

DESTINATION: NET ZERO

PLOTTING AVIATION'S COURSE TO SUSTAINABILITY



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The industry must progressively reduce its emissions while accommodating the growing demand of a world that is eager to fly in a post-COVID-19 era.

This report was drafted before the invasion of Ukraine. However, the trends outlined in the following pages still hold true. To understand the potential impact of the invasion on Financial Services specifically, please refer to the foreword at the beginning of our magazine.

Aviation connectivity is a strong driver of economic growth, jobs, trade, and mobility. At the same time, the growth in air travel demand needs to maintain high standards of safety as well as reducing the industry's environmental footprint. Aviation is one of many industries that has a heavy impact on global human-made emissions. Today, it accounts for 3% of global carbon emissions, but if the sector makes no changes, this will increase to as much as 27% by 2050. Based on planned reductions and more efficient fossil fuel technology, the industry is still projected to consume over 12% of the annual CO2 budget.¹

Direction of travel

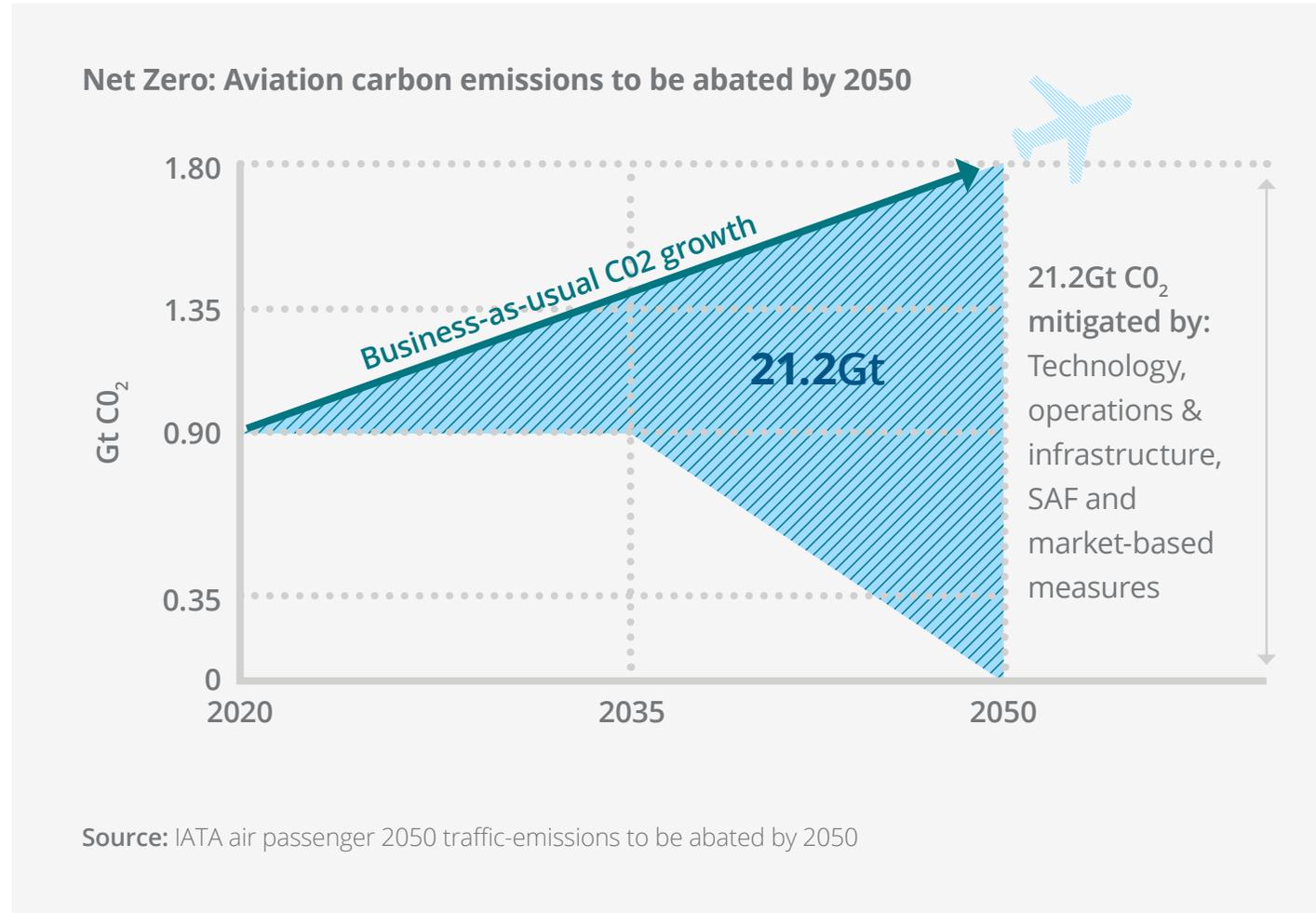
On 4 October 2021, the International Air Transport Association (IATA) 77th Annual General Meeting approved a resolution for the global air transport industry to achieve net zero carbon emissions by 2050. This commitment aligns with the Paris Agreement goal for global warming not to exceed 1.5°C.

