBM scheme to be implemented from 2020 onwards (ICAO, 2013). As a result of three years of intense negotiations, States adopted a Resolution, by which means the CORSIA, which stands for Carbon Offsetting and Reduction Scheme for International Aviation, was established (ICAO, 2016b). CORSIA is thus the ultimate response from ICAO to address its impact on climate change. It consists of an economic measure through which CO₂ emissions growth above the baseline will have to be offset by the purchase of emissions unit credits in the carbon eligible markets.

CORSIA is meant to be a temporary response though. Designed to be implemented in a phase-in approach, it supposedly should last from 2021 to 2035. In the first two CORSIA is meant to be a temporary response though. Designed to be implemented in a phase-in approach, it supposedly should last from 2021 to 2035. In the first two phases (from 2021 to 2026), it has a voluntary character, in the sense that only the routes of those states that willingly join the scheme will have offsetting requirements under CORSIA. In the third phase, which starts in 2027, CORSIA will be mandatory for all states that have a significant share individual of international aviation activities in RTKs in year 2018 above 0.5 per cent of total RTKs or that are part of the 90% world RTK. Exception are granted to Least Developed Countries (LDCs), Small Island Developing States (SIDS) and Landlocked Developing Countries (LLDCs) unless they volunteer to participate in any phase.

This phase-in approach was aimed at addressing the principle of differentiation among countries accordingly to their respective capabilities, as enshrined in the UNFCCC regime. On the other hand, as non-discrimination is a basilar principle in ICAO, in a same route all air operators will not be differentiated by their nationality. In this sense, if a route is included under CORSIA, all airlines operating that specific route will have offsetting requirements. A route is included under CORSIA only if both state pairs are part of the scheme; if one leg of the route is exempted, there is no offsetting requirements at all.

The attribution of offsetting obligations will be made according to a very tricky formula. In the first years of the scheme, the market share will be mainly considered to designate how much each airline will have to offset. Therefore, more consolidated airlines with a larger share of the global operations and, thus, with greater GHG emissions, will pay relatively more than smaller operators. Starting in 2030, though, an individual factor will be increasingly added in the formula, and so the individual growth rate will play an important part as well in the distribution of offsetting requirements.



The limits of the ICAO response

After almost 20 years, ICAO has chosen, among different possible measures to induce emission reduction, an economic mechanism that compensates (not reduces) emissions. All the airlines that operate routes covered by the system will have to buy carbon credits – or carbon reduction certifications – from carbon offset project developers (projects to reduce GHG emissions in different sectors like agriculture, industrial gas, cook stove, forestry projects, energy-sector types, etc.) that transact credits in carbon markets.

Offset is one of the simplest carbon market mechanisms that exists, and the possibility of buying credits from different sources give buyers flexibility to comply their obligations. Besides, a significant number of airlines already has offset programs, through which passengers may neutralize their individual travel emission contribution. In this sense, CORSIA do not imply a significant amount of investment or operations' adaptation. For carbon markets consultants, investors and project designers, CORSIA may represent an important increase in demand.

However, CORSIA has significant limits that allows characterizing it as a feeble response to climate change. Below, we synthesize six aspects of the system' limits.

a) The IO constitutive concern is to preserve the sector's interests, not the environment

As ICAO is an intergovernmental organization whose main actors are states, many of the constraints that hamper more ambitious actions in the international climate regime may also have played an important role, which may have led the Organization to a more consensual answer that hardly is the best solution from an environmental standpoint.

It can also be argued that the ICAO response to climate change was mainly centered in industry friendly solutions partly because the industry exerts a strong pressure on the decision-making process, but also because environmental goals are not enshrined in the ICAO Convention and were only inserted on the agenda in a later stage. According to the Chicago Convention (ICAO, 1944), the Organization has, as one of its main objectives, to meet "the needs of the peoples of the world for safe, regular, efficient and economical air transport" (emphasis added).

b) There are not reduction targets and the sector plans to growth

Although ICAO claims that CORSIA consists in a resolute step from the international community in its efforts to mitigate greenhouse gas emissions by taking sector-wide action at a global level, it fails to foster an internal transition to a more efficient and cleaner energy matrix. As there is no reduction target for the sector, air transport will likely continue its economic growth as long as it is able to transfer the cost of its emissions to other sectors in the economy. Investment not only in sustainable alternative fuels that can definitively replace bunker fuels, but also in more disruptive technologies would certainly have to be considered in a much larger scale by ICAO.

More ambitious measures will need to be considered especially when taking into account the growth projections in the demand for air transport. According to IATA forecasts (IATA, 2016), demand of passengers for air transport will nearly double in the next 20 years, and the major driver for this demand will come from the Asia-Pacific region.



