

Private jets Hamburg Airport

Flight activity, destinations and
climate impacts



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Summary

This study examines private jet activity at Hamburg Airport between 2023 and 2025, focusing on the number of flights, their destinations, the estimated climate impact and periods of particularly high activity. The analysis is based on flight-level ADS-B data from PrivateJets Tracker.

Around 7,000 private jet flights take place at Hamburg Airport each year. Between 2023 and 2025, 20,949 private jet flights departed from or arrived at Hamburg Airport, equivalent to approximately 7,000 flights per year. Activity remained relatively stable over this period. Over the three-year period, these flights generated approximately 67,200 tonnes of direct CO₂ emissions from fuel combustion and 13,700 tonnes of CO₂ emissions from fuel production and supply. Applying the GWP100-based approximation results in an additional estimated 47,000 tCO₂-e from non-CO₂ climate effects. The combined climate impact of these flights is therefore estimated at approximately 128,000 tCO₂-e between 2023 and 2025.

An average private jet flight has a climate impact equivalent to eight months of an average EU citizen's greenhouse-gas footprint. To put the climate impact into perspective, the estimated CO₂ emissions from private jet flights to and from Hamburg in 2025 were comparable to the annual greenhouse-gas footprint of around 4,500 average EU citizens. The climate impact of departing private jet flights in 2025 alone was equivalent to roughly 370,000 one-way car journeys between Hamburg and Berlin, based on an average passenger car. An average private jet flight in 2025 had an estimated climate impact of around 6 ton CO₂-equivalenten (tCO₂-e), equivalent to about eight months of the average annual EU greenhouse gas footprint per person.

Private jet flights from Hamburg serve a wide range of destinations. Palma de Mallorca and Sylt were the most common destinations from Hamburg over the three-year period, followed by Munich, Berlin Brandenburg, Zurich, Cologne/Bonn and Düsseldorf. Nevertheless, traffic was relatively dispersed: the ten most common destinations accounted for only around 29–30% of departures in each year. The busiest individual days recorded between 43 and 46 private jet movements. Eight of the nine identified peak days occurred between March and June. Traffic on these days was generally distributed across many destinations rather than concentrated on a single route.

1 Introduction

Private aviation has significantly higher emissions per passenger kilometre than other modes of transport. According to Transport and Environment, business jets are 5 to 14 times more polluting per passenger than commercial flights, and 50 times more polluting than trains (T&E, 2021). Some private jets emit two tonnes of CO₂ per hour (T&E, 2021), while the average greenhouse-gas footprint in the EU was 9.0 tonnes of CO₂ equivalent per person in 2023 (Eurostat, 2026).

Previous research identified Hamburg as an important German airport for private aviation. Hamburg recorded the highest number of departing private flights in Germany in 2020 and ranked third in 2021 and 2022 (CE Delft, 2023).

The aim of this report is to provide a detailed overview of private aviation and its emissions in Hamburg, Germany, for the years 2023, 2024 and 2025. The report presents the number of flights, the associated climate impacts and their most common destinations.

Text box 1 – Definition of private jets in this study

What flights were included in our analysis?

In this study, we refer to the flights analysed as 'private jet' emissions from Hamburg Airport. Private flights are flights that do not offer tickets to passengers. In practice, this can be any type of aircraft, as long as the aircraft is used for this purpose. In this study we specifically analysed the climate impact of private flights by *business jets*, using the definitions of the PrivateJets Tracker. Since in practice, sometimes private flights are also made with aircraft types that are not classified as business jets, the number of flights analysed in this study is a narrow definition of private aviation.

1.1 Objective and research questions

The objective of this study is to provide insight into the scale, destinations and climate impacts of private aviation at Hamburg Airport. The report will focus on the following research questions:

1. How many private flights departed from or arrived at Hamburg Airport in 2023, 2024 and 2025, and how does this compare with other German airports?
2. What were the CO₂ emissions of these flights and their estimated total climate impacts, including non-CO₂ effects?

3. What were the most common destinations?
4. On which days did the largest peaks in private aviation activity occur, and what were the most common destinations on those days?

1.2 Methodology and scope

The study covers flights departing from and arriving at Hamburg Airport between 1 January 2023 and 31 December 2025. Flight volumes are reported separately for departures and arrivals where relevant.