Willie Walsh, IATA's Director General, recently said: "The world's airlines have taken a momentous decision to ensure that flying is sustainable. The post-COVID-19 re-connect will be on a clear path towards net zero. That will ensure the freedom of future generations to sustainably explore, learn, trade, build markets, appreciate cultures and connect with people the world over. With the collective efforts of the entire value chain and supportive government policies, aviation will achieve net zero emissions by 2050."

1. IATA Net Carbon Emissions by 2050, October 2021

However, it is widely recognised within the aviation industry that achieving net zero emissions will be a huge challenge. Declan Kelly, Chairperson of Aircraft Leasing Ireland also emphasised this challenge as part of the Deloitte Aviation Leadership Interview Series that the aviation industry must progressively reduce its emissions while accommodating the growing demand of a world that is eager to fly in a post-COVID-19 era. IATA believes that to be able to serve the needs of the ten billion people expected to fly in 2050, at least 1.8 gigatons of carbon must be abated in that year. Moreover, the net zero commitment implies that a cumulative total of 21.2 gigatons of carbon will be abated globally between now and 2050.

The aviation industry's net zero carbon emissions target is focused on delivering maximum reduction in emissions at source through the use of sustainable aviation fuels, innovative new propulsion technologies, other efficiency improvements such as improvements to air traffic navigation, and green aviation finance driven by investor demand.



Sustainable aviation fuels

There is the potential for sustainable aviation fuels (SAF) to provide the bulk of the emissions reductions the industry will need to make by 2050. SAF is a liquid fuel currently used in commercial aviation which reduces CO2 emissions by up to 80%. It can be produced from a number of sources, or feedstock, including waste oil and fats, green and municipal waste, and non-food crops. It can also be produced synthetically via a process that captures carbon directly from the air. It is sustainable because the raw feedstock does not compete with food crops or water supplies nor is it responsible for forest degradation.

Whereas fossil fuels add to overall CO2 levels by emitting carbon that had been previously locked away, SAF recycles the CO2 which has been absorbed by the biomass used in the feedstock during the course of its life. IATA estimates that SAF could contribute around 65% of the reduction in emissions that aviation needs in order to reach net zero in 2050. However, this will require a massive increase in production to meet demand. IATA has forecast that the largest acceleration is expected in the 2030's as policy support becomes global, SAF becomes competitive with fossil kerosene, and credible offsets become scarcer.

However, SAF is currently up to two to eight times more expensive than traditional jet fuel and there are a number of other obstacles blocking wider adoption of SAF.

SAF milestones so far²:

Over **370,000** flights have taken to the skies using SAF since 2016



7 technical pathways exist



100 million litres of SAF will be produced in 2021

SAF can reduce emissions by up to **80%**



during its full lifecycle

Around **14 billion** litres of SAF are in forward purchase agreements

More than **45** airlines now have experience with SAF.



2. IATA, Developing Sustainable Aviation Fuel, February 2022

Decarbonising aviation: clear for take off

In 2021, Deloitte and Shell interviewed more than 100 aviation executives and experts, representing more than 60 organisations across the global aviation ecosystem, to identify the key barriers to decarbonising aviation and practical solutions to accelerate the industry's transition towards net zero.

Highlights from this research include



Aviation has often been considered a sector that will decarbonise later than others, because of the complexity involved and the view that aviation accounts for “just 3% of global emissions”. But there is a need to act now.



The sector is facing several barriers to decarbonisation – reluctance of passengers to accept the cost of low-emission solutions, lack of regulatory support, prohibitively high cost of SAF, and concerns about quality, transparency, and communications.



Long-term customer demand, enabled by recognition mechanisms and differentiated propositions, will play a fundamental role in providing the funding and incentives for airlines to invest in lowering their emissions.



Country- and region-based policy incentives relating to supply and demand will accelerate the adoption of SAF, together with regulation at regional and global level.



Offsets can play an essential role in funding the early stages of decarbonisation. But for this to happen, they must be made more transparent and verifiable. They need to be more emotionally appealing to passengers, and their impact should be clearer.



Choosing SAF as the primary means of decarbonisation will have a disproportionate impact on lowering emissions, because there is no need to redesign aircraft. As a result, investments and R&D efforts can focus mainly on scaling production and lowering cost.



