AmCham EU
SPEAKING FOR AMERICAN BUSINESS IN EUROPE

# Our position

# Charting a sustainable path: Enhancing sustainability in the aviation industry

AmCham EU speaks for American companies committed to Europe on trade, investment and competitiveness issues. It aims to ensure a growth-orientated business and investment climate in Europe. AmCham EU facilitates the resolution of transatlantic issues that impact business and plays a role in creating better understanding of EU and US positions on business matters. Aggregate US investment in Europe totalled more than €3.7 trillion in 2022, directly supports more than 4.9 million jobs in Europe, and generates billions of euros annually in income, trade and research and development.

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# Executive summary

The US aviation industry is fully aligned with the European Union's goal of achieving net-zero carbon emissions in the aviation sector by 2050. As a significant contributor to Europe's economic and employment landscape, the industry plays a pivotal role in advancing net-zero technologies within the aerospace sector. This commitment is manifested through a comprehensive strategy that encompasses fleet renewal, operational efficiency enhancements, the adoption of sustainable aviation fuel (SAF) and advancements in cutting-edge technology.

Along with the aviation sector's many initiatives to become more sustainable, there is much the EU institutions can do to support companies' efforts. Because SAF has the potential for up to 80% fewer greenhouse gas (GHG) emissions, the industry supports EU initiatives like ReFuelEU Aviation and urges the rapid implementation of a Book and Claim (B&C) mechanism to expedite SAF scaling. Considering the need for substantial investment, the EU should also support efforts to attract private investment, include efficient aircraft in the EU Taxonomy and direct Emissions Trading System (ETS) revenues toward decarbonisation.

# Introduction

American Chamber of Commerce to the EU (AmCham EU) members represent the entire aviation value chain, from jet fuel providers and engine and aircraft systems manufacturers to airframers and aircraft end-users and therefore have distinct but complementary pathways towards net-zero carbon emissions for international aviation. In line with the targets established in the United Nations Framework Convention on Climate Change's Paris Climate Agreement, member companies are continuously working towards limiting their environmental footprint and introducing new practices to further reduce carbon emissions. Furthermore, in alignment with the decarbonisation roadmaps laid out in the Destination 2050 report[1], members are engaged in developing more fuel-efficient aircraft and engines, improving air traffic management (ATM) and operational efficiency to reduce fuel consumption and related greenhouse gas (GHG) emissions, as well as the uptake of SAF and introducing state-of-the-art advanced technologies.

The aviation industry is proactively pursuing diverse technology and innovation strategies to effectively decarbonise. This commitment is reflected in a comprehensive strategy that encompasses: 1. fleet renewal; 2. operational efficiency enhancements; 3. the adoption of SAF; and 4. advancements in cutting-edge technology.

The following paper provides an overview of each of these key elements and relevant recommendations for each trend to accelerate the transition to net zero, as well as the role access to finance plays in each. Furthermore, the annex at the end showcases AmCham EU members' specific sustainability initiatives and illustrates their substantial investment in sustainable practices.

## 1. Advancing efficiency gains through fleet renewal

Continuous investment in aerospace technology and innovation has resulted in improved fuel efficiency in each generation of aircraft over the last decades. Each new generation aircraft is 15% to

[1] https://www.destination2050.eu/wp-content/uploads/2021/03/Destination2050_Report.pdf

25% more efficient than the previous generation due to new aircraft and engine architectures, lighter materials (ie composites), more efficient propulsion and gains on aerodynamic designs. In addition, various retrofit programmes – including lighter weight and more energy-efficient aircraft systems and cabin concepts – have provided more immediate fuel and emissions reduction opportunities.

## 2. Operational efficiency and air traffic management (ATM)

Continued growth in air traffic is not only causing airport congestion, which results in more delays for passengers and air freight, but also leads to decreased efficiency and customer satisfaction while increasing flight times and emissions. Delivering on the Digital European Sky under the Single European Sky ATM Research 3 Joint Undertaking along with implementing a Single European Sky are an essential part of the net-zero roadmap and could reduce $CO_2$ emissions by up to 10%.[2]

Furthermore, AmCham EU members are developing connected aircraft solutions that optimise routes and operations and offer immediate or near-term solutions to reduce fuel consumption and GHG emissions. These solutions include technologies such as flight path optimisation, weather event monitoring and avoidance, advanced digital ATM, connected cabin systems and the use of enhanced air-ground fleet connectivity. These solutions already allow for 1% to 2% fuel burn reduction in flight and therefore $CO_2$ emissions due to inflight adjustments, advanced avionics and real-time data updates.

