OXFORD ECONOMICS

THE SOCIO-ECONOMIC BENEFITS OF BUSINESS AVIATION IN EUROPE

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EBAA

GAMA General Aviation Manufacturers Association

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FOREWORD

TIME TO RETHINK BUSINESS AVIATION

The world is brimming with studies on economic impacts, so does it need another one focused on business aviation? Absolutely, yes! Business aviation is arguably one of the least understood sectors in the aviation industry, often clouded by misconceptions and stereotypes rather than grounded in factual knowledge.

Our industry plays a vitally important role in connecting Europe, and helping Europeans prosper. We fly where airlines can't, connecting a total of **80,000 unique airport pairs** and serving 1000 airports and airfields across our Union that are otherwise unserved by scheduled commercial aviation. In doing so, we employ approximately **440,000 people** across the EU and contribute around **€110 billion** to the European GDP annually.

As this study shows, the services offered by our industry are primarily tools that serve important societal functions and help make the EU's four fundamental freedoms a daily reality for businesses that look to build on the strength of our internal market to be efficient, successful and globally competitive.

Considering **past years' political discourse**, which has often sought to **demonise aviation** and our sector specifically, **calling for severe restrictions or outright bans** on private aviation we've taken a provocative approach here. We've asked the question of what would happen if we did that. Placed severe limitations on European businesses' ability to use private aviation. The **results paint a bleak picture**.

Given the relevance of Foreign Direct Investment (FDI) as an indicator of an economy's overall competitiveness, we've asked the Oxford Economics research team to look at how a **partial ban or restriction of business aviation would impact the continent's ability to attract FDI**. The findings are worrying. By pursuing restrictions on our small segment of the aviation industry alone, the EU27 **stands to lose between €70 to €120 billion of** FDI by 2030. And that doesn't account for the **knock-on effects** that we might expect to see from European businesses leaving the continent in search of more favourable geographies to do business. This is **not the vision set out by the Draghi Report**.

I hope this study will help us **move away from the "ban mentality"** that has become so prevalent in Europe over the past years, and help kickstart a constructive conversation around the value that general and business aviation brings to the EU. We are a small, but innovative industry and we are here to help Europe prosper.

Holger Krahmer
Secretary General, EBAA

INNOVATING FOR A STRONGER EUROPE

This study comes at a critical time for Europe. As we grapple with the dual challenges of redefining European competitiveness and climate change mitigation, it is an opportune moment to take stock of the policy environment for aviation and reflect on how this sector can play a role in driving a strong industrial policy in Europe.

Beyond the immediate value we deliver for society writ large, general aviation manufacturers play a pivotal role in **maintaining a strong innovation pipeline** for the broader aviation industry. We have a proven track record of bringing innovative fuel savings or safety enhancing technologies to market first, before these eventually scale up to commercial aviation. And we continue to further additional advancements. The shift towards **alternative methods of propulsion** in aviation, including electric and hydrogen, is being **pioneered by general aviation manufacturers**. Given the race to decarbonise air transport, it is in Europe's own self-interest to ensure that European general aviation manufacturers continue to have a market for their products today, allowing them to invest in the new technologies of tomorrow.

The study's findings clearly show that a decrease in connectivity and a drop in Europe's ability to attract Foreign Direct Investment (FDI) would diminish Europe's ability to foster and incentivise innovation. An economy based on bans and heavy-handed restrictions sends the wrong message in an increasingly competitive world. Rather, it is innovation that will help us all reach our shared objective **of achieving net zero carbon emissions for aviation**.

Accordingly, we have made the **rapid deployment and uptake of sustainable aviation fuels (SAF) our top priority, recognising that SAF is a key solution to decarbonise aviation now**. We advocate for smart, decisive policy measures to support scaling SAF production and uptake. While the **ReFuelEU Aviation** Regulation is an important development, setting the world's first binding SAF mandate for fuel suppliers, it is, unfortunately **not moving the needle** for scaling production. To do that and make SAF an industrial policy success story for Europe we need to consider introducing innovative flexibilities like an **EU-wide book & claim system** as soon as possible.

Europe is writing its future today. European prosperity, global relevance and meaningful climate change mitigation can only be achieved through a strong and innovative industrial base.

KYLE MARTIN
VICE PRESIDENT – EUROPEAN AFFAIRS, GAMA

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EXECUTIVE SUMMARY

PRESSURE TO CURB BUSINESS AVIATION IS MOUNTING BUT THE ECONOMIC COSTS ARE NOT WELL UNDERSTOOD

The European Union's plan to reach Net Zero by 2050 targets a 90% reduction in transport-related emissions compared to 1990 levels. Absent technological change, this would require a substantial reduction in emissions across all transport modes.

In parallel, the European Council has clearly articulated its vision to strengthen the region's competitiveness and to "unleash the European spirit of entrepreneurship".[1] For that vision to materialise, the Council has identified a need to mobilise investment by leveraging one of the EU's greatest assets—connectivity.

Compared to commercial aviation, the economic contribution of general and business aviation is less well measured by official statistics. Given pressure to introduce policy reforms that restrict the volume of business aviation in Europe to reduce its environmental footprint, it is imperative that this information gap is filled to provide policymakers with greater visibility and ability to assess the economic trade-offs associated with curbing activity.

BUSINESS AVIATION FACILITATES A RANGE OF ECONOMIC BENEFITS

Business aviation **improves connectivity** as it enables travellers to fly directly and efficiently to regions that are not connected, either directly or at all, by viable transportation alternatives such as commercial airlines or trains. In addition to improving connectivity, it offers **flexibility, time, and—potentially—cost savings** through more seamless connections compared to commercial alternatives.

The **flexibility and convenience** provided by business aviation is especially important for businesses as it facilitates dealmaking while minimising distortions to executives' normal course of business. Moreover, the presence of a business aviation airport has the potential to influence business location decisions and **attract high value businesses to the area.**

By streamlining access to expertise and decision-makers, the connectivity enabled by business aviation can help businesses to maximise the benefits and mitigate the costs associated with operating in an international network of colleagues, customers, and suppliers. **Such effects are of outsized importance to multinational enterprises (MNEs) which drive foreign direct investment (FDI)**.

Beyond connectivity benefits for businesses, the sector fosters innovation, empowering Europe's leading position in the global economy. Business aviation also provides **emergency medical and humanitarian services** for communities that do not have access to specialised treatment facilities. Additionally, the industry **facilitates leisure travel,** complementing commercial aviation**,** by providing on demand access to hard-to-reach destinations, boosting in-bound tourism spending in surrounding areas on accommodation, food, and entertainment.

[1] European Council, "New strategic agenda".

POLICIES TO CURB BUSINESS AVIATION MIGHT REDUCE FLIGHTS BY 45%–70%

Policies that seek to constrain the growth of business aviation create implicit trade-offs between the environmental benefits arising from fewer flights and the foregone benefits associated with business aviation. While there are several policy measures which the industry is monitoring and considers likely, this analysis has focused on two types of restrictions perceived as the most credible and which yield themselves to quantification using available datasets. We consider two policy scenarios covering **complete restrictions on short-haul flights** and **slot restrictions** specific to business aviation in certain airports. Our analysis of historic flight patterns indicates that these would result in a reduction in the volume of business aviation flights of 45% to 70% for flights departing from or arriving at European airports.

THIS WOULD REDUCE BOTH THE COMPETITIVENESS OF THE EU27 AND CARBON EMISSIONS

Under these scenarios, our analysis shows that **Europe would become less attractive as a destination for foreign investment**, with an estimated **reduction of €76 billion to €120 billion** compared to the baseline by 2030. Lower inflows of FDI can be expected to have a negative impact on the region's economic dynamism and productivity growth.

Inward FDI has a substantial economic footprint in Europe which is measured as the economic activity of foreign-controlled entities (FCEs). Overall, we estimate that the measures under the policy scenarios would reduce FCE direct employment **in the EU27 by 57,000 to 104,000 by 2030. We anticipate that this impact would be mostly felt in Germany, Italy, and Poland** which have high levels of FCE activity and would experience larger than average connectivity losses in the policy scenarios.

Restricting the sector's activity would have additional economic implications that we have not modelled, including reduced demand for purchasing new aircraft and maintenance services from European aircraft manufacturers that should also be considered when balancing environmental benefits and economic costs.

Our analysis suggests that the policy scenarios could help reduce business aviation emissions by between 32% and 61% per year. To put this environmental benefit in context, **such a reduction would be equivalent of 0.01% to 0.02% of total CO_2 emissions in the EU27 in 2023**, whilst the projected reduction in emissions by 2030 (600,000 $mtCO_2$) is expected to represent a 0.03% of the EU27 total.

BALANCING ENVIRONMENTAL BENEFITS WITH ECONOMIC COSTS

Our scenario analysis demonstrates that the intended environmental benefits associated with constraining the use of business aviation services would have economic costs. Notably, these policies would have a negative impact on the international competitiveness of the EU27 economy and reduce inflows of FDI. These policies, therefore, run in support of (lower carbon intensity) and in contradiction of current EU policy objectives—notably, a more attractive investment environment.

