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NEW LEGAL ROUTES FOR AIRLINES

# THE CHALLENGE OF SUSTAINABILITY IN THE FIELD OF AIR TRANSPORT

Air transport plays a crucial role in economic and social development, enhancing connectivity, trade, tourism, and people's mobility. However, like many other economic activities, it faces significant challenges concerning environmental sustainability.

Indeed, the urgency of sustainability and decarbonization in air transport has surged, driven by the escalating concerns over the evident impact of climate change on our planet.

It is undeniable that greenhouse gas emissions (GHG) and, in particular, carbon dioxide ($CO_2$) emissions from various industries, including aviation, contribute to global warming, increase the carbon footprint, and adversely affect air quality. Therefore, aviation, like all other industries, must take very seriously the need to adopt measures to help mitigate and reduce its environmental impact.

That is why we at PionAirLaw wanted to dedicate our last newsletter before the summer break to this complex challenge, presenting some of the measures being considered in the industry to reduce GHG emissions, mitigate the effects of climate change and ensure sustainable growth from an environmental standpoint.

However, before delving into the subject, it is essential to mention that, while the challenge of the so-called decarbonisation of the air sector should not be underestimated, air transport only represents 3.8% of total GHG emissions in Europe. This figure is relatively limited when compared to other means of transportation, which generate 24.7% of the total emissions[1]. Additionally, there are other more polluting sectors that should also, in our opinion, take a step forward, as our beloved aeronautical industry is doing.

## STRATEGIC AND POLICY FRAMEWORK

It is fair to begin this section by stating that aviation actively engages in the fight against climate change. Its clear commitment to reversing this trend and achieving net-zero emissions by 2050 serves as evidence of its dedication. To meet this target, as will be seen below, various technological solutions are being explored, including development of biofuels, the use of green hydrogen, the electrification of aviation or the implementation of paraffin taxes, as well as improvements in the efficiency of air traffic management.

These technological measures must inevitably be accompanied by regulation to provide the system with adequate legal certainty.

However, let's step back a bit and recall that the Civil Aviation Organisation (ICAO)[2] has historically been dedicated to aligning the development and growth of aviation with the efforts to mitigate its impact on climate change. With this objective in mind, ICAO promoted the global initiative known as CORSIA[3] . The purpose of CORSIA is to stabilise net $CO_2$ emissions from international aviation by implementing operational and technological measures to reduce direct emissions from flights. Additionally, the acquisition of carbon offset units to neutralise the remaining emissions.

The success of this economic scheme, which establishes a system of emission allowances for aviation, requiring carriers to purchase allowances to offset or reduce their emissions, is often debated. However, it undoubtedly demonstrates ICAO's firm commitment to addressing the problem.

At the European level, in 2015, the so-called Green Deal was adopted, with the 27 EU Member States committing to make Europe the first climate-neutral continent by 2050.

To achieve this objective, on 14th July 2021, the European Commission approved the *Fit for 55 Package*, comprising a set of proposals to adapt EU policies on climate, energy, land use, transport and taxation. These proposals aim to reduce net GHG emissions and include measures such as the elimination of incentives for the use of fossil fuels (*Energy Taxation Directive* (ETD), the reduction of emissions by at least 55% by 2030 compared to 1990 levels (*Energy Efficiency Directive*, EDD), the promotion of energy production from renewable sources (*Renewable Energy Directive* (RED II), and the reduction in the consumption of traditional fuels (*The ReFuelEU aviation initiative*).

[1] According to data from the European Environment Agency, road transport accounts for 20.5% of total GHG emissions, following by shipping at 4%, aviation at 3.8%, rail transport at 0.1%, and other sources 0.1%. (Data from 2022).

[2] ICAO, which stands for the International Civil Aviation Organization, is a specialised agency of the United Nations that aims to promote cooperation and standardisation in civil aviation worldwide. Its work focuses on developing standards and regulations to ensure safety, efficiency, regularity, and environmental protection in the aviation industry.