The analysis covers flight activity, destinations and estimated climate impacts. Up to three peak days are identified for each year.

Public flight-tracking ADS-B data¹ from the PrivateJets Tracker platform, built by Institute for Policy Studies and the Tax Private Jets project² was used to identify private flights departing from and arriving at Hamburg Airport, including aircraft type, origin, destination and flight distance. PrivateJets Tracker was selected following a comparison with Flightradar24 data for 2023–2025. It contained more flight records for every year, flight direction and aircraft category examined. Checks of aircraft registrations indicate that these differences mainly reflect broader flight coverage rather than differences in aircraft classification. A comparison is presented in Appendix A.

We calculated CO₂ emissions making use of their combined calculation method, which uses the Eurocontrol Small Emitters Tool (SET) to estimate CO₂ emissions for aircraft that are in the database and the Travel Impact Model as a fallback option for aircraft that are not covered by the Small Emitters Tool (Eurocontrol, Ongoing; Google, 2026).

Non-CO₂ effects are an important component of aviation's overall climate impact. These include impacts from nitrogen oxides, soot particles, sulphur species and water vapour, as well as contrail formation under certain atmospheric conditions. We estimated the non-CO₂ climate effects using a multiplication factor of 0,7 compared to the CO₂ emissions, based on the GWP100 metric (Lee et al., 2021). In practice, the non-CO₂ climate impacts are strongly flight-dependent and vary with altitude, latitude, time of day and local atmospheric conditions. We note that this estimate, based on a factor 0.7 using GWP100, is representative of total global air traffic in 2018 and not specifically for flights to and from Hamburg Airport or private aviation. Since private aviation has a different flight profile compared to commercial aviation, it is not evident that this estimate is appropriate. However, due to a lack of specific studies related to the non-CO₂ impact of private

¹ The PrivateJets Tracker made its flight-level data available to CE Delft for the purposes of this study. The data is derived from ADS-B Exchange.

² www.taxprivatejets.org

aviation, it was not possible to use a more tailored approach. We briefly summarise the available literature on non-CO₂ climate impacts of private aviation in Text box 2.

Text box 2 – Literature on non-CO₂ climate effects of private aviation

What do we know about non-CO₂ climate effects of private aviation?

The literature on the non-CO₂ climate effects of private aviation is limited. In particular, we have not identified a peer-reviewed study that provides an overall CO₂-equivalent estimate, or a GWP100-based multiplication factor, specifically for private aviation. Available studies do, however, provide some evidence that characteristics of private aviation operations may affect individual non-CO₂ effects.

For contrails, Gryspeerdt et al. (2024) matched air-traffic data with satellite observations for more than 64,000 contrail cases. In their study, business jets operated at higher altitudes than the commercial-aircraft categories considered and were associated with longer-lived satellite-detectable contrails, despite their lower fuel flow. The authors found that differences in flight altitude were an important explanation for differences in observed contrail lifetimes. Separately, Gössling et al. (2024) estimated that, in their global dataset of private aircraft, 45% of flight time occurred above 30,000 ft and 21% above 40,000 ft. This demonstrates that a substantial share of private-aviation activity takes place at high cruise altitudes, although these figures do not by themselves establish that private or business aircraft generally fly higher than commercial aircraft.

These findings should not be interpreted as evidence that the total non-CO₂ climate impact per unit of CO₂ is necessarily higher for business aviation. Contrail formation and climate impact depend strongly on the atmospheric conditions encountered by an individual flight, while other non-CO₂ effects, including those associated with NO_x emissions, follow different physical and chemical mechanisms. Furthermore, business aviation includes a heterogeneous range of aircraft types and flight profiles. The available studies therefore do not provide a sufficient basis for deriving a business-aviation-specific GWP100 factor.

Consequently, the factor of 0.7 used in this study, derived from estimates for global aviation, should be considered an indicative approximation when applied to business aviation. It accounts for non-CO₂ effects at an aggregate level but does not capture differences in aircraft type, flight profile, route, altitude or meteorological conditions. The resulting estimate of the non-CO₂ impact should therefore be interpreted with corresponding uncertainty.

2 Private aviation in Hamburg

2.1 Private aviation in 2023, 2024 and 2025

Hamburg Airport handled between approximately 6,700 and 7,200 business jet flights per year, with 20,949 flights recorded over the three-year period. Annual activity remained broadly stable, although the total decreased by 7.6%, from 7,212 flights in 2023 to 6,667 in 2025, as is clear from Table 1.