The size of the business aviation sector implies that the scale of these benefits/costs are, from a macroeconomic perspective, relatively minor. In general, green technological solutions which can

reduce the carbon intensity of existing economic activities are a means to ameliorate such trade-offs. Notably, in this context, using sustainable aviation fuels (SAF) in business aviation has the potential to reduce CO_2 emissions per flight by up to 80%[2].

Alongside environmental benefits, ramping up SAF production will require a combination of effective R&D and industrial policies that can yield additional competitiveness benefits for Europe. This was echoed in the Draghi report on the future of European competitiveness, which stressed that "the EU needs to start building a supply chain for alternative fuels, or the costs of meeting its [decarbonisation] targets will be significant".[3]

[2] Eurocontrol, "Can Sustainable Aviation Fuels Help Us Decarbonise Aviation?", accessed September 2024
[3] Mario Draghi, "EU competitiveness: Looking ahead", accessed September 2024

1. INTRODUCTION

1.1 THE POLICY CONTEXT FACING BUSINESS AVIATION

As part of the European Green Deal, the EU27 has set a target of reaching net zero by 2050 with an associated 90% reduction in transport-related emissions (compared to 1990) incorporated as part of the plan.[4] Absent technological change, this would require a substantial reduction in emissions across all transport modes. While aviation only accounts for 12% of all transport emissions in the EU, compared to 73% from road transport, and 14% from maritime[5], aviation is widely recognised as a hard to abate sector and has become the subject of political attention recently.

Compared to commercial aviation, the economic contribution of general and business aviation (henceforth "business aviation") is less well measured by official statistics, making it harder to assess the economic trade-offs associated with curbing activity. The combination of this evidence gap, and the sector's small scale have fuelled pressure to introduce policy that curbs the volume of business aviation in Europe to reduce its environmental footprint.

This has resulted in a wide range of potential policies under discussion which would impose considerable restrictions on the sector. These include but are not limited to:

- a complete ban of flights below a certain distance threshold;
- slot restrictions specific to business aviation in some airports; and
- an energy tax proposed by the European Commission applied to kerosine.

In parallel, the European Council has clearly articulated its vision to strengthen the region's competitiveness and to "unleash the European spirit of entrepreneurship".[6] As part of supporting that vision to materialise, the Council has identified a need to leverage connectivity, one of the EU's greatest assets, in order to mobilise investment.

1.2 OBJECTIVES OF THIS RESEARCH

Pursuing environmental objectives in parallel to economic objectives typically entails policy trade-offs. When taking decisions, policymakers should adopt a holistic view that weighs up the various trade-offs that will inevitably accompany any market's attempt to transition to a carbon-free economy.

Achieving this requires a robust evidence base that speaks to, in this case, the economic benefits and environmental costs associated with business aviation services. The latter can be reasonably proxied in terms of the contribution of these flights to carbon emissions. In comparison, the former are currently much less well understood.

This research was designed to narrow the evidence gap by evaluating the sector's structural economic contribution to enable informed analysis of these trade-offs. Our methodology assesses the sector's

[4] European Commission, "Delivering the European Green Deal".
[5] Statista, "Distribution of transportation sector carbon dioxide emissions in the European Union in 2022, by transport mode"
[6] European Council, "New strategic agenda".

contribution to European competitiveness through the lens of connectivity and explores its importance for regional economic activity and innovation.

Furthermore, to provide quantitative guidance related to the scale of these trade-offs, we applied our findings to two hypothetical policy scenarios designed to reduce volumes of business aviation traffic in Europe.

1.3 OUR APPROACH

The evidence presented in this report has been collected through three workstreams.[7]

(1) A review of academic literature and industry publications on the socioeconomic contribution of business aviation.
(2) Analysis of various data sources to collect quantitative evidence on the relationship between the volume of business aviation flights, connectivity, foreign direct investment, and CO_2 emissions. We developed an econometric model analysing flight-level data provided by the European Business Aviation Association (EBAA) alongside an FDI dataset provided by Moody's and macroeconomic data from Oxford Economics' databank.
(3) Interviews conducted with five industry experts representing business aviation operators.

1.4 REPORT STRUCTURE

The report is structured as follows.

- Chapter 2 discusses the socioeconomic contribution of business aviation.
- Chapter 3 explores the implications of restrictions on business aviation.

[7] Additional detail on our methodology can be found in the appendices.

2. THE SOCIOECONOMIC CONTRIBUTION OF BUSINESS AVIATION

Business aviation contributes to Europe's connectivity and competitiveness in several ways while also supporting social causes. These benefits come at an environmental cost as business aviation flights generate CO_2 emissions. The sections below discuss the different types of impacts in more detail.

2.1 CONNECTIVITY AND BUSINESS EFFICIENCIES

Business aviation improves connectivity as it enables travellers to fly directly to airports that are not connected, either directly or at all, by commercial airline services. A study conducted by the Swiss Business Aviation Association demonstrated that 90% of all business aviation routes in Switzerland were inaccessible by direct scheduled flights.[8] Similar benefits can also be seen elsewhere in Europe. An analysis of all European Business aviation flight movements in 2023 revealed that 943 European airports used by business aviation were not connected by non-stop commercial flights. .[9] Further research suggests that 91% of the 79,943 routes connected by business aviation within and outside Europe in 2023 had no direct commercial alternative. These routes exclusively covered by business aviation represented three quarters of business aviation flights.[10] There is also research estimating connectivity benefits[11]-reflecting connectivity provided by business aviation in addition to that provided by commercial aviation– that range from 178% in London to more than 700% in Cote d'Azur[12].

A senior manager of a European business jet operator highlighted that the variety of non-stop connections offered by business aviation is a valuable addition even for hubs that are well connected by commercial aviation networks. In hubs like Munich airport, commercial aviation alternatives would often have to go through other hubs before reaching their final destination thereby making business aviation a preferred alternative for customers prioritising flexibility and efficiency.

In addition to improving connectivity, business aviation offers flexibility and time savings through more seamless connections. Industry experts highlighted several flexibility benefits offered by business aviation including the ability to depart on-demand and without adhering to a rigid schedule determined by external factors. This enables business travellers to minimise the time spent travelling and allows them to travel back on the same day without the need to spend time and money on overnight accommodation. For example, in 2021, a government delegation flew from Brussels to

[8] Ludwig Haeberle, Wolfgang Stoelzle, and Tim Felix Sievers, Swiss Business Aviation Association "Business Aviation Study Switzerland 2022", 2022, accessed July 2024

[9] Analysis of data provided by EBAA.

[10] EBAA, "Traffic Tracker – December 2023", accessed September 2024.

[11] Connectivity benefit = $\frac{No.of\ cities\ connected\ by\ business\ aviation}{No.of\ cities\ connected\ by\ business\ aviation - No.of\ cities\ connected\ by\ commercial\ aviation}$

[12] Booz Allen Hamilton and DLR, "Economic Impact of Business Aviation in Europe", 2015, accessed June 2024

Rome to attend the G20 Summit and then flew directly to Glasgow to attend the COP26. Due to the use of a business jet, representatives from multiple institutions were able to coordinate their travel requirements, saving 11 hours compared to scheduled commercial travel.[13] Experts suggested that several sectors, ranging from sports and entertainment to automotive and energy, benefit considerably from business aviation's flexibility and extended network as they require frequent movements to meet demanding schedules. **Ryanair, a low-cost commercial airline, uses business-jets alongside their commercial fleet, to transport parts and crew around tight timelines required to support their day-to-day operations**.[14]

Experts also highlighted that business aviation airports tend to be located closer to city centres, requiring less travel time to and from the airport. At these airports, passengers can arrive shortly before their flight instead of the typical two to three hours in advance suggested by commercial airlines. There are several notable examples across Europe including Paris, Milan, Stockholm, Lyon, and Istanbul. The table below illustrates that business aviation airports can be a lot closer to city centres compared to airports covering commercial flights. This varies from being 13.8km closer in Paris up to 46.3km closer in Milan.

Fig. 1. The distance of business aviation and mixed-use airports from the closest city centre

Reference city	Business aviation airport (km from city centre)*	Mixed use airport (km from city centre)*
Paris, France	Le Bourget (15.4km)	Charles de Gaulle (29.2km)
Lyon, France	Bron (11.2km)	Saint Exupéry (27.8km)
Stockholm, Sweden	Bromma (8.5km)	Arlanda (43.7km)
Milan, Italy	Linate (6.9km)	Malpensa (53.2km)
Istanbul, Turkey	Ataturk (20.1km)	Istanbul new airport (40.4km)

*The distance from city centre was calculated using Google Maps to and selecting the shortest route to the following indicative destinations: Louvre museum (Paris), Bellecour Square (Lyon), Norrmalm area (Stockholm), Duomo di Milano (Milan), and Taksim square (Istanbul).