[3] *Carbon Offsetting and Reduction Scheme for International Aviation.*

At national level, ENAIRE, has also expressed its commitment to climate neutrality by establishing a clear strategy to reduce aircraft emissions at operational level. In pursuit of this goal, ENAIRE has put forth a comprehensive range of measures, such as implementing more direct routes whenever possible, thereby reducing CO2 emissions –when they are less polluting, which is not always the case[4]– (*Fly Clean*); minimizing the acoustic impact on the populations and biodiversity around airports (*Fly Quiet*); and investing in renewable energies, efficient vehicles, reducing consumption and waste, self-consumption initiatives and the foster of a circular economy in airports to reduce emissions (Eco-ENAIRE).

## HOW TO MAKE AIR TRANSPORT GREENER? ALTERNATIVES FOR THE DECARBONISATION OF THE AVIATION SECTOR

As mentioned earlier, the roadmap for achieving sustainability and net-zero aviation by 2050 is based on four key pillars, namely:

(i) promoting technological innovations that enable the development of more efficient and sustainable aircraft, such as electric, hybrid or hydrogen-powered;

(ii) providing incentives for operational and infrastructure improvements to optimise flight efficiency and reduce fuel consumption;

(iii) encouraging the use of sustainable aviation fuels (SAFs) produced from renewable sources, like vegetable oils and organic waste, which offer a cleaner alternative to conventional paraffin; and

(iv) finally, implementing market and governmental measures to encourage the adoption of more sustainable practices in the aviation industry, including emission taxes or subsidies for clean technologies.

These four pillars are designed to drive the transition towards a more sustainable aviation.

Focusing on the use of SAF, it is important to note that switching from conventional jet fuels, such as paraffin, to these environmentally friendly alternatives could be the most direct route to greener flights and more sustainable air travel.

According to figures provided by IATA, a more widespread use of SAF could potentially enable a 65% cut in aviation's overall emissions, helping to achieve the goal of net-zero emissions by 2050[5]. However, it is crucial to emphasize that hitting this target would require a massive increase in production to meet growing demand for sustainable alternatives.

However, at present, the available supply of SAFs is very limited, accounting for just 0.1% of global consumption. This limitation is due to several factors, such as the high production cost and the limited availability of raw materials. Additionally, there is a need to achieve a balance in reducing carbon emissions during its production.

Furthermore, to promote the use of SAFs, it is necessary to develop adequate infrastructure and logistics for their efficient distribution and to obtain certification and regulation. Rigorous quality and safety standards must be met before SAFs can be utilised in commercial aircrafts, which requires a solid and harmonised regulatory framework at the international level.

In relation to the above, at the European level, within the framework of the *Fit for 55 package* of measures, the EU Council has approved a new regulation that aims to govern the use of SAFs and boost their development, promoting its manufacture, distribution and export, among other measures. The regulation, known as ReFuelEU Aviation, is expected to enter into force on 1st January 2024[6].

Additionally, as a measure to discourage the intensive use of fossil fuels

in air transport, the introduction of an aviation paraffin tax has been proposed. While this measure seeks to internalise the environmental costs of carbon emissions, there are concerns about possible economic repercussions for airlines and passengers, as well as the impact on the competitiveness of the aviation industry in a global market.

In this regard, it is crucial to consider how the revenues generated by such a tax would be utilised and whether they would be channelled towards initiatives and investments that genuinely promote the transition to a more sustainable aviation. The implementation of such a tax therefore requires careful consideration, taking into account the various economic and environmental factors involved.

Electric flight and the use of hydrogen to power aircraft are two promising alternatives for greener aviation and reducing carbon emissions. However, both present significant challenges in terms of implementation.

In the case of electric flights, the limited capacity and weight of batteries impact aircraft range and efficiency, resulting in restrictions on passengers and cargo transport[7]; furthermore, establishing adequate charging infrastructure at airports for fast and efficient charging of aircraft requires substantial investments and adaptations, not to mention the upfront costs associated with acquiring electric aircraft, which are currently higher than traditional combustion aircraft.

Nevertheless, transitioning to electric flights seems viable for short routes. For example, easyJet is developing an all-electric aircraft with a capacity of 186 passengers, intending to cover short routes such as London-Amsterdam from 2030[8].

