Carbon Brief – The Flight to Jet Zero

The aviation industry is seen by many as one of the most challenging sectors to decarbonise, and it is a growing industry as demand for air charters and passenger flights increases. Air charters allow for flexibility, security, speed and efficiency. They are arguably the most suitable for certain types of charters, humanitarian airlifts, and urgent or project charters.

The International Air Transport Association (IATA) and the United Nation's International Civil Aviation Organisation (ICAO) affirmed their support of the Paris Agreement 2015 and the long-term goal of global net zero by 2050 at the IATA's 77th Annual General Meeting in October 2021 and the 41st ICAO Assembly in October 2022.

Following IATA and ICAO's affirmation of their commitments to the net-zero goal, certain measures have been explored by the aviation industry as a whole:

- reducing fuel consumption and offsetting the carbon credit;
- increasing the use of sustainable aviation fuel (SAF) and clean energy - SAF is primarily made from waste oils and fats (such as used cooking oil), and it is reported that if SAF can fully replace conventional fossil jet fuel, carbon emissions can be reduced by more than 80% in comparison to traditional jet fuels;
- air traffic management and operational improvements, and
- developing electric and/or hydrogen-powered aircraft and other new aircraft technology.

Notably, earlier in November 2023:

- The Royal Air Force, with the joint efforts of other industry partners, Airbus, Rolls-Royce and Air BP, completed its first 100% SAF military aircraft flight, and it was the first aircraft flown in the UK airspace using 100% SAF.
- Emirates has completed its first A380 demonstration flight on 100% SAF.

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- Virgin Atlantic took off its first transatlantic flight, partly funded by the UK government, from London Heathrow to JFK using 100% SAF on 28 November 2023.

What does this mean for aircraft operators, owners, aviation fuel suppliers and airport operators?

Legal framework

The industry will need to carefully navigate changing regulations as they emerge over the next couple of decades in an attempt to tackle climate change. We briefly set out below some existing regulations in the aviation-carbon sector:

- ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA): in the ICAO member states in which the CORSIA has been implemented (115 as of 1 January 2023 in the pilot phase (2021-2023)),
- if the aircraft operators produce annual CO2 emissions greater than 10,000 tonnes;
- via the use of an aeroplane with a maximum take-off mass greater than 5,700 kg and
- conducting international flights,
- they must report emissions to the state regulators annually and apply for an emissions monitoring plan unless exempt.
- Any failure to comply could lead to significant financial penalties.

The UK, recognising the importance of international action to tackle emissions from international aviation, implemented these obligations to UK-administered aircraft operators in the Air Navigation CORSIA Order 2021.

- UK Emissions Trading Scheme (ETS): following Brexit, the UK introduced the UK ETS, effective from 1 January 2021, which is applicable to aircraft operators regulated by the UK and those new to regulation in the UK.

The threshold of whether you are an "aircraft operator" will depend on the number of flights departing from or arriving in the UK, Gibraltar, or an EEA State (full scope flights) and the total emission of those flights:

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- Commercial air transport operators: operated more than 243 full-scope flights in a four-month period, for three consecutive periods with total annual emissions of more than 10,000 tonnes of CO2.

- Non-commercial air transport operators: operated full-scope lights with total annual commissions of more than 1,000 tonnes of CO2 in any given scheme year.

Provided that the flights are not excluded by the Greenhouse Gas Emissions Trading Scheme Order 2020, the aircraft operators are required to monitor their aviation emissions, report verified aviation emissions each scheme year, and surrender allowances equivalent to reportable emissions.

- ReFuelEU aviation initiative: new to the scene this year, ReFuelEU was adopted by the EU Council in October 2023. It will apply from 1 January 2024, with certain articles to apply from 1 January 2025. The rules aim to kickstart the demand for and supply of SAF in the EU, and the main provisions are:

- Aviation fuel suppliers are obliged to ensure that all fuel made available to aircraft operators at EU airports must contain a minimum of 2% SAF in 2025, 6% in 2030, and rise to 70% in 2050.

- Aircraft operators must avoid tankering practices – where an aircraft carries more fuel than required to cover its return trip, to reduce or avoid refuelling at the destination airport. Operators may tanker to save fuel costs if the fuel is cheaper at the departing airport, but the extra weight from tankering would bring additional emissions.

- Aircraft operators must ensure that the yearly quantity of aviation fuel uplifted at a given EU airport is at least 90% of the yearly fuel required for the flights.

- Competent authorities designated by the EU member states will enforce this regulation and implement rules on fines for non-compliance.

Insurance

Insurance companies have a large role to play in the race to get zero. With risky investments and highly innovative technologies underway, backing from insurers and underwriters is essential to the transition.

A few key points to note:

- Cost-covering exercise: driven by higher oil prices and the advance towards new aircraft technology to combat climate change, the industry has seen an accelerated retirement of older aircraft.

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While new aircraft operate more efficiently and can be lighter in weight, they tend to use materials and engines that are generally more expensive and time-consuming to repair, with some parts unrepairable. Aircraft operators, therefore, may opt for the replacement of the parts altogether, driving up the cost of repairs and, in turn, more expensive aviation insurance claims.

- Impact on the nature of risk: there is an increased focus on SAF and electric vertical take-off and landing vehicles as the aviation sector works towards net zero by 2050. The innovative technologies are likely to significantly impact the nature of the risk and the potential for increased value in insurance claims. Insurance claims may also increase in the event of cancellation, damage and/or injury risks.

Industry Challenges

The aviation industry is not without its fair share of challenges in decarbonisation:

- Profitability: new aircraft technologies are expensive, and if the costs of alternative fuels and engines remain high, stakeholders are likely to offset the costs onto consumers to increase profitability or cut costs in other areas, potentially impacting air safety.
- Long-range flights: electric-powered aircraft can be heavier due to the weight of the batteries, have a limited range due to the limited capacity of current lithium-ion batteries and take longer to refuel/recharge. Electric aircraft are, therefore, not yet suitable for longer flights, both practically or commercially, and will be very much dependent on the future of battery improvements.
- Scalability and sustainability of SAF: The ability to scale up production and make SAF an affordable alternative for aircraft operators is very much a work in progress. Concerns have arisen in the sustainability of supply in the next few decades as SAF largely relies on the availability and costs of feedstock and the demand for clean energy in other sectors.

Key takeaways

- The aviation industry is still a long way away from achieving the ‘flight to jet zero’. However, with the support of international organisations, such as the IATA and the ICAO, along with the EU and governmental bodies, the industry has shown some positive signs of decarbonisation.

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- SAF seems to be one of the most promising solutions so far, but low supply and high prices mean that there is a reluctance to move towards the use of SAF as an industry.

- SAF is a short- and medium-term tool for decarbonising the industry (as indicated by the EU Council). The industry will need long-haul solutions to meet the 'jet zero' goal by 2050, and further technological developments will be required. With the additional safety feature for the aviation industry, compatible designs and thorough testing are essential.

- All players in the industry will need to closely monitor changes in the legal framework as international organisations and governing bodies implement further rules to regulate the industry's carbon emissions in the next few years. A trend of significant penalties (primarily monetary) is seen in existing and upcoming regulations.

For further insights or assistance related to the Aviation Carbon Brief, please get in touch with our aviation law specialists at online.enquiries@la-law.com.

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