Finally, commercial airports can be more congested and susceptible to strikes which increase time spent travelling.[15] The German aerospace centre estimated the **average travel time saving from business aviation to be around 127 minutes[16] per trip and, for multi-city trips**, at more than 6.5

[13] EBAA, "Business aviation serving world leaders: The use of government flights when time not just matters but prevents conflicts", March 2024, accessed August 2024
[14] Simple Flying, "The Story of Ryanair's 4 Learjets", accessed September 2024
[15] Booz Allen Hamilton and DLR, "European Business Aviation: Economic Value & Business Benefits", March 2018, accessed June 2024
[16] This is a total trip estimate which included ground access/egress time, handling and wating time and actual flight time.

hours.[17],[18] Employees can also make better use of their time as a business aircraft is perceived as a more comfortable and private space for meetings and the use of confidential documents.[19]

The **flexibility and convenience** provided by business aviation is especially important for business trips as it facilitates deal making while minimising distortions to executives' normal course of business. According to experts, there can be compelling reasons why some corporations insist on owning a business jet, ranging from time-sensitive business opportunities to football league transfers with tight deadlines, all of which require urgent on-demand travel arrangements. Industry experts claim that access to on-demand private aviation enabled their clients to act swiftly and provided them with a competitive edge.

> **Alex Durand, CEO of SaxonAir**
>
> "Business aviation is the only option for companies that require timely and flexible transportation. Our clients have leveraged on-demand services for urgent movements ranging from investors looking to purchase assets before their competitors, football clubs pursuing players close to transfer deadlines, to musicians getting from one concert destination to the next."

Beyond connectivity benefits for businesses, aviation also facilitates leisure travel boosting in-bound tourism spending in surrounding destinations on accommodation, food, and entertainment. Industry professionals have highlighted that, for leisure travellers, the ease of reaching a destination is crucial. This is especially important for destinations that are not connected directly by other transportation modes, such as the French film city Cannes, or for major events like the Formula One Grand Prix in Monaco or the Tour de France.

[17] Booz Allen Hamilton and DLR, "Economic Impact of Business Aviation in Europe", 2015, accessed June 2024
[18] This is a total trip estimate which included ground access/egress time, handling and wating time and actual flight time.
[19] Booz Allen Hamilton and DLR, "European Business Aviation: Economic Value & Business Benefits", March 2018, accessed June 2024

NICE CÔTE D'AZUR AIRPORT, FRANCE

The Côte d'Azur airport in Nice is the second most important airport for business aviation in France and Europe with more than 37,000 business aviation flights departing from and arriving at the airport in 2023, representing 26% of the activity of the airport.[20] In addition, 77% of the business aviation flights departing from the airport are commercial ones which are booked on demand by users other than the jets' owners.[21]

The airport makes a substantial contribution to local economic activity and employment supporting nearly 700 jobs across 23 sites.[22] It supports employment in airport operations and support functions alongside employment supported along the airport's supply chain. This supply chain includes fixed-based operators, employing personnel ranging from pilots to maintenance crew and security employees as well as maintenance, repair, and overhaul providers that perform the required maintenance and inspection of the aircraft.

In 2023, the airport welcomed more than 14 million passengers, a number close to pre-pandemic levels. Due to the tourist tax France imposes on hotel stays, the increased traffic at the Côte d'Azur airport brought in €15 million in government revenue in 2023.[23]

Furthermore, the airport facilitates access to major cultural and sports events taking place in the region. One of these events, the Monaco Grand Prix Formula One race in 2017, attracted expenditure of €90 million during the course of only four days. While 24% of these expenditures directly related to the event, such as organisers' expenses, the remaining 76% was incurred for hotel bookings, restaurant reservations, and tickets, among others.[24] In 2024, the Tour de France finished in Nice with the hosting of the event expected to generate benefits for the local economy reportedly far outweighing the costs for organising the event.[25] The event resulted in a 27% increase in business aviation arrivals and departures between 18 and 22 July 2024 compared to the same period in 2019 and 2023. Specifically, there were more than 1,000 business aviation movements compared to an average of 800 movements in 2019 and 2023.[26]

Beyond facilitating leisure travel, Nice enables connections to over 500 destinations that would otherwise be inaccessible by non-stop commercial flights. Of these destinations, 90% are international with 38% being outside Europe.[27]

Apart from increased comfort and connectivity, business and leisure travellers departing or arriving to Nice were able to save, on average, 224 minutes compared to a scheduled commercial flight.[28]

[20] Analysis of data provided by EBAA.
[21] As previous footnote.
[22] Airports of the Cote d'Azur, "Presentation of the Group", accessed August 2024
[23] Invest in Cote d'Azur, "Tourism in Nice: Increase in Visitors and Economic Prospects", accessed June 2024

There are potential cost savings stemming from using business aviation as compared to commercial aviation. Business aviation flights allow companies to fly several executives together in the same flight at a decreasing average cost as the bulk of the total cost relates to the flight itself and not the amount of passengers on board. Commercial alternatives would require a full-price ticket for each passenger travelling with prices potentially increasing as capacity becomes more limited due to higher demand. Industry experts stressed that beyond the productivity benefits enabled by colleagues flying together in a private environment, there are potential cost savings that can be achieved under certain circumstances.

The presence of a business aviation airport has the potential to influence business location decisions and attract high value businesses to the area. Evidence from Switzerland shows that "the connectivity and accessibility of Swiss airports is a relevant factor in the choice of location for companies and organizations to transport employees quickly and reliably".[29] This is supported by findings from Canada suggesting that, for many businesses, being located closer to an airport is essential in determining where businesses locate their offices, manufacturing plants, and warehouses as businesses that already own a private aircraft are not constrained to cities with large commercial airports.[30]

Beyond the evidence found in the literature, there are several real-world examples that illustrate the important link between a business's location and the presence of a business aviation network in proximity. The example of Michelin—a French multinational tyre manufacturing company—underscores the critical role that regional airports play in sustaining local economies and corporate operations. Michelin is located in Clermont-Ferrand, a region without regular airline services or high-speed train connections. The regional airport, Clermont-Ferrand Auvergne, initially served as Michelin's corporate airport around the time of its establishment in 1916[31], offering Michelin efficient travel connections with other European cities. Despite the airport's significant growth since, Michelin's corporate jets remain an important part of its operations. In 2021, BP agreed to provide Michelin SAF in the airport on an ongoing basis, marking the first such ongoing commitment in France.[32], industry experts suggested that business aviation restrictions affecting this airport would hinder Michelin's ability to conduct its operations and could push the company to relocate to a more accessible location.

[24] Monegasque Institute of Statistics and Economic Studies, "Economic benefits of the 2017 edition of the Monaco Formula 1 Grand Prix", accessed June 2024
[25] Invest in Cote d'Azur, "Tour de France: Nice chosen as the finish city for the 2024 edition", accessed June 2024
[26] Analysis of data provided by EBAA.
[27] Analysis of data provided by EBAA.
[28] Booz Allen Hamilton and DLR, "European Business Aviation: Economic Value and Business Benefits", March 2018, accessed June 2024
[29] Ludwig Haeberle, Wolfgang Stoelzle, and Tim Felix Sievers, Swiss Business Aviation Association "Business Aviation Study Switzerland 2022", 2022, accessed July 2024
[30] Canadian Business Aviation Association, "Economic Impact: Business Aviation Operations and Business Aircraft Manufacturing in Canada, 2023", December 2023, accessed June 2024
[31] JetApp, "Private Jet Charter at Clermont-Ferrand Auvergne", accessed September 2024.
[32] BP, "SAF takes off at Clermont Ferrand Airport in France", accessed September 2024.

In LEGO's case, the operational importance of being able to fly flexibly without having to travel far to reach an airport led the company to invest in its own landing strip in nearby Billund in 1961 and its first business jet in 1962. These developments led to the establishment of Billund Airport in Denmark in 1964 which has since become the second largest airport in the country.[33]

2.2 THE SOCIO-ECONOMIC IMPACT OF BUSINESS AVIATION IN EUROPE

Beyond the economic benefits associated with business aviation, it is worth highlighting that the sector enables a wide range of tailored mobility solutions that contribute to societal functions. This section gathers some illustrative examples.