In relation to the above, the suspension of air routes of less than three hours to replace them with rail travel proposed in countries such as France and Spain does not look like an impactful measure, as indicated above, these short routes contribute only to 3.8% total emissions[9].

On the other hand, the use of hydrogen raises various challenges, such as: (i) storage and energy density, as significantly more volume is needed to store the same amount of energy[10]; (ii) building new infrastructure, as completely new constructions are needed to be able to produce it; (iii) distribution, which poses a major challenge to obtain ways to achieve it on a large scale at airports; (iv) safety, as it is highly

[4] It is questionable whether this measure could result, as ENAIRE has pointed out, in savings for airlinest
[5] See IATA - Sustainable Aviation Fuel (SAF) and SAF Deployment (iata.org).
[6] Please note that the text is pending final approval by the European Parliament. For better reference, we refer to the latest version of the text approved by the EP and details about the approval process.
[7] While one kilogram of jet fuel contains 12,000 Wh of energy, a lithium-iron battery provides only 250 Wh per kilogram.
[8] The study indicates that long-haul journeys (>4,000 km) account for 6% of total air transport, but contribute 47.6% of emissions, and medium-haul journeys (<1,500 km and >4,000 km) account for 69.9% and contribute 48.6% of emissions.
[9] Think Paper #10 - Flying the "perfect green flight".

flammable and requires additional measures for its handling, storage and use in aircraft; (v) cost, which is significantly higher compared to fossil fuels; (vi) performance, where questions arise regarding the efficiency and performance of large-scale hydrogen-powered aircraft; and finally (vii) the production of green hydrogen, as it requires a considerable amount of renewable energy, which also poses a problem in terms of supply and availability.

Each of these alternatives presents its own challenges and advantages. Achieving a complete transformation towards greener aviation is likely to require a combination of multiple approaches.

## AIR TRANSPORT SUSTAINABILITY PARTNERSHIP (AST)

With a strong commitment to advancing towards a sustainable model in our country, the "Alliance for Air Transport Sustainability" (AST) was established on 17th April 2023. This alliance, formed by the key players in the Spanish aeronautical sector, has set three fundamental objectives,outlined below.

Firstly, it aims to develop a coordinated approach to the regulatory framework and public policies that will promote measures contributing to the decarbonization of aviation, ultimately achieving net-zero emission aviation by 2050.

Secondly, the AST strives to encourage investment and implementation of SAF production plants in Spain, fostering their large-scale commercialization and reducing production costs. The alliance also aims to drive the development of new technologies to mitigate the environmental impact of flight operations.

Lastly, the AST seeks to promote initiatives and establish a regulatory framework that ensures circularity in managing waste generated by the sector, guaranteeing sustainability throughout the value chain.

In conclusion, as emphasized by AST, Spain has a significant opportunity to lead the change towards more sustainable transport, promoting projects and measures that promote the production of SAFs in Spain. The local production of this kind of sustainable fuel would help reduce reliance on imported fossil fuels, enhance autonomy and energy security in the aviation sector and create new employment and economic development opportunities in our country. This approach would also strengthen Spain's industrial and technological fabric, foster innovation, and progress towards a sustainable economy.

The leadership of the Alliance for Sustainability in Air Transport holds a vital role in promoting collaboration among key actors in the sector, such as airlines, government authorities and technology and energy companies. Together they can establish a solid and sustainable infrastructure for the production and supply of SAFs in the country. By driving coordinated policies and measures, a significant impact on reducing carbon emissions from aviation can be achieved, laying the groundwork for a greener and more sustainable future in air transport in Spain and beyond.

In conclusion, sustainability in air transport represents a pressing challenge that demands a multi-sectoral approach. Addressing this challenge requires determined and coordinated action to strike a balance between environmental, economic, and social aspects. Collaboration between airlines, manufacturers, governments and society as a whole is essential to driving a significant transformation in air transport and ensuring a greener and more sustainable future.

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[10] A hydrogen jet would need a fuel tank four times the size of a conventional aircraft to generate the same amount of power, which would reduce the space available for passengers or cargo on board.