Collaboration with other sectors is essential to the successful deployment of SAF. It can drive down the cost of required technologies, such as hydrogen production, direct air capture and biomass conversion, and ensure effective use of scarce resources.



The pathway to decarbonisation needs to be more ambitious and investments need to start sooner to address societal expectations, reach sufficient SAF volumes and bring down cost to the levels required for large-scale adoption within 15 years.



Individual initiatives should be integrated into comprehensive plans representing all points along the value chain – from energy producers to end-customers. These plans should be systematically deployed in areas with favourable policies, market conditions, and access to SAF.

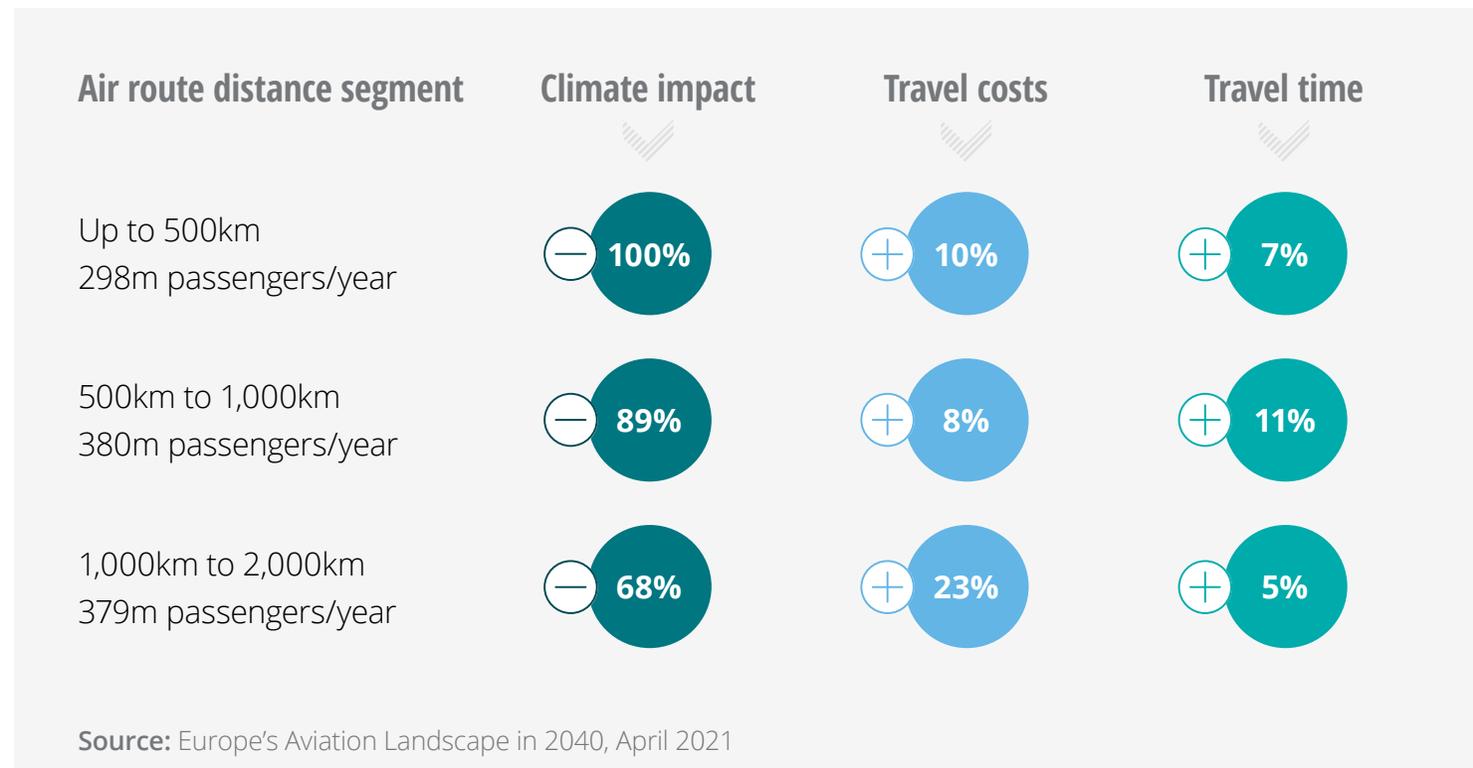


New aircraft technology

The aviation sector's commitment to significantly reduce its emissions and reach carbon-neutrality by 2050 calls for new systems and radical alternatives to kerosene. Sustainable aviation fuels will not be enough, but promising technologies have emerged with the potential to decarbonise the aviation industry in the longer term. Battery-powered planes (zero-emissions aircraft) and hydrogen-powered planes (zero-carbon aircraft) are currently in the pilot phase but could operate commercially on short-haul routes by 2040.