## 3. Harnessing sustainable aviation fuels (SAF) for emission reduction

### SAF as the main lever to net zero by 2050

SAF can create up to 80% less GHG lifecycle emissions compared to fossil-based kerosene. Drop-in SAF – fuel that can be safely mixed to varying degrees with conventional jet fuel – can be adopted in existing aircraft and fuel infrastructure with no required hardware changes, which makes it the main lever to decarbonise aviation in the short and medium term. The EU has taken a leading role to enact legislation such as ReFuelEU Aviation, which is essential to develop this nascent industry. Nevertheless, SAF remains four to 12 times more expensive than conventional kerosene, and forecasted demand significantly exceeds existing production capabilities and capacity.

AmCham EU members are working to ensure engine and aircraft systems are ready for the uptake of SAF. In addition, companies are promoting the ramp up of commercial scale units to produce SAF from various feedstocks such as biological, synthetic and recycled carbon. At present, the approved SAF production pathways limit blending in conventional jets to a maximum of 50%. However, the industry is working to achieve 100%. Several demonstration flights with 100% SAF have already taken place, including a B777 freighter in 2018, a B737 with passengers in 2022, the first 100% SAF transatlantic flight on a Gulfstream G600 and first commercial transatlantic flight on Virgin's Boeing 787 in 2023.[3]

### Scaling up SAF with a 'Book and Claim' (B&C) mechanism

[1] https://www.destination2050.eu/wp-content/uploads/2021/03/Destination2050_Report.pdf

[2] https://ec.europa.eu/commission/presscorner/detail/en/QANDA_20_1716

[3] https://www.prattwhitney.com/en/newsroom/news/2023/11/20/rtxs-pratt-whitney-canada-and-gulfstream-successfully-complete-first-100-saf

To allow faster scaling up of SAF, EU policymakers must introduce a B&C system, as alluded to in ReFuelEU Aviation. This would avoid the industry being too dependent on suppliers outside the EU and more specifically, on coercive economies.

As a cost recovery mechanism, B&C enables airlines to de-couple the purchase of SAF's environmental attributes from its physical flow. With B&C, an air carrier receives a certificate for the attributes from the use of SAF it has purchased through contractual arrangements with fuel suppliers without the need for the physical SAF to be consumed in its own aircraft. Using such certificates, the air carrier can claim the credit for the environmental benefit (attribute) of the SAF it purchased, while another flight benefits from the physical use of SAF without claiming the environmental credit so as to avoid double counting. This arrangement provides both environmental and economic benefits, as fuel does not need to be physically transported to all airports around the world for benefits to be realised.

B&C is a particularly appropriate solution in markets where individual customer demand volumes may be relatively small and dispersed, production may be geographically isolated and infrastructure/logistics may not provide efficient means to physically connect supply to demand. Without reducing the overall SAF deployment targets, B&C supports a cost-efficient transition and achieves desired environmental attributes with improved flexibility for fuel suppliers and air carriers to comply with their obligations.

The European Commission must establish a well-designed trading deck to guarantee the traceability of certificates across Europe, as stipulated in the provision under Article 13 of the ReFuelEU Aviation text whereby 'no later than 1 July 2024', the Commission shall identify and assess 'additional measures … such as setting up or recognising a system of tradability of SAF to enable fuel supply in the Union without it being physically connected to a supply site'. The Commission must consider the global nature of aviation and coordinate with entities such as the International Air Transport Association and its SAF Accounting Reporting Intelligence project to engage key stakeholders, including US businesses, when developing its assessment.

US industry also supports alignment and convergence between the EU and the US regarding the B&C model for SAF, including a collaborative framework that propels sustainable aviation while keeping the sector competitive.

### Enabling sustainable fuels take up by feed diversification and regulatory harmonisation

For the EU to achieve its ambitious targets, enabling multiple commercial-scale pathways for producing sustainable and/or lower-carbon replacement fuels is crucial. A harmonised regulatory framework would significantly benefit both the industry and the entire Union. Ambitious SAF uptake, as specified in ReFuelEU Aviation, requires access to a wide pool of feedstocks and processing methodologies to drive competition and contribute to the affordability of the decarbonisation effort.