The sector has an economic footprint in terms of jobs and GDP supported in Europe. In 2022, 94,000 people were employed directly by business aviation companies in Europe. Of those, 42,000 were in operational roles, 40,000 in manufacturing roles, and 12,000 in maintenance. Business aviation spending with its supply chain and the spending of its workers and its supply chain workers, supported an extra 350,000 jobs in Europe according to a study by the German Aerospace Centre (DLR). The same study found that the business aviation industry contributed €37 billion to European GDP, €12 billion of which was contributed directly by the industry.[34]

Business aviation fosters innovation, empowering Europe's leading position in the global economy. EASA refers to general aviation as providing "a cradle for innovation"[35] and Eurocontrol has characterised business aviation a "test bed for sustainability innovations", highlighting that environmental innovations are often first tested by business aviation before getting rolled out to commercial aviation.[36] Perhaps the most widely recognised innovation often attributed to business aviation is the development and testing of winglets — vertical extensions on the tips of aircraft wings. Today, winglets are the industry norm for both business jets and commercial airliners and can help reduce fuel-burn by between 4% and 6%.[37,38]

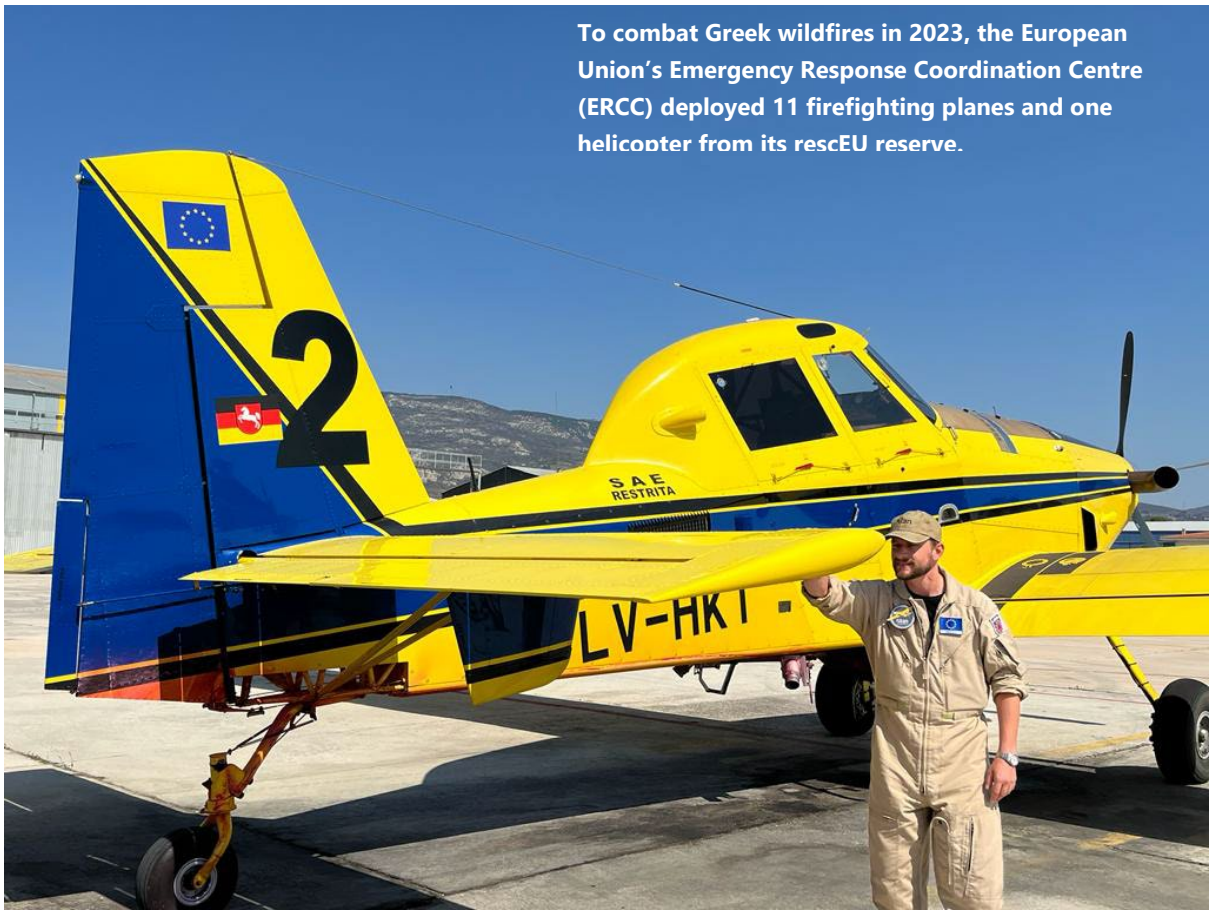
As the aviation industry moves towards developing and testing new zero emissions propulsion technologies – like electric or hydrogen propulsion – the general aviation industry can provide a useful testing field for these new technologies. For example, Pipistrel, a small aircraft manufacturer based in Slovenia, is the first – and as of writing still the only – company in the world to have successfully certified a fully electric aircraft which is already being used by flight schools today. The field of 'advanced air mobility' colloquially referred to as 'air taxis' is another example of how these innovative zero-emission technologies are being developed and tested on a small scale.[39]

Business aviation facilitates operational safety and efficiency on wind farms. Wind farms play an important role in European renewable energy supply but can be located away from the continent's mainland. In its 2020 renewable energy strategy, the European Union set a target of boosting the EU's

[33] LEGO, "From private airfield to international airport", accessed September 2024
[34] Unpublished DLR analysis for EBAA.
[35] EASA, "A European plan for aviation safety", 2022, accessed September 2024
[36] Eurocontrol, "Business aviation: A test bed for sustainability innovations", accessed September 2024
[37] NASA Spinoff, "Winglets Save Billions of Dollars in Fuel Costs", 2010, accessed September 2024
[38] Eurocontrol, "Business aviation: A test bed for sustainability innovations", accessed September 2024
[39] World Economic Forum "Advanced Air Mobility: Shaping the Future of Aviation", accessed September 2024

offshore wind capacity to 300GW by 2050, from 16GW in 2022.[40] Helicopters provide an effective vehicle to transport crew and equipment required to maintain wind turbines which would be hard to reach otherwise—and can therefore support EU attempts to reach its renewable energy targets.[41]

Business aviation provides emergency medical and humanitarian services for communities that do not have access to specialised treatment facilities. The Covid-19 pandemic revealed an urgent need for flexibility in aviation, as patients had to be transported from remote regions and timing was critical. Business aviation catered to that need as flights were used for medical emergencies, saving many lives,[42] but also, as industry experts confirm, to transport vaccines and essential supplies to remote regions faced with significant shortages.



To combat Greek wildfires in 2023, the European Union's Emergency Response Coordination Centre (ERCC) deployed 11 firefighting planes and one helicopter from its rescEU reserve.

Source: © European Union, 2023 (photographer: Claire Kowalewksi)[43]

Beyond medical services, specialised business aviation aircraft can play an important role in providing aid to areas affected by wildfires and other natural disasters, providing aerial surveillance and firefighting capacity across Europe. In March 2024, the European Commission announced that it was

[40] European Parliament, "Wind energy in the EU", January 2024, accessed September 2024
[41] Helicopter Express, "How helicopters help offshore wind farm operations", accessed September 2024
[42] Ludwig Haeberle, Wolfgang Stoelzle, and Tim Felix Sievers, Swiss Business Aviation Association "Business Aviation Study Switzerland 2022", 2022, accessed July 2024
[43] European Union, "Wildfires in Greece: biggest rescEU aerial firefighting operation", "Public Licence", 2023

strengthening the rescEU[44] fleet, which in 2023 was composed of 24 airplanes and four helicopters, by procuring 12 new planes.[45,46]

The sector also supported medical operations after the pandemic. In 2023, European business aviation networks operated an estimated minimum of **70,000 medical flights in 2023**, or the equivalent of more than **191 flights per day on average**.[47] Before the pandemic, in Switzerland, 12,000 flights served medical evacuations in 2017, while more than 15,000 flights per year are carried out by business aircraft for humanitarian missions.[48]

[44] RescEU was established as a reserve of European capacities. It includes a fleet of firefighting planes and helicopters, a medical evacuation plane, and a stockpile of medical items and field hospitals that can respond to health emergencies.
[45] European Commission, "EU provides €600 million to strengthen rescEU firefighting fleet", March 2024, accessed September 2024
[46] European Commission, "Wildfires: EU doubles rescEU firefighting fleet for summer 2023", May 2023, accessed September 2024
[47] Estimate provided by EBAA.
[48] Ludwig Haeberle, Wolfgang Stoelzle, and Tim Felix Sievers, Swiss Business Aviation Association "Business Aviation Study Switzerland 2022", 2022, accessed July 2024

AMSTERDAM SCHIPHOL AIRPORT, THE NETHERLANDS

The Amsterdam Schiphol airport is one of Europe's busiest airports, hosting around 62 million passengers[49] or more than 85% of total passengers arriving and departing from Dutch airports in commercial flights in 2023.[50] More than 444,000 commercial and business flights departed and arrived at the airport in 2023. Out of these, 3% or around 14,000 flights were business aviation flights, equivalent to more than 50% of all business aviation flights departing from or arriving at the Netherlands.[51]

At the same time, the contribution of business aviation to local economic activity and employment is substantial. In 2022, business aviation contributed €2.2 billion to the Netherland's GDP while the sector supported around 8,700 jobs. [52]While these figures are national, they are indicative of the employment supported by the country's largest airport.