A recent Deloitte Report, "[Europe's Aviation Landscape - The potential of zero-carbon and zero-emissions aircraft on intra-European routes by 2040](#)", outlines that while the current arguments in favour of electric vehicles and rail rely on their low climate footprint, the advent of zero-carbon and zero-emissions aircraft could significantly impact the discourse and drive government support towards the aviation sector.

Even with decreased flight range compared to conventional kerosene aircraft, these future aircraft have the potential to cover up to 89% of the intra-EU air travel market in 2040, representing a potential climate impact reduction of up to 59%.



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The competitiveness of zero-emissions and zero-carbon aircraft in terms of emission reductions, and also in terms of the cost and time taken for travel, is dependent on the existing rail, road, and air infrastructure on a given route. In combination with rail and EVs, battery-powered and hydrogen-powered aeroplanes are promising solutions for the decarbonisation of short-range mobility. Outside Europe, Avolon and AirAsia have partnered to create a ride sharing platform in South East Asia with the airline signing a non-binding memorandum to lease a minimum of 100 VX4 eVTOL aircraft. However, limitations in infrastructure and capacity for these modes of transport are key reasons why a combination of solutions may be more effective than a focus on just one.

3. ISHKA, Aviation banks partner for new sustainable aviation initiative: IMPACT, 17 January 2022

Industry and investor initiatives

In January 2022, Aircraft Leasing Ireland (ALI) published an [Environment, Sustainable and Governance \(ESG\)](#) narrative. The collection of 31 aircraft leasing companies based in Ireland have agreed to take a more active role in global aviation and climate change. An ALI Charter will be published by the end of 2022 to address greenhouse gas reduction within the industry.

Separately, a group of 20 international aviation banks and institutions are in the process of establishing an independent association to promote sustainable aircraft financing. This initiative, called IMPACT (Initiative to Measure and Promote Aviation's Carbon-free Transition), intends to develop credible standards to eliminate box-ticking and greenwashing, promote data transparency and "provide an engine for change for the entire aircraft finance industry worldwide that is independent of vested interests".³

To start, IMPACT will focus on five projects⁴:



Transition finance: What does sustainability in aviation mean specifically, and what criteria must financing instruments such as green finance and sustainability-linked finance meet? Which metrics are needed to underpin the different types of financing? How can certificates encourage and support compliance with these standards?



Metrics: How can the transparency of airlines' CO₂ emissions be improved? How should metrics such as Scope 1, Scope 2, and especially Scope 3 be defined so that they can be consistently applied, monitored, and reported for the entire aviation value chain? What metrics can be used to measure aircraft and engine efficiency, decarbonisation effectiveness and the centrally important decoupling of CO₂ emissions trends from capacity growth? How can more targeted KPIs help to prevent greenwashing?



Policies and reports: IMPACT will accompany and support political and corporate discussions with an annual report on the status and progress of decarbonisation in aviation. Accordingly, position papers are to be written on current topics that set out, independently of individual interests, which paths are on track and where further action is needed.



Networking: IMPACT seeks to exchange with all companies in the aviation value chain and with regulators, trade unions, and scientific institutions. It will promote teaching and research on the topic of sustainability in air transport. IMPACT wants to cooperate with other initiatives in this area and ensure that there is no competition to the detriment of the common cause of climate alignment.



Know-how: How can modern digital knowledge management tools help members of the IMPACT initiative and others to ensure data, scientific studies, and other sources of relevant knowledge on the topic of sustainability in aviation are kept as up-to-date, structured and easily accessible as possible?

4. ISHKA, Aviation banks partner for new sustainable aviation initiative: IMPACT, 17 January 2022



These projects will help frame the aviation financing arrangements that have already been launched, including green financing arrangements driven by investor demand in the aviation industry.

Last November, the Korean leasing platform Crianza Aviation announced sustainability-linked operating leases. These are an important first milestone for the leasing sector in how it can begin to reward lessees' good environmental stewardship. In January, Société Generale partnered with Air France/KLM to provide the first sustainability-linked aircraft secured loan. Japan Airlines issued a transition bond to upgrade to fuel efficient aircraft citing Airbus 350s and Boeing 787s. Rockton, a Swedish Asset Manager, launched the first sustainable aviation fund last year, targeting investment of €200 million between 20 to 30 assets. Air Lease Corporate and Aviation Capital Group have both publicly committed to supporting ESG funds. The list goes on and on.

In conclusion, decarbonisation has become a global imperative and a priority for government, companies and society at large. Aviation remains fundamental to the world economy and to reconnecting people after the COVID-19 pandemic. While the path to decarbonise the sector is clear, it needs to be more ambitious. The industry should front-load efforts to scale up demand and production of SAF, speed up technological developments, ultimately driven by aviation finance investors.