Table 1 – Number of private flights departing from and arriving at Hamburg in 2023, 2024 and 2025

Year	2023	2024	2025	Total
Number of private flights departing from Hamburg Airport	3,647	3,557	3,346	10,550
Number of private flights arriving at Hamburg Airport	3,565	3,513	3,321	10,399
Total number of private flights	7,212	7,070	6,667	20,949

Based on previous research, we know that Hamburg Airport is consistently in the top 3 German airports when it comes to private aviation departures and arrivals (CE Delft, 2023).

2.2 Climate impacts

Private flights departing from and arriving at Hamburg Airport generated about 67,000 tonnes of direct CO₂-equivalent emissions between 2023 and 2025. These direct emissions result from fuel combustion during flight and are referred to as tank-to-wing emissions. Producing and supplying the fuel generated an additional 13,742 tCO₂e, known as well-to-tank emissions. Together, these components constitute well-to-wing emissions, which totalled approximately 81,000 tCO₂e over the three-year period (Table 2). Tank-to-wing emissions accounted for approximately 83% of this total, while well-to-tank emissions accounted for 17%.

Table 2 – CO₂ emissions from private flights in Hamburg in 2023, 2024 and 2025

Year	2023	2024	2025	Total
tCO₂e (well-to-wing)				
Private flights departing from Hamburg Airport	13,878	13,907	12,660	40,445
Private flights arriving at Hamburg Airport	13,844	13,796	12,848	40,488
Total CO₂ emissions from private flights	27,722	27,703	25,508	80,934
tCO₂e (tank-to-wing)				
Private flights departing from Hamburg Airport	11,521	11,546	10,511	33,578
Private flights arriving at Hamburg Airport	11,493	11,454	10,667	33,614
Total CO₂ emissions from private flights	23,014	22,999	21,178	67,192
tCO₂e (well-to-tank)				
Private flights departing from Hamburg Airport	2,356	2,362	2,149	6,868
Private flights arriving at Hamburg Airport	2,351	2,342	2,181	6,875
Total CO₂ emissions from private flights	4,707	4,704	4,331	13,742

The estimate of non-CO₂ climate impacts is relatively uncertain, as was described in Text box 2. With the assumption that non-CO₂ climate impacts represent on average 0.7 times the tank-to-wing CO₂ climate impacts, private flights departing from and arriving at Hamburg Airport had an estimated non-CO₂ climate impact of about 47,000 tCO₂e between 2023 and 2025.

Table 3 – Non-CO₂ climate impacts from private aviation in 2023, 2024 and 2025

Year	2023	2024	2025	Total
Non-CO ₂ emissions from private jets departing from Hamburg Airport (tCO ₂ e)	8,065	8,082	7,358	23,505
Non-CO ₂ emissions from private jets arriving at Hamburg Airport (tCO ₂ e)	8,045	8,018	7,467	23,530
Total non-CO₂ emissions (tCO₂e)	16,110	16,100	14,824	47,034

Combining well-to-wing CO₂ emissions and non-CO₂ effects, the estimated climate impact of private flights to and from Hamburg Airport was about 128,000 tCO₂e between 2023 and 2025 (Table 4). Non-CO₂ effects accounted for approximately 37% of this total.

Table 4 – Total climate impact from private aviation in 2023, 2024, and 2025

Year	2023	2024	2025	Total
Total climate impact from private jets departing from Hamburg Airport (tonnes CO ₂ e)	21,942	21,989	20,018	63,950
Total climate impact from private jets arriving at Hamburg Airport (tonnes CO ₂ e)	21,890	21,814	20,315	64,018
Total climate impact (tonnes CO₂e)	43,832	43,803	40,333	127,968

Text box 3 – The climate impact of private aviation in perspective

Based on CE Delft's STREAM emission factor for an average passenger car, a one-way journey of approximately 285 km from Hamburg to Berlin generates around 54 kg CO₂e (CE Delft, 2026). The total emissions from private flights departing Hamburg Airport in 2025 were therefore equivalent to approximately 370,000 such journeys. This corresponds to roughly 3,000 departing private jets, which illustrates that private jet travel has a much higher climate impact compared to car travel.