Beyond its economic contribution, Schiphol enables connections to over 700 destinations that would otherwise be inaccessible by non-stop commercial flights.[53] Of these destinations, 99% are international with around 50% being outside Europe.[54] This is at a time when alternative modes of transport connecting Amsterdam to the rest of Europe are experiencing disruptions. The direct train service connecting Amsterdam to London has been suspended for six months while the number of daily trains connecting the two cities directly is down from four to three.[55]

In 2023, the airport faced a potential business aviation ban aimed at reducing noise for local residents which was later rescinded. In the same year, the airport also stated in its capacity declaration that it aims to limit business aviation flights to 12,000 movements a year, starting in April 2024, down from a limit of 17,000 movements previously.[56] This limit is considerably lower than the 50,000 annual movement limit currently in place at Farnborough airport and the 70,000-movement limit which Farnborough's management has stated as its aim.[57] While the regulation to limit capacity was also suspended by the Minister of Infrastructure & Water Management two months after its announcement, Schiphol airport maintains that it aims to ban business aviation from the airport.[58] Is it thus uncertain whether new restrictions will be introduced in the future that will disproportionately impact business aviation.

[49] Statista, "Leading airports in Europe in 2023, by air passengers carried", accessed July 2024
[50] Statistics Netherlands, "Aviation; monthly figures of Dutch airports", accessed July 2024
[51] Analysis of data provided by EBAA.
[52] Analysis of data provided by EBAA. This estimate covers jobs directly supported by the sector, those indirectly supported by its supply chain and those supported by workers' spending in the economy, i.e., the induced channel.
[53] Analysis of data provided by EBAA.
[54] Analysis of data provided by EBAA.
[55] Euronews, "Eurostar's London-Amsterdam service will still run this summer despite Dutch station renovation", January 2024, accessed July 2024
[56] Schiphol Airport, "Fewer flights and private jets at Schiphol next summer", September 2023, accessed July 2024
[57] BBC, "Farnborough Airport submits plans for more private jet flights", November 2023, accessed July 2024
[58] Schiphol Airport, "For a quieter, cleaner and better Schiphol", accessed July 2024

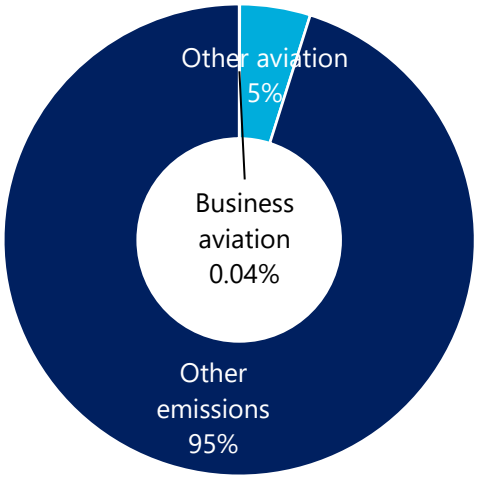
2.3 ENVIRONMENTAL IMPACTS

Business aviation has an environmental impact as aircrafts emit CO_2 and other substances. The environmental footprint of business aviation represents only a small fraction of emissions in Europe and an even smaller fraction of global emissions. **For example, in 2023 the sector was responsible for 0.8%[59] of all aviation emissions or 0.05%[60] of total emissions in the EEA, Switzerland, and the UK**.

Still in 2023, at the EU27-level, only 0.8%[61] of all aviation emissions or 0.04%[62] of overall CO_2 emissions were attributed to business aviation. This was driven by around 400,000 flights departing 1,100 European airports for flights averaging 800km.[63]

Fig. 2. Breakdown of man-made CO_2 emissions in the EU27 in 2023

Share of CO_2 emissions (%)



Source: Euromonitor, EDGAR and Oxford Economics analysis

Despite the sector's small environmental footprint, business and general aviation associations have established sustainability and decarbonisation goals, demonstrating the **sector's commitment to reducing emissions**.[64,65,66]

Business aviation emissions strongly depend on the type of fuel used. **Evidence suggests that using SAF in business aviation flights can reduce CO_2 emissions by up to 80%**.[67] ReFuelEU, an initiative

[59] Data on CO2 emissions from business aviation by EBAA were compared with CO_2 emissions from total aviation available from Eurocontrol Aviation Sustainability Unit on a country level for 2023.
[60] EBAA, Oxford Economics forecasts and European Commission, "EDGAR - Emissions Database for Global Atmospheric Research", accessed July 2024
[61] Data on CO_2 emissions from business aviation by EBAA were compared with CO_2 emissions from total aviation available from Eurocontrol Aviation Sustainability Unit on a country level for 2023.
[62] EBAA, Oxford Economics forecasts and European Commission, "EDGAR - Emissions Database for Global Atmospheric Research", accessed July 2024
[63] Analysis of data provided by EBAA.
[64] International Business Aviation Council (IBAC), "Business aviation prioritises sustainability", accessed September 2024
[65] GAMA and IBAC, "Business aviation commitment on climate change", 2009, accessed September 2024
[66] GAMA and IBAC, "Business aviation commitment on climate change: An update", 2015, accessed September 2024
[67] Eurocontrol, "Can Sustainable Aviation Fuels Help Us Decarbonise Aviation?", accessed September 2024

by the EU, sets the requirements for aviation fuel suppliers to gradually increase the share of SAF included into the conventional aviation fuel supplied at EU airports.[68] At the same time, the European Business Aviation Association (EBAA) and the General Aviation Manufacturers Association (GAMA) have jointly developed and endorsed a European "Sustainable Aviation Fuel (SAF) plan" which indicates the sector's willingness to uplift more SAF than the mandate set by ReFuelEU Aviation. [69,70]

Specifically, EBAA and GAMA have outlined a phased plan for increasing the use of SAF in European business aviation, targeting 20% SAF usage by 2030 and 100% SAF adoption by 2050, a rate higher than what is mandated by ReFuelEU.[71] **If implemented by European business aircraft operators, the proposed approach could reduce CO_2 emissions from business aviation by 16% by 2030 and 80% by 2050**.

Achieving the full potential of SAF usage is challenging under the current environment of high demand and limited supply. Production capacity for SAF is expected to be insufficient to cover demand in Europe according to ReFuelEU's 2030 targets, covering about 10% of the required demand.[72]

Policy should factor in the potential to achieve reductions through flexible measures that enable wider usage of SAF without restricting the sector's activity and socioeconomic contribution. Business aviation operates through a wide network of local airports which are not well linked to SAF distribution networks. EBAA and GAMA have recommended introducing a "Book and Claim" system to overcome this limitation and to facilitate access to the limited supply of SAF.[73]

Through "Book and Claim", the use of SAF that is physically loaded into an airport or fuel pipeline close to where it is produced can be claimed by the operator in other areas lacking physical access to SAF. This allows operators to claim the benefits of SAF purchases to account for their environmental obligations[74] and it can potentially encourage SAF uptake by facilitating purchases from more locations.[75]

[68] European Commission, "ReFuelEU Aviation", accessed August 2024

[69] RefuelEU, an initiative by the European Union to decarbonise the aviation sector , states that fuel suppliers will have to incorporate 2% SAF in 2025, 6% in 2030 and 70% in 2050.

[70] Council of the EU, RefuelEU aviation initiative: Council adopts new law to decarbonise the aviation sector, October 2023, accessed August 2024.

[71] RefuelEU mandates a 70% share of SAF in all EU airports from 2050.

[72] European Union Aviation Safety Agency, "Current landscape and future of SAF industry", accessed August 2024

[73] EBAA and GAMA, Above and Beyond: European Business Aviation to Uplift SAF Beyond Minimum Requirements", January 2024, accessed August 2024

[74] IATA, "SAF accounting", May 2024, accessed August 2024

[75] Deloitte, "Buying and reporting on SAF when the skies are cloudy", accessed September 2024

3. THE IMPACTS OF RESTRICTING BUSINESS AVIATION

Policies that seek to constrain the growth of business aviation create implicit trade-offs between the environmental benefits arising from fewer flights and the foregone benefits associated with business aviation discussed in the previous chapter.

Business aviation improves connectivity between countries and, in doing so, enables companies to meet, negotiate, and transact more efficiently with counterparts all over the world. The connectivity benefits supported by business aviation can enhance the allure and competitiveness of a destination for foreign investors. By streamlining access to expertise and decision-makers, the connectivity enabled by business aviation can help businesses to maximise the benefits and mitigate the costs associated with operating in an international network of colleagues, customers, and suppliers. Such effects are of outsized importance to MNEs which drive FDI.

This chapter explores how connectivity and, in turn, FDI would be impacted under two policy scenarios. Given the nature of any future regulatory change is highly uncertain these scenarios reflect a stylised interpretation of how potential regulatory action could restrict the growth of business aviation over the next five years.

It concludes with a comparison between the broader economic implications of reduced FDI and the environmental benefits of reduced flight volumes.

3.1 POLICY SCENARIOS

Two stylised policy scenarios were developed to reflect the largely uncertain regulatory landscape facing business aviation. While there are several policy measures considered likely by industry, this analysis has focused on two types of restrictions perceived as the most credible and which yield themselves to quantification using available datasets. We consider **complete restrictions on short-haul flights** in Europe[76] and **slot restrictions** specific to business aviation in certain airports.