## 4. Advanced technologies for decarbonisation

US companies are at the forefront of aviation innovation.[4] Research and development of new technologies and advanced material concepts to decarbonise the industry, particularly hybrid-electric and hydrogen solutions, will play a fundamental role in the coming decades. The next generation

[4] For more information on the technologies AmCham EU members use, see the annex on p.8.

engine could enter into service in the mid-2030s and provide a 20% to 30% efficiency gain compared to the current state-of-the-art engine, depending on the engine size, configuration and the level of hybridisation.

In addition, lighter weight and more energy-efficient aircraft and engine systems are an important contributor to emissions reductions. Lighter weight, energy efficient and recyclable cabin interiors, more electric and connected aircraft systems as well as polymer technologies for highly reliable aircraft structures are examples of technology bricks industry is using to build net-zero aviation. To develop these enabling technologies, continued access to advanced materials (such as fluoropolymers, ethylene tetrafluoroethylene and polyimide) is critical.

AmCham EU members' participation in Horizon Europe research programmes with the European aviation sector and academia is key to mature these new technology concepts. Industry collaboration across the Atlantic is needed to accelerate the decarbonisation of the aviation sector, as are public funding and incentives.

As aviation is a highly regulated industry, such novel technologies must be introduced only with extensive testing and regulatory scrutiny. With regard to hydrogen, lifecycle impact remains an obstacle for large-scale adoption as well as the large-scale investment in the physical infrastructure needed for the production, transport, storage and up-take of SAF, low-carbon hydrogen and renewable electricity. A coordinated and efficient network of these resources and infrastructure must be abundant and accessible to effectively incorporate these advanced technologies into the aviation industry. In addition, close collaboration between certification agencies, namely the European Authority for Aviation Safety and the US Federal Aviation Administration, is needed to introduce hydrogen-powered aircraft at scale.

## Access to finance

To continue making progress in each of the above four areas and to achieve net-zero emissions by 2050, the aviation industry requires significant investments, estimated at a total of €800 billion in addition to the industry's usual expenditures, according to a study by SEO Amsterdam Economics and Royal Netherlands Aerospace Centre.[5] However, since the COVID-19 pandemic, the aviation industry has limited financial capabilities, making policy support essential to attract private investment. It is therefore essential that the EU promote and facilitate private investment into decarbonising aviation.

Including the existing most-efficient aircraft and engines in the Taxonomy is a welcome first step. However, future efforts to renew aircraft fleets or invest in SAF production might be derailed by overly stringent criteria, which could perpetuate the use of older, less efficient technologies. The EU should channel investment into the latest generation aviation technologies.

The phase-out of free allowance under the Emissions Trading System (ETS), ReFuelEU Aviation's requirements and the increasing taxes and limitations on airports are diverting the aviation industry's financial resources away from the development, introduction and transition to more sustainable technologies. The EU must ensure that a significant proportion of revenues from ETS go towards

[5] https://www.destination2050.eu/wp-content/uploads/2023/03/The-Price-of-Net-Zero-Report.pdf

decarbonising aviation, particularly to scale up the supply of SAF and bring SAF pricing to par with conventional fuels.

Similarly, policymakers must carefully consider any additional mechanisms, such as further taxation of kerosene, and non-compliance penalties for ReFuelEU Aviation mandates that could increase the sector's financial burden. Instead of exacerbating the sector's financial strain, any existing mechanisms should be directed towards investments in clean, fuel-efficient technologies.

## Conclusion

The American aviation industry's robust endorsement of the EU's decarbonisation initiatives stems from the recognition that collaborative strategies – including in fleet renewal, operational efficiency enhancements, adoption of low-emission fuels and cutting-edge technology advancements – are pivotal for achieving net-zero goals by 2050. These efforts not only benefit the industry's economic and employment contributions to the continent but also signify a crucial step towards global sustainability. It is imperative to establish a European SAF industry to ensure that cross-Atlantic flights can seamlessly use SAF for transatlantic round trips. Prioritising SAF within the Net-Zero Innovation Alliance and promptly implementing mechanisms like B&C are among those efforts that can collectively propel the industry, the EU and the planet towards a decarbonised future.