Another comparison that can be made is with the average greenhouse-gas footprint in the EU, which was 9.0 tonnes of CO₂ equivalent per person in 2023 (Eurostat, 2026). The departing and arriving private flights in 2025 were equivalent to the total climate impact of about 4,481 average Europeans that year.

The climate impact of an average private flight in 2025 was about 6 tonnes of CO₂-e. This is equal to the CO₂ emission of an average person for a duration of 8 months. A private flight causes this amount of total (CO₂ and non-CO₂) climate impact in only a couple of hours.

2.3 Most common destinations

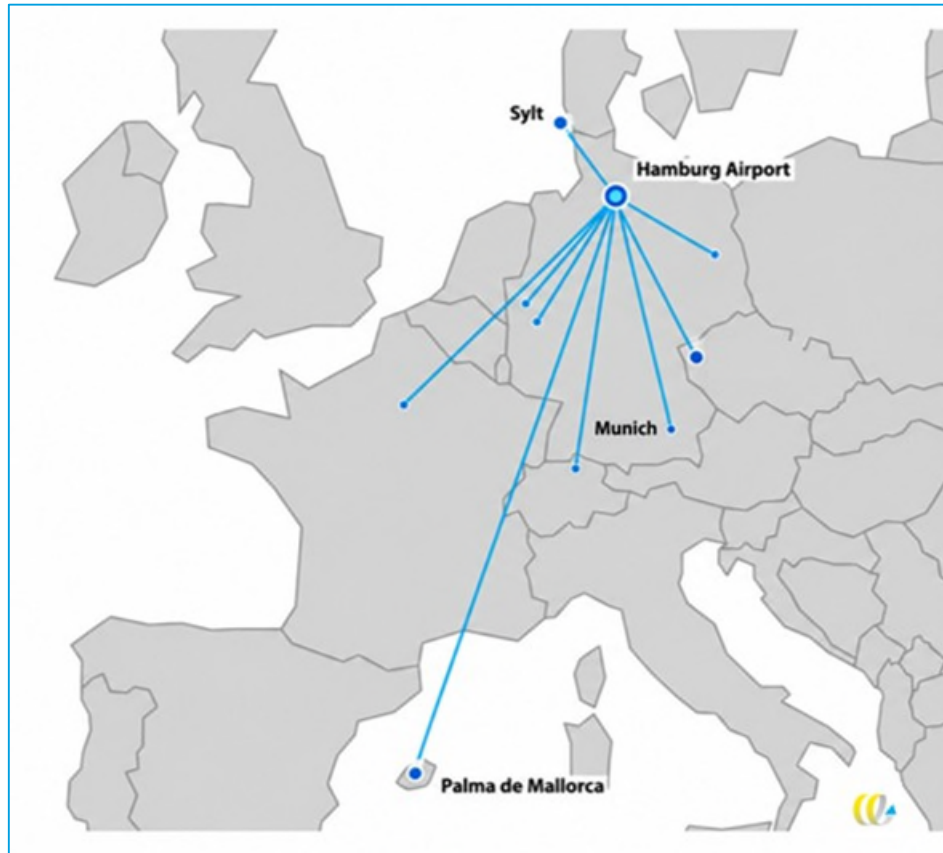
This section presents the most common destinations and origins for private flights departing from and arriving at Hamburg Airport between 2023 and 2025.

Palma de Mallorca and Sylt were the two most common connections throughout the study period (Figure 1). The annual number of flights in each direction ranged from 136 to 177 for Palma de Mallorca and from 139 to 161 for Sylt.

Other recurring domestic connections included Munich, Düsseldorf, Berlin Brandenburg and Cologne/Bonn. Zurich and Paris-Le Bourget were also common international connections, while Salzburg ranked among the ten most common connections in 2024 and 2025.

The ten most common destinations accounted for around 29 to 30% of departures each year. Arrivals showed a similar pattern, indicating that the remaining flights were distributed across a relatively large number of airports.

Figure 1 – Most common private jet routes to and from Hamburg



Source: CE Delft.