- **Scenario 1**: complete restriction of flights below 1,000 km and slot restrictions for business aviation in Amsterdam Schiphol, Rome Ciampino, and Brussels airport.
- **Scenario 2**: complete restriction of flights below 500 km and slot restrictions for business aviation in Amsterdam Schiphol, Rome Ciampino, and Brussels airport.

[76] The following countries and territories were covered in our analysis: all EU27 Member states, Albania, Bosnia and Herzegovina, Faroe Islands, Gibraltar, Guernsey, Iceland, Isle of Man, Jersey, North Macedonia, Moldova, Montenegro, Norway, Serbia, Switzerland, Turkey, Ukraine and, the United Kingdom.

Applying flight patterns observed in 2023, Scenario 1 would have resulted in a reduction in the volume of business aviation flights of 45% and Scenario 2 would have resulted in a 70% reduction flights in the volume of business aviation flights departing from or arriving at European airports.[77,78]

While this report explores the impact of volume reductions on European competitiveness and the region's ability to attract foreign investment, the anticipated reductions would also reduce the sector's economic footprint. **In 2022, business aviation employed around 94,000 workers in Europe and directly supported a €44 billion[79] GDP contribution.**[80] Through the sector's supply chain purchases and workers' compensation, an **additional 355,000 jobs and €56 billion**[81] in GDP were supported.[82] Volume reductions will limit the sector's operational needs reducing the number of jobs required, supply chain spending and the level of workers' compensation.

Several other measures under discussion by European policymakers could further restrict the volume of business aviation going forward but these have not been considered in the analysis. These measures vary from energy taxes on kerosine and pricing of non-CO_2 emissions, to sector-specific taxes. Their impact on business aviation volumes would depend on several factors and would require dedicated research to quantify.

[77] These are static estimates which do not take into account business aviation customers' behavioural responses such as increasing their demand for flying through unrestricted routes.
[78] The analysis in this report is focused on business aviation and does not consider knock-on effects on other means of transportation in response to the restrictions.
[79] In 2021 prices.
[80] Data provided by EBAA.
[81] In 2021 prices.
[82] Data provided by EBAA.

PRAGUE VACLAV HAVEL AIRPORT, CZECH REPUBLIC

The Vaclav Havel airport in Prague is the most important airport for business aviation in the Czech Republic and eastern Europe, with more than 13,000 business aviation flights departing from and arriving at the airport in 2023. This represents more than 65% of all business aviation flight movements from airports in Czech Republic and 10% in Eastern Europe.[83]

This airport makes a substantial contribution to economic activity and employment. Currently, a total of around 2,700 people are employed directly in airport operations while 14,000 are employed indirectly by companies active at the airport and companies linked to the airport's operations.[84] This includes operators such as ABS jets—a business aviation company headquartered in Prague and Bratislava, currently employing more than 300 highly skilled professionals.[85]

The presence of well-established business aviation operators in the airport allows users of business aircrafts to connect to over 700 international destinations that would otherwise be inaccessible by non-stop commercial flights. Of these destinations, over 50% are located outside Europe.[86]

Aside from increased connectivity benefits, business travellers at Vaclav Havel airport benefit from increased comfort and time savings. According to ABS Jets CEO, Jan Kralik, business flights departing from Prague fly to airports located close to city centres that are less congested, reducing the time required to commute to and from the place of business. The flexibility offered by business aviation allows executives flying from Prague to tailor flights to their schedule and limit unnecessary costs such as overnight accommodation. Moreover, executives are able to leverage the privacy of business jets to conduct meetings with colleagues or work productively without the disruptions associated with commercial travel.[87]

According to industry experts, Prague is a favoured city for flight crew and passengers alike due to its central location in Europe, the scenery, and the city's overall safety.

[83] Analysis of data provided by EBAA.
[84] Prague Airport, "About the Company", accessed July 2024
[85] Interview by Jan Kralik, CEO of ABS Jets, July 2024
[86] Analysis of data provided by EBAA.
[87] Interview by Jan Kralik, CEO of ABS Jets, July 2024

3.2 RESTRICTING EUROPEAN COMPETITIVENESS

This section discusses the impact of the policy scenarios on European competitiveness, focusing on the interplay between connectivity and foreign investment.

It explains how reduced foreign investment can have wider economic implications in the form of lower economic activity, employment, and innovation. Furthermore, it provides qualitative evidence on the impact of restrictions on European aircraft manufacturers and on regional economies.

Jan Kralik, CEO of ABS Jets says:

"Business aviation plays a vital role in linking central Europe to global markets, particularly through long-haul flights and accessible facilities."

3.2.1 The link between connectivity and investment

Aviation networks provide several benefits but the degree to which they connect a country with the rest of the world economy is among the most important and well-documented ones.

Increased aviation connectivity, and particularly business aviation, potentially influences FDI by facilitating easier access to markets, enhancing business opportunities, and reducing transport costs for investors. Enhanced connectivity allows for more efficient business travel and communication, fostering stronger economic ties between countries and regions. This increased accessibility can attract foreign investors seeking to establish or expand their operations in areas with improved aviation infrastructure, ultimately driving FDI inflows.

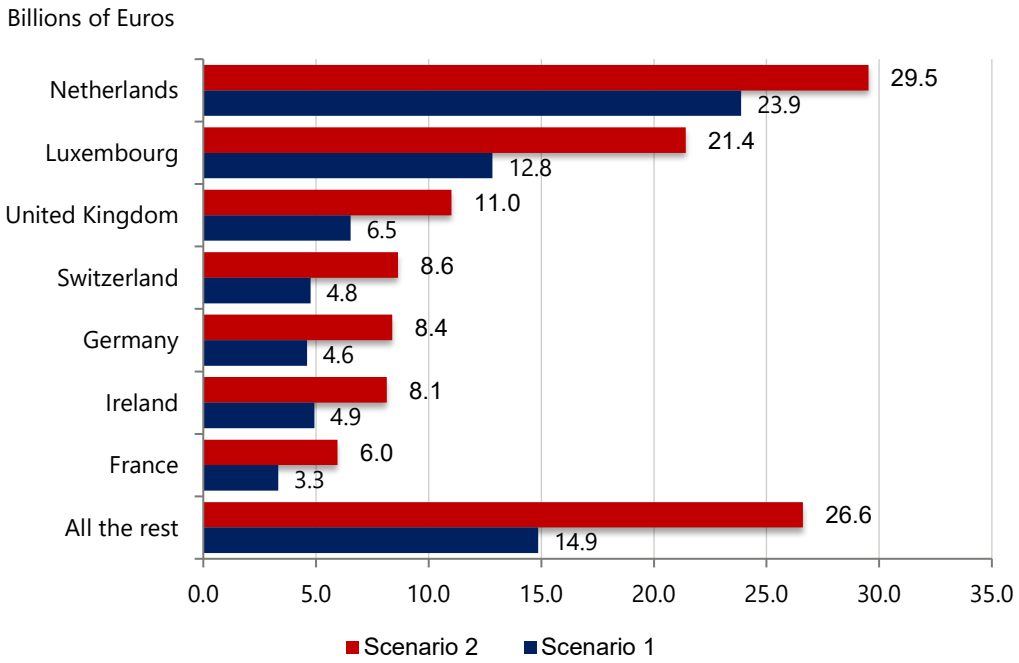
Under the two policy scenarios considered, flight restrictions will limit business aviation connectivity in Europe. As a result, we found that Europe will likely become less attractive as a destination for foreign investment, with a reduction of between €76 billion and €120 billion compared to the baseline by 2030, making it less competitive globally.[88] This might hinder Europe's ability to attract investment from a diverse set of international partners and adversely affect the development of international alliances to accelerate activities in areas where Europe is heavily foreign-dependent. Industry experts described several instances where business aviation customers leveraged the sector's flexibility and reach to pursue urgent investment opportunities in other countries.

€120 bn

Reduction in FDI in Europe compared to a no restriction scenario by 2030.

[88] This estimate covers the EU27, Norway, Serbia, Switzerland, United Kingdom, North Macedonia, Albania, and Turkey.

Fig. 3. Reduction in FDI compared to a no restriction scenario by 2030[89]



Source: Eurostat, Oxford Economics

The estimated FDI reduction is higher in the Netherlands, Luxembourg, and the UK, where the stock of FDI inflows is high and the impact on connectivity is larger. The link between business aviation connectivity for FDI is stronger in countries that are less connected by commercial aviation networks. That is partly reflected in the lower levels of FDI impact observed in France and Germany which are well connected by commercial aviation. In all cases, scenario 1 leads to a lower estimated reduction in FDI compares to scenario 2 given the severity of the restrictions in the latter.

WHY FDI IS IMPORTANT

FDI is defined as cross-border investment where an investor resident in one country establishes ownership of 10% or more of voting power in a business residing in another country. The European Commission recognises FDI as a driver of competitiveness and economic development.[90] As part of the economy's wider investment stock, FDI supports economic growth and employment. In addition to supporting economic development, FDI is a conduit for technology transfer between countries and can promote lasting international trade links. From investors' perspective, economies that are stable, accessible, and competitive are perceived as less risky and can present an attractive investment option.