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c) There are no clear parameters to environmental integrity of the credits allowed at CORSIA

The Resolution does not set clear parameters to guarantee the environmental integrity of the credits allowed at CORSIA. In 2018, some important elements are still at the negotiation table, in particular those related to the quality of carbon offsetting credits and the criteria for their eligibility under CORSIA.

Besides, the voluntary design in its first phases and the absence of a strong commitment about the quality of the offsets indicate the system may not be able to incentivize the aviation sector transition to more efficient technologies (MURPHY, 2018). Doubts remain on the environmental integrity of some projects even in reliable carbon programs, as the Clean Development Mechanism (MICHAELOWA, 2012). In short, there is no consensus on the effectiveness of carbon offsetting schemes to really deliver environmental gains.

d) CORSIA may have undesirable effects from an economic perspective

From an economic standpoint, CORSIA is also debatable. While this individual factor was included to incentivize improvement in efficiency, in practical terms, market distortions could be created under ICAO, subverting the very basilar principle of non-discrimination. As fast growing and new entrants will certainly have more offsetting requirements than more consolidated airline, they will also pay relatively more operating the same route under CORSIA. The cost impact of CORSIA will thus be different between operators and will create important competitive distortions, whose extent is still unknown.

e) CORSIA is a limited solution to respond to a serious and urgent problem

ICAO has not introduced any restriction on the economic growth of the sector, as no reduction emission target was not even considered by states. As there is no reduction target for the sector, air transport will likely continue its economic growth as long as it is able to transfer the cost of its emissions to other sectors in the economy. Given the projections of an increasing demand, the industry will hardly find inner solutions to curb its emissions. If sustainable alternative fuels are not developed in a larger scale to meet the current and future demand, CORSIA may become a permanent scheme, lasting much beyond 2035, when it was supposed to come to an end. So, a considerable weak mechanism will probably be maintained as the main international politics to deal with aviation emissions.

As a result of political choices, the weaknesses of CORSIA must be evaluated also by its ethical implications: it is a deliberated weak response taken by a group of actors that may collaborate to intensify changes and impacts to the global environmental system.

The ICAO agreement is founded on the comprehension of climate change as a serious challenge: it is a problem caused by anthropogenic action and it is urgent to act in order to reduce emissions and mitigate its effects. ICAO's response to the problem, however, does not seems to take into account this urgency or seriousness until now.

There is a distance between recognizing the seriousness of the climate change problem and the significant contribution of aviation, and building a strong set of actions, engaging actors and mobilizing the institution to respond to the problem. ICAO reached the first important part:



it has recognized the problem, but if it does not respond coherently to engage in building strong responses to the challenge, the designed system may be characterized as greenwash for airline companies.

f) Participation of civil society and other non-state actors besides the industry was very limited

Participation of international non-governmental organization has been very limited under ICAO. The only NGO represented as an observer member in ICAO is the International Coalition for Sustainable Aviation (ICSA), which is a congregation of six different actors, all of them based in developed countries. As broadly represented as it may be, though, ICSA may not speak up for the international community as a whole, as the voices from local communities, especially those located in developing countries and that may be the most impacted by any international measure, are not be taken into consideration. In this regard the limited participation of NGOs may have negatively affected the final result in the aviation sector not only because other visions and perspectives were disregarded but also because it may have ultimately legitimized the scheme, as at least ICSA had influenced, to some extent, the decision-making process under ICAO.

Conclusions

The approval of the first international agreement involving hundreds of States to deal with the emissions of a specific sector is an important achievement. However, it is a deeply restricted step, considering the problem it seeks to address and the changes it may cause to the global environmental system.

CORSIA is the result of a negotiation process in an International Organization. As mentioned before, IOs tend to produce “lowest common multiple” decisions, and CORSIA is a good example of this lack of stringency. It is a system designed to allow flexible compliance of rules. The central interests mediated in the negotiations that resulted on the approval of CORSIA were trying to preserve the sector growth and the national interests involved while also responding to climate change.

As stated, hardly will CORSIA be effective in reducing emissions from the sector, as it will only foster the continuous growth of operations as long as the carbon price remains attractive. Nonetheless, CORSIA takes place of other potential politics with possible higher impacts to the global environmental system – like, for example, approving stringent rules for speed up emission cuts and promoting higher efficiency gains. Considering the criteria involving the quality of the carbon credits still under discussion at ICAO, CORSIA may be transformed in an effective greenwash for airline companies.

CORSIA could be considered a call to responsiveness of the aviation sector for its contribution to climate change. The results of negotiations so far indicate the agreement does not represent a sufficient and comprehensive response to the challenges posed to the global environmental system.



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