Table 5 – Most common destinations for private jets departing from Hamburg in 2023 to 2025

Location	Number of flights
Palma de Mallorca, Spain	448
Sylt, Germany	441
Munich, Germany	333
Berlin Brandenburg, Germany	308
Zurich, Switzerland	305
Cologne/Bonn, Germany	297
Düsseldorf, Germany	294
Paris-Le Bourget, France	227
Salzburg, Austria	222
Nuremberg Airport	213

2.4 Peak events

2.4.1 Peak days in private aviation

This section identifies the busiest days for private aviation and describes broader monthly and weekly patterns between 2023 and 2025. Figure 2, Figure 3 and Figure 4 show the daily number of private flights in each year, while Table 7 presents the three busiest days per year and the breakdown between arrivals and departures.

The busiest day in 2023 was 22 May, with 45 movements. In 2024, the peak occurred on 7 May, with 46 movements, while the busiest day in 2025 was 27 November, with 43 movements (Table 7). Arrivals and departures were generally evenly balanced on these peak days.

Eight of the nine peak days occurred between March and June. May and June recorded the highest average daily activity in 2023, while June and September were the busiest months in both 2024 and 2025 (Figure 2, Figure 3 and Figure 4).

Wednesdays and Thursdays were consistently the busiest days of the week, with daily averages ranging from around 22 to 24 movements. Saturdays were the quietest, with daily averages ranging from around 12 to 15 movements.