## Annex – European footprint of American aerospace companies

AmCham EU and its members are fully committed to the above initiatives and strongly support the EU's Fit for 55 and smart mobility policy packages. With over 66,000 employees in the EU aerospace and aviation sector, AmCham member companies make significant investments in new technologies, designs and manufacturing throughout Europe and the world, while also supporting European partners, including academia and suppliers. Several AmCham EU companies are contributing members and board members to EU research and development projects such as the Clean Hydrogen Joint Undertaking (JU), the Clean Aviation JU and the SESAR JU.

In addition, AmCham EU companies are active members and contributors to the EU's Alliance for Zero Emission Aviation (AZEA), a voluntary initiative of private and public partners committed to preparing for the entry into commercial service of hydrogen-powered and electric aircraft. They are also part of the EU's Renewable and Low-Carbon Fuels Value Chain Industrial Alliance, a voluntary initiative of private and public partners whose objective is to boost the production and supply of renewable and low-carbon fuels in the aviation and waterborne sectors.

Furthermore, the International Civil Aviation Organization, which includes many AmCham EU members, adopted in October 2022 a long-term global goal for international aviation of net-zero carbon emissions by 2050 in support of the Paris Agreement, following both the joint Air Transport Action Group's and the International Air Transport Association's net-zero commitment as well as the Toulouse declaration signed by the aerospace industry the prior year.

Below are snapshots that illustrate member companies' efforts to further sustainability in the aviation sector, as well as their impact on the industry and the European economy as a whole.

## The Boeing Company

Boeing has been a part of the European aerospace community for more than 80 years. In Europe, the company directly employs more than 8,000 talented people, and its commercial, defence and services programmes support nearly 190,000 highly skilled jobs on the continent. We continue to strengthen our presence in Europe by investing in research and development and contributing to the EU's long-term environmental sustainability goals.

## RTX

RTX is a global company dedicated to redefining the future of the aerospace and defence industries. With over 100 years of history and a continued spirit of innovation and collaboration, our global team of 182,000 employees solves our customers' most complex problems and makes breakthroughs that help protect and connect our world. Our three business units, Collins Aerospace, Pratt & Whitney and Raytheon, employ more than 23,000 people in Europe. Collins Aerospace is a board member of Clean Aviation JU and SESAR JU and an active member of AZEA, along with Pratt & Whitney.

## FedEx Express

FedEx Express is a global leader in express transport with 50,000 employees in Europe and large investments in infrastructure across the region. We connect European citizens and businesses to markets in 221 countries and territories around the world, within 24 to 72 hours. Early 2021, FedEx announced its goal to achieve carbon-neutral operations globally by 2040.

## UPS

UPS is the world's premier package delivery company and a leading provider of global supply chain management solutions. Under its global brand, UPS operates one of the largest airlines and one of the largest fleets of alternative fuel vehicles. In 2022, the company delivered an average of 24.3 million packages per day in over 200 countries and territories, totalling 6.2 billion packages during the year. Its total revenue in 2022 was $100.3 billion. In Europe, UPS has more than 48,000 employees. Its European headquarters are in Brussels, while its operational heart is at the Cologne-Bonn Airport. UPS's goal is to achieve carbon neutrality in all its operations by 2050 and across scope 1, 2 and 3 emissions.

## GE Aerospace

GE Aerospace is a leading provider of jet engines, components and systems for commercial and military aircraft with a global service network to support these offerings. In Europe, the company employs more than 12,000 people across eight countries, including in: research and development; manufacturing; and maintenance, repair and overhaul facilities, thus providing full original equipment manufacturer capabilities for a European supply chain. GE Aerospace also has close collaborations with a network of European universities and research institutes. The company is an active participant of Clean Aviation JU, the Renewable and Low-Carbon Fuels Value Chain Industrial Alliance and AZEA.

## Honeywell

Honeywell employs 20,000 people across Europe and delivers industry-specific solutions that include: aerospace products and services; control technologies for buildings and industry; and performance materials and technologies globally. Our technologies help connect aircraft, buildings, manufacturing plants, supply chains and workers to make our world smarter, safer and more sustainable. Our technologies include key airplane components like more efficient auxiliary power units and smarter navigation, which are used to produce SAF and hydrogen, help make buildings like airports more efficient and sustainable and re-imagine mobility for the future.