[89] Estimates include the EU27, Norway, Serbia, Switzerland, North Macedonia, Albania, Turkey and the UK.
[90] European Commission, Foreign Direct Investments (FDI), accessed September 2024

METHODOLOGY OVERVIEW

Measuring air connectivity

Air connectivity can be defined as the extent to which an aviation network connects a country with the rest of the world. In this study, we measure business aviation connectivity with an Air Connectivity Index which aims to quantify how easy it is for passengers to reach other economic centres from a particular airport, city, or country. Our approach is based on World Bank methodology, which is described in more detail in the methodological appendix. The method is grounded in network analysis and gravity modelling that are frequently used in international trade studies. The approach accounts for the hub-and-spoke nature of global air transport beyond just aggregating the number of flights. The measure of air connectivity is global, and therefore captures the relationship between all network nodes, even when there is no direct flight between them. Furthermore, the model incorporates GDP, which accounts for changes in connectivity due to changes in the economic strength of the destination/origin. Within our Air Connectivity Index, countries score highly when they are connected to other highly connected or economically larger countries. Therefore, other countries with the same number of flights but connected to less connected or economically smaller countries will record lower scores.

Estimating air connectivity's impact on foreign direct investment (FDI)

We used the results from the connectivity analysis to estimate an econometric model which aimed to explain the impact of business aviation connectivity on FDI.

We used project level FDI data from Bureau van Dyk (BVD) and macroeconomic data that influence the decision to undertake FDI investment and applied econometric modelling to estimate a gravity model of FDI to assess the impact of a decrease in business aviation connectivity.

A gravity model uses the historic path of bilateral FDI flows to assess the influence of different factors in promoting or constraining investment between nations. As such, it can provide an evidence base to assess the influence of business aviation connectivity on FDI flows between countries. The concept of gravity models resembles Newton's law of gravity whereby FDI are directly proportional to mass represented by GDP of two countries and inversely proportional to the distance between them. This suggests that we can expect country pairs with larger GDP to engage more in FDI, but countries that are further apart to have less FDI.

After constructing our preferred model, we combined our estimate for the magnitude of the relationship between FDI and business aviation connectivity with the shock to connectivity from the two hypothetical scenarios introduced earlier. This provided the reduction in FDI attractiveness from a reduction in business aviation connectivity.

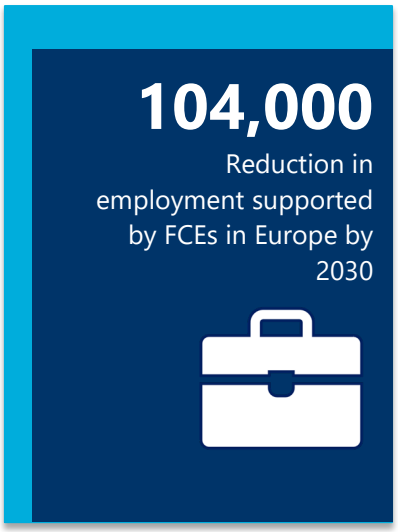
Our results show that both commercial and business connectivity have a significant positive effect on FDI. The impact of business aviation connectivity on FDI depends on the existing scale of the commercial connectivity index. Simply put, a higher volume of business flights

would have a greater impact in areas with fewer commercial flights than in areas with many commercial flights. The ultimate impact of business aviation restrictions on FDI will therefore depend on:

- **The influence that restrictions have on business aviation connectivity**. Restrictions on short-haul flights, for instance, will have a stronger impact on countries that are close to wealthy and well-connected countries.
- **The availability of commercial aviation alternatives**. We found that the relationship between business aviation connectivity and FDI is weaker where there exist strong commercial aviation networks.

3.2.2 Wider economic implications

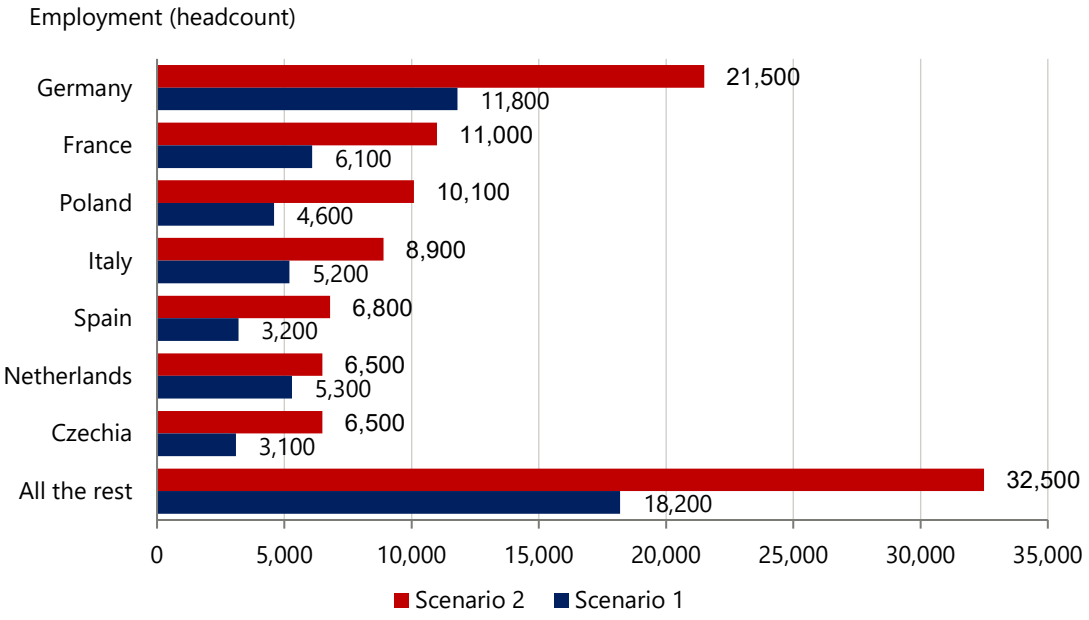
Inward FDI has a substantial economic footprint in Europe which is measured by the economic activity of foreign-controlled entities (FCEs). As described, policy restrictions limiting connectivity would make Europe a less attractive FDI destination resulting in lower levels of inward FDI and, therefore, decreased economic activity by FCEs.



Overall, we estimate that the measures under the policy scenarios would reduce the employment supported by FCEs in Europe by 57,000 to 104,000 by 2030.[91] We anticipate that this impact would be mostly felt in Germany, France, and Poland. The impact is mostly felt in countries where employment supported by FCEs is higher. As a result, Netherlands and Luxembourg, where the highest FDI impact is anticipated, will not be as strongly affected in terms of employment. This is due to relatively lower levels of employment supported per euro of FDI compared to countries like Germany and France.

[91] This estimate covers the EU27.

Fig. 4. Reduction in employment supported by FCEs in the EU27 by 2030



Source: Eurostat, Oxford Economics

Projects requiring **FDI facilitate technological diffusion between countries** helping them overcome their boundaries as they benefit from the exchange of expertise and know-how. Empirical evidence from EU27 countries indicates that higher **FDI flows are associated with increased R&D spending**. Therefore, FDI reductions expected under the policy scenarios would be expected to restrict Europe's ability to **finance research and innovation.**[92] Research and innovation is a high priority for EU's industrial policy as identified in the Letta report: "It is crucial that we fully tap the potential of our research and development strengths and maximise the opportunities offered by the Single Market."[93]

The wider economic implications from policy restrictions that limit business aviation connectivity have been highlighted by industry experts as well as publications in the topic. In a survey of businesses that use business aviation in Massachusetts, 19% of the participating businesses reported that they would **relocate if their base airport were not available for use**, while 7% responded that they would **go out of business**.[94] The UK's Civil Aviation Authority argues that the supply of private transport can attract high value businesses and individuals to certain locations within the UK. If these services were not available, overall inward investment could be lower and there could be a more limited pool of available opportunities for existing businesses.[95] In a case study on the role of business aviation in the

[92] Based on empirical findings in Ivana Jancjic et al, "The influence of Foreign Direct Investment on Research and Development in EU countries".
[93] Enrico Letta, "Much more than a market: Empowering the Single Market to deliver a sustainable future and prosperity for all EU citizens", accessed September 2024
[94] Glen Weisbrod, "Economic Impacts of Improving General Aviation Airports", 1990
[95] UK Civil Aviation Authority, "Strategic Review of General Aviation in UK", July 2006, accessed June 2024

regional economy, airport representatives attributed the success of Canary Wharf to the presence of London City, where 15% of all departures are business aviation flights.[96]

At the same time, several experts in the business aviation industry have highlighted risks that could significantly hinder the growth opportunities of many businesses. Companies rely on business jets to set up new plants or production sites, transport materials, and facilitate employee travel for knowledge sharing. **Without access to nearby airports, businesses could struggle to grow beyond their headquarters.**

MILAN LINATE AIRPORT, ITALY

Milan is a hub for businesses and of substantial activity in the fashion and design industries. It is currently serviced by three airports, with the Linate airport being the closest airport to the centre of Milan.