Figure 2 – Timeline of private flights per day in 2023

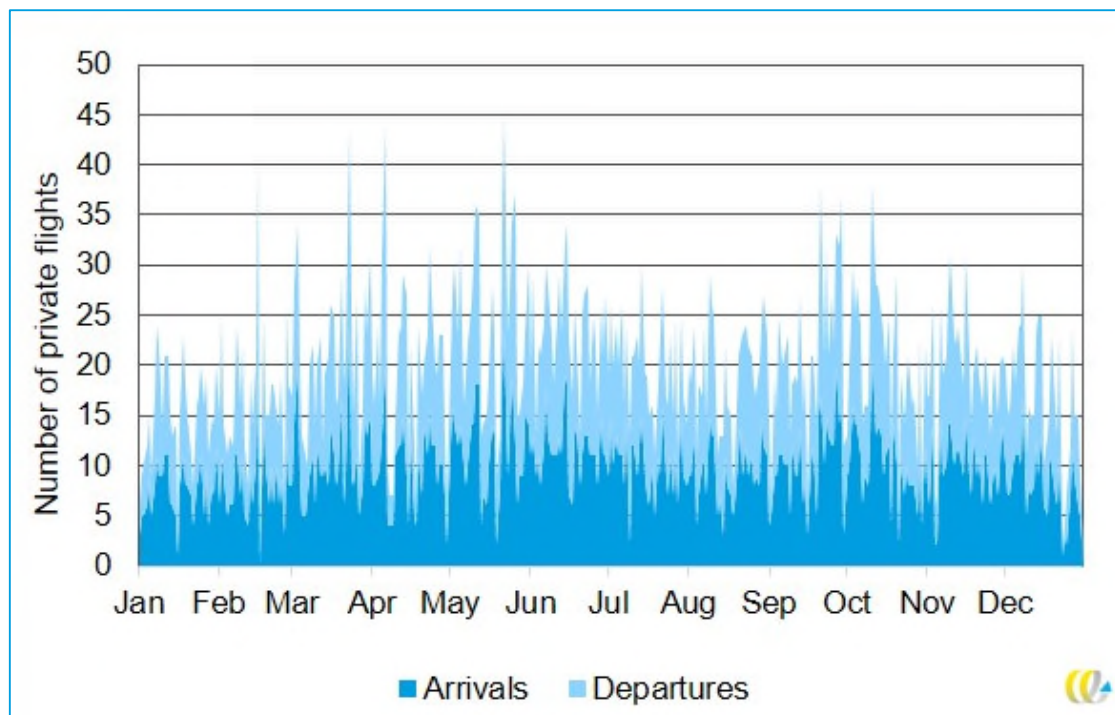


Figure 3 – Timeline of private flights per day in 2024

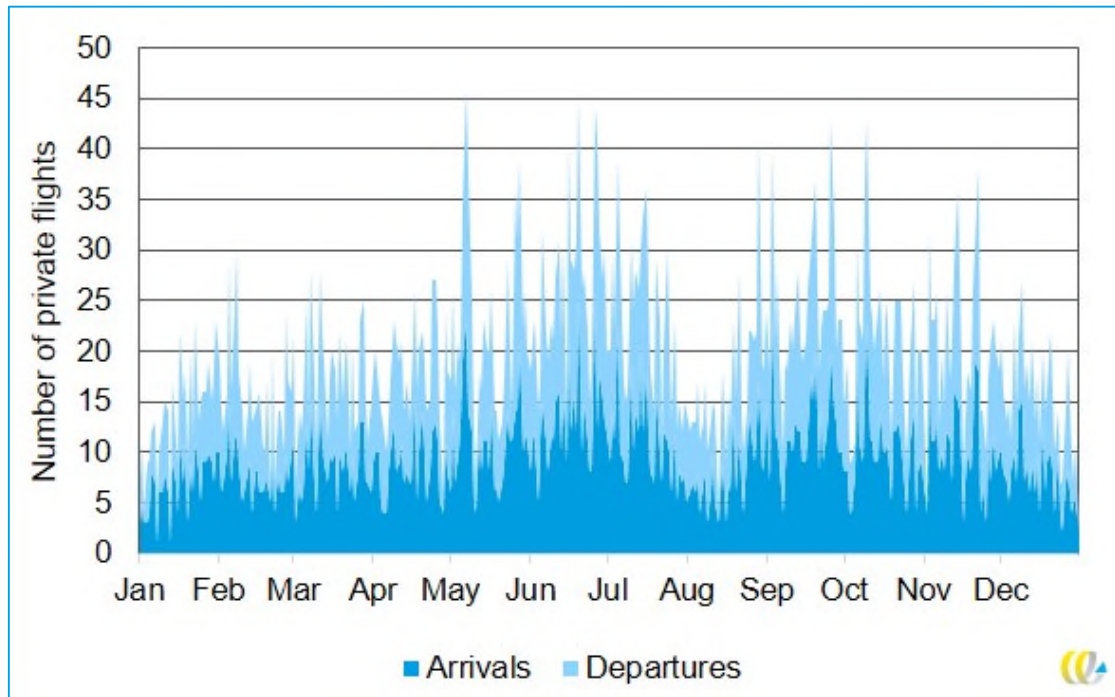


Figure 4 – Timeline of private flights per day 2025

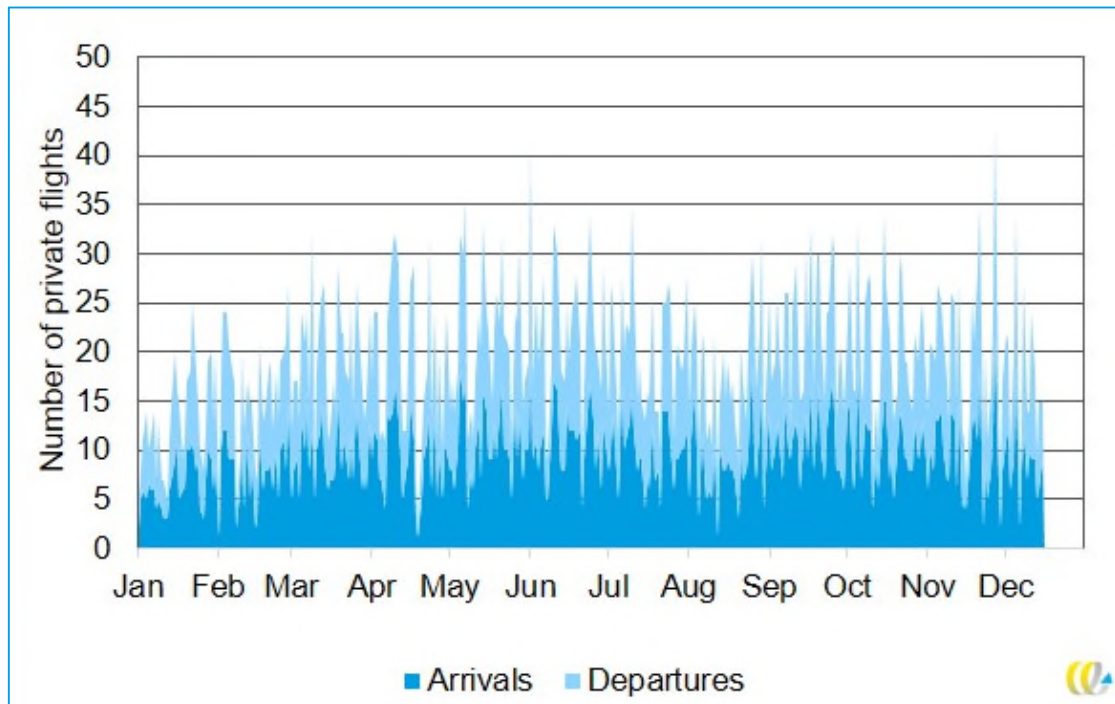


Table 6 – Identified peak days in private aviation in 2023, 2024, and 2025

Year	Peak day	Total movements	Arrivals	Departures
2023	22 May	45	24	21
	6 April	44	20	24
	23 March	44	24	20
2024	7 May	46	23	23
	20 June	45	26	19
	26 June	44	26	18
2025	27 November	43	22	21
	1 June	41	20	21
	7 May	36	17	19

2.4.2 Most common destinations during peak days

This section examines the most common destinations for private flights departing from Hamburg on the nine identified peak days. Table 7 presents the leading destinations and the number of departures to each destination on each day.

Traffic on most peak days was spread across several routes rather than concentrated on a single destination. The highest number of departures to any one destination was three. On 1 June 2025, each departing flight was bound for a different destination.

Sylt appeared most frequently among the leading destinations, appearing on three peak days. Other leading destinations included domestic connections, such as Munich, Cologne/Bonn, Hannover, Düsseldorf and Frankfurt, as well as international connections, including Geneva, Palma de Mallorca, Paris-Le Bourget and London.

Table 7 – Most common destinations during peak days in 2023, 2024 and 2025

Peak day	Most common destination(s)	Departing flights
23 March 2023	Geneva, Switzerland	3
6 April 2023	Sylt, Germany and Palma de Mallorca, Spain	3 each
22 May 2023	London Biggin Hill, United Kingdom; Munich, Germany and Cologne/Bonn, Germany	2 each
7 May 2024	Schwäbisch Hall, Germany; Karlsruhe/Baden-Baden, Germany; Bremen, Germany; Hannover, Germany and Paris-Le Bourget, France	2 each
20 June 2024	Cologne/Bonn, Germany and Sylt, Germany	3 each
26 June 2024	Hannover, Germany	2
7 May 2025	Düsseldorf, Germany; Frankfurt, Germany and London Heathrow, United Kingdom	2 each
1 June 2025	No single most common destination identified	1 each
27 November 2025	Sylt, Germany	3

3 Conclusions

Private aviation at Hamburg Airport accounted for almost 21,000 private jet flights during the study period. The number of flights remained broadly stable between 2023 and 2025, with approximately 7,000 flights per year.

These flights generated approximately 81,000 tCO₂e of well-to-wing emissions. When the estimated non-CO₂ effects are included, their combined climate impact was approximately 128,000 tCO₂e. Non-CO₂ effects accounted for around 37% of this total.

Palma de Mallorca and Sylt were the two most common connections throughout the study period. Other recurring destinations included Munich, Düsseldorf, Berlin Brandenburg, Cologne/Bonn and Zurich. However, the ten most common destinations accounted for only around one-third of departures, indicating that private flights were distributed across a relatively large number of airports.

The annual peak in daily movements ranged from 43 to 46 across the three years. Most peak days occurred between March and June, and no single route accounted for a large share of departures on these days.

A Comparison of data sources

A.1 Comparison of private flight data sources for Hamburg

This section provides a comparison of the flight data for private aviation at Hamburg Airport (EDDH). It compares the PrivateJets Tracker dataset, which is used in this study, with a dataset obtained from Flightradar24 (FR24). The tables below cover departure and arrival data for some of the most common types of business jets in the dataset from 2023 to 2025.

PrivateJets Tracker consistently recorded more flights than the FR24 dataset in every aircraft category. We checked the data and concluded that the flights in the PrivateJets Tracker seemed to be more complete.