The Linate airport is Italy's most important airport for business aviation with more than 25,000 business aviation flights departing from and arriving at the airport in 2023, equivalent to more than 16% of all business aviation departures and arrivals from airports in Italy.[97] In comparison, around 7,000 business aviation flights moved through Malpensa airport, the second most important business aviation airport in Milan.

Due to its central location, Linate airport facilitates seamless access to Milan for business and leisure travellers alike. It can cater to the increased demand by business travellers caused by the presence of Italy's stock exchange, Borsa Italiana, which is one of Europe's primary stock exchanges.

At the same time, it provides an alternative and more efficient travel option during busy periods like the Milan Fashion Week, a popular regular fashion event attracting businesses and consumers. In September 2023, the event attracted expenditure of €80 million with suppliers such as venues, hotels, catering companies, and restaurants.[98]

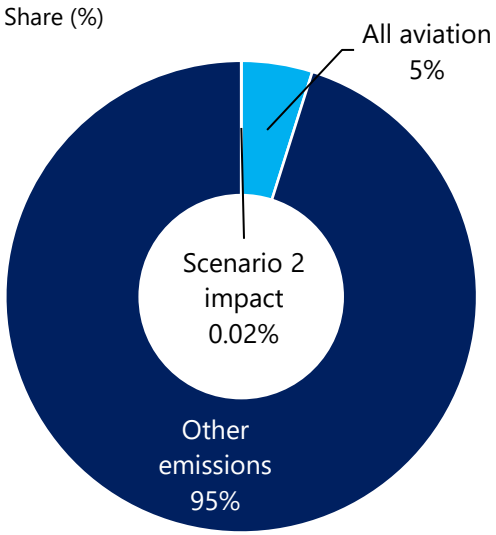
Linate Airport enables connections to over 800 destinations that would otherwise be inaccessible by non-stop commercial flights. Of these destinations, over 95% are international with 45% being outside Europe.[99]

[96] PwC Economics Macro Consulting, "The economic impact of business aviation in Europe" (unpublished), 2008, accessed June 2024
[97] Analysis of data provided by EBAA.
[98] The Milan City Journal, "The Economic Impact of Milan Fashion Week", January 2024, accessed June 2024
[99] Analysis of data provided by EBAA.

3.3 ENVIRONMENTAL BENEFITS

The economic impacts should be balanced against environmental benefits. Our analysis suggests that the policy scenarios could reduce business aviation emissions by 32% and 61% per year, respectively.[100] This represents 0.3% to 0.5%[101] of aviation emissions and 0.01% to 0.02%[102] of total CO_2 emissions in the EU27 in 2023. In addition, we find that under the two scenarios emissions in the EU27 will fall by 300,000 to 600,000 $mtCO_2$ annually.[103]

Fig. 5. The environmental impact of restrictions on business aviation



Source: Oxford Economics

These estimates **do not account for the response of business aviation users who could seek alternative means of transportation contributing to emissions in other sectors** or for the potential displacement of business aviation traffic to other regions with less restrictive policy on the sector. Moreover, sector emissions will be influenced by the uptake of SAF by business aviation flights. Our analysis has not modelled SAF uptake and has assumed it will remain constant at current levels. These factors suggest actual emissions reductions from the restrictions would likely be lower than our estimates.

With evidence suggesting that SAF usage in business aviation could result in emissions reduction of up to 80%, the level of SAF uptake can play an important role in reducing the sector's environmental footprint.[104,105] While supply restrictions are limiting the realisation of SAFs' full emissions reduction

[100] This estimate covers the EU27. Data provided by EBAA.
[101] Data on CO_2 emissions from business aviation by EBAA were compared with CO_2 emissions from total aviation available from Eurocontrol Aviation Sustainability Unit on a country level for 2023.
[102] EBAA, Oxford Economics forecasts and European Commission, "EDGAR - Emissions Database for Global Atmospheric Research", accessed July 2024.
[103] This estimate assumes that the volume of business aviation flights does not grow over the next years and does not account for technological improvements that could reduce CO_2 emissions in business aviation flights.
[104] IATA, "Net zero 2050: sustainable aviation fuels", accessed August 2024
[105] RefuelEU mandates a 70% share of SAF in all EU airports from 2050.

potential, the proposed SAF plan by EBAA and GAMA would be expected to reduce CO_2 emissions from business aviation, with current SAF technologies, by 16% by 2030 and up to 80% by 2050, by which time SAF would be fully adopted. To achieve full adoption, the current difficulties faced due to the lack of available SAF, especially in non-EU airports which are frequently used by business aviation would have to be addressed.

4. CONCLUSION

Reducing CO_2 emissions is a clear European policy imperative. Nevertheless, policy design that disregards economic consequences risks generating sub-optimal trade-offs. This is particularly true for sectors, like business aviation, where evidence gaps prevent a balanced assessment of environmental benefits versus economic costs.

Overall, the measures under the two policy scenarios assessed in our analysis would reduce connectivity in Europe thereby making the region less attractive for Foreign Direct Investment. This would be driven by a 45% reduction in the volume of business aviation flights under Scenario 1 and a 70% reduction under Scenario 2 for flights departing from or arriving at European airports.

Our modelling indicates that, if Scenario 2 (most severe restrictions) had been implemented in 2023, the resulting **loss of FDI would be worth €120 billion by 2030**. Based on average trends, we estimate this lost FDI would have led to the **loss of 104,000 direct jobs in the EU27**. The impact on employment would be mostly felt in Germany and France reflecting high levels of employment supported per euro of FDI.

The environmental impact analysis found that the policy scenarios could reduce business aviation emissions by as much as 61% per year. However, **policies that support the ramping-up of sustainable aviation fuel** production and rollout across the EU have the **potential to reduce CO_2 emissions by up to 80%** without reducing the volume of business aviation flights and affecting European connectivity.

To put the balance between the economic and environmental impact in context, the direct jobs lost constitute 0.05% of forecast employment in the EU27 while the CO_2 emission reduction represents an expected 0.02% reduction of total forecast EU27 CO_2 emissions in 2030.

This estimate of foregone employment only accounts for individuals who would be directly employed by the Foreign Controlled Entities. Restricting the sector's activity would have additional economic implications that we have not modelled in the form of a reduced economic footprint for business aviation operators and their supply chains. For context, 2022 estimates suggest this **could affect 94,000 existing workers directly employed by the business aviation industry and its €44 billion GDP contribution**. The sector's supply chain could encompass European aircraft manufacturers whose domestic customers will be facing a restrictive landscape likely to reduce their demand for purchasing new aircraft and maintenance services. By 2022 estimates, this could **affect an additional 355,000 jobs and a €56 billion GDP contribution supported by the sector's supply chain and workers' spending**.

The size of the business aviation sector implies that the scale of these benefits/costs are, from a macroeconomic perspective, relatively minor. In general, green technological solutions which can reduce the carbon intensity of existing economic activities are a means to ameliorate such trade-offs. Notably, in this context, using sustainable aviation fuels in business aviation has the potential to reduce CO_2 emissions per flight by up to 80%.

Alongside environmental benefits, ramping up sustainable aviation fuel production will require a combination of effective R&D and industrial policies that can yield additional competitiveness benefits for Europe. The lack of specialisation on novel technologies, like SAF, was identified as a problem sustaining the innovation gap between the EU27 and the US or China in the Draghi report for the European Commission. To bridge this gap, the report highlights that decarbonisation plans should be "matched by leadership on the technologies that will supply it". [106] It also added that "the EU needs to start building a supply chain for alternative fuels, or the costs of meeting its [decarbonisation] targets will be significant". [107]

The table below compares the potential impacts of the policy scenarios involving restrictions in business aviation flights against predicted effects in a hypothetical case where reductions in CO_2 emissions are achieved through increased SAF production and uptake.

Fig. 6. Comparison of policy scenario impacts

	Policy scenarios restricting business aviation volumes	Hypothetical scenario where SAF production and uptake are ramped-up
Economic impacts	- Reduction in connectivity - Reduction in FDI of **up to €120bn by 2030** - **Reduction in employment supported by FCEs of up to 104,000 in 2030** - Reduced economic footprint for business aviation and its supply chain, including aircraft manufacturers - **Reduction in R&D spending**	+ Potential for job creation to support the emerging SAF industry + Potential boost to regional R&D expenditure and innovation in support of SAF research + No detrimental impact on connectivity, FDI or FCE footprint
Environmental impacts	+ Reduction in business aviation CO_2 emissions between 32% and 61% by 2030 due to reduced volume of flights - **This reduction is equivalent to only 0.01% to 0.02% of total CO_2 emissions in the EU27**	+ Reduction of CO_2 emissions by business by up to 80% without reducing the volume of flights

[106] Mario Draghi, "EU competitiveness: Looking ahead", accessed September 2024
[107] Mario Draghi, "EU competitiveness: Looking ahead", accessed September 2024

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