Table 8 – Comparison between data from Flightradar24 and PrivateJets Tracker (number of flights per aircraft type per year)

Aircraft – ICAO code	PrivateJets Tracker			FlightRadar24			% difference (100% = equal)		
	2023	2024	2025	2023	2024	2025	2023	2024	2025
C56X	1007	893	908	639	469	650	63%	53%	72%
E55P	864	893	764	501	521	549	58%	58%	72%
C525	826	649	650	358	414	461	43%	64%	71%
C25A	595	588	502	248	310	365	42%	53%	73%
C68A	348	326	407	260	178	314	75%	55%	77%
C25M	312	177	187	88	115	173	28%	65%	93%
PC24	307	428	366	233	283	267	76%	66%	73%
C510	237	201	148	140	107	103	59%	53%	70%
E550	229	242	175	31	47	126	14%	19%	72%
F2TH	197	175	118	142	119	121	72%	68%	103%
LJ35	152	46	63	98	33	31	64%	72%	49%
CL60	146	180	189	111	104	126	76%	58%	67%
CL35	142	168	171	92	108	130	65%	64%	76%

B Annual data for most common destinations

This appendix presents the most common private jet connections between Hamburg Airport and other airports in 2023, 2024 and 2025. Departing and arriving flights are combined for each connection, providing one total per airport for each year.

Table 9 – Most common destinations for private jets departing from Hamburg in 2023

Destination ICAO	Location	Number of flights
LEPA	Palma de Mallorca, Spain	173
EDXW	Sylt, Germany	157
EDDM	Munich, Germany	111
EDDL	Düsseldorf, Germany	104
LSZH	Zurich, Switzerland	102
EDDK	Cologne/Bonn, Germany	96
LFPB	Paris-Le Bourget, France	95
EDDB	Berlin Brandenburg, Germany	90
EGKB	London Biggin Hill, United Kingdom	70

Table 10 – Most common origin airports for private jets arriving at Hamburg in 2023

Origin ICAO	Location	Number of flights
LEPA	Palma de Mallorca, Spain	177
EDXW	Sylt, Germany	161
LSZH	Zurich, Switzerland	115
EDDL	Düsseldorf, Germany	111
EDDM	Munich, Germany	86
LFPB	Paris-Le Bourget, France	85
EDDK	Cologne/Bonn, Germany	82
EDDB	Berlin Brandenburg, Germany	75
EDDF	Frankfurt, Germany	72

Table 11 – Most common destinations for private jets departing from Hamburg in 2024

Destination ICAO	Location	Number of flights
EDXW	Sylt, Germany	143
LEPA	Palma de Mallorca, Spain	139
EDDM	Munich, Germany	121
EDDB	Berlin Brandenburg, Germany	116
EDDK	Cologne/Bonn, Germany	107
EDDL	Düsseldorf, Germany	106
LSZH	Zurich, Switzerland	103
LOWS	Salzburg, Austria	81
EDDN	Nuremberg, Germany	72
LFPB	Paris-Le Bourget, France	70

Table 12 – Most common origin airports for private jets arriving at Hamburg in 2024

Origin ICAO	Location	Number of flights
LEPA	Palma de Mallorca, Spain	151
EDXW	Sylt, Germany	139
EDDL	Düsseldorf, Germany	121
EDDM	Munich, Germany	105
EDDB	Berlin Brandenburg, Germany	99
LOWS	Salzburg, Austria	89
EDDK	Cologne/Bonn, Germany	87
LSZH	Zurich, Switzerland	85
LFPB	Paris-Le Bourget, France	71
LSGG	Geneva, Switzerland	67

Table 13 – Most common destinations for private jets departing from Hamburg in 2025

Destination ICAO	Location	Number of flights
EDXW	Sylt, Germany	141
LEPA	Palma de Mallorca, Spain	136
EDDB	Berlin Brandenburg, Germany	102
EDDM	Munich, Germany	101
LSZH	Zurich, Switzerland	100
EDDK	Cologne/Bonn, Germany	94
EDDL	Düsseldorf, Germany	84

Destination ICAO	Location	Number of flights
EDDN	Nuremberg, Germany	72
LOWS	Salzburg, Austria	71
EDDF	Frankfurt, Germany	68

Table 14 – Most common origin airports for private jets arriving at Hamburg in 2025

Origin ICAO	Location	Number of flights
EDXW	Sylt, Germany	147
LEPA	Palma de Mallorca, Spain	147
EDDM	Munich, Germany	93
EDDB	Berlin Brandenburg, Germany	91
EDDL	Düsseldorf, Germany	91
LSZH	Zurich, Switzerland	87
LFPB	Paris-Le Bourget, France	81
EDDK	Cologne/Bonn, Germany	78
LOWS	Salzburg, Austria	76
EDDF	Frankfurt, Germany	63

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