

## Charting the European Aviation recovery: 2021 COVID-19 impacts and 2022 outlook

2021 was the year aviation hoped to get back on its feet after the catastrophic pandemic impacts of 2020. This Think Paper uses our unique network data to show the cumulative impacts of this year's partial recovery on all aspects of European aviation. Mass vaccinations and the EU Digital COVID Certificate helped drive a strong summer traffic bounce that has endured despite Omicron and rising infection levels, proving the sector's resilience as we enter 2022.

### KEY CONCLUSIONS & OUTLOOK 2022

- 2021 saw a partial but sustained traffic recovery in Europe, starting with -64% in January vs 2019 levels, and ending it at -22% of 2019 levels in December. Mass vaccinations and the EU Digital COVID certificate helped deliver a solid summer recovery, and traffic has remained relatively stable at over 70% since the summer. However, total 2021 traffic was -44% of 2019 levels, 4.9 million flights fewer than 2019 – and not substantially better than 2020 (6.1 million fewer).
- The impacts of reduced traffic continued to be unevenly shared, with the five worst-impacted countries all in the north (-55% to -62% traffic), while the five least-impacted were all in the south (-8% to -27%).
- Greater predictability and returning travel have helped airlines and airports stay afloat, without however bringing balance sheets back into the black. Airline losses for 2021 stood at €18.5 bn with 1.4-1.5 bn fewer passengers, even if this was not as heavy as 2020's disastrous losses (€22.2 bn and 1.7 bn). Load factors (around 50-60%) are weighing on profitability, with the major airline groups operating 30-64% fewer flights.
- Aviation showed its resilience in 2021 to a crisis that had paralysed economies in 2020. Despite rising infection levels and new COVID variants, European societies have learned to manage the crisis, and aviation has been able to provide basic connectivity, even if, at around 55%, flight choice within Europe lags well behind traffic levels.
- While all aviation actors have embraced the need to build back more sustainably, the pace of change – particularly in making Sustainable Aviation Fuels more available – has not yet started to accelerate. Investment in new technological solutions must continue.
- Omicron triggered travel restrictions that constrained flights in the first half of December to 75%, but eased in the second half (81%) owing to the holiday period. The situation for January is less clear however.
- 2022 traffic is expected to recover to 70-90% of 2019 levels – even though right now, the evolving pandemic has seen traffic fall away from our optimistic forecast to converge increasingly on our baseline forecast.

### EUROPEAN AVIATION: 2022 HEADLINE DATA



Huge financial impact for all European stakeholders:

- €18.5 billion net losses for airlines
- €3.7 billion in-year revenue losses for ANSPs



1.4-1.5 billion

fewer passengers than in 2019 (2020: 1.7 billion fewer)



106 million tonnes

fewer CO<sub>2</sub> emissions than in 2019

6.2 million flights 2021 vs. 11.1 million 2019 = annual loss of 4.9 million flights (2020: 5 million flights).

26,773 peak daily flights (27 Aug 2021), -28% compared to the 2019 peak of 37,228 (28 Jun 2019).



- Intra-European traffic **43%** down.
- Europe-Rest of the World **48%** down.
- Low-cost carrier flights **54%** down.
- Scheduled carrier flights **52%** down.

Markets still down, but with much more variation: **8%-62%** lower vs. 2020's more uniformly bad 40-73%:

-  **1.3 million** flights less in the UK (-62%)
-  **1.0 million** flights less in Germany (-50%)
-  **0.7 million** flights less in Spain (-44%)
-  **0.7 million** flights less in France (-42%)
-  **0.6 million** flights less in Italy (-47%).



Leading aviation groups down by **30%-64%**:

-  Ryanair **-43%** flights (2021: **1,321** daily average flights, 2019: 2,323)
-  Lufthansa Group **-61%** flights (2021: **1,263**, 2019: 3,295)
-  Air France-KLM **-44%** flights (2021: **1,150**, 2019: 2,053)
-  Turkish Airlines **-30%** flights (2021: **938**, 2019: 1,331)
-  IAG **-57%** flights (2021: **987**, 2019: 2,342)
-  easyJet **-64%** flights (2021: **607**, 2019: 1,671)





## European Network Performance

### Total Traffic

Traffic in 2021 began with **January** recording a highly depressed **-64%** of 2019 flight levels, **9,241** average daily flights, but closed the year with **December** traffic at **-22%** with **20,028** average daily flights. Cumulatively, the year saw total traffic at **-44%** of 2019 levels, a total of **6.2** million flights operated in 2021. That was better than 2020's **5.0** million flights, but still a long way from 2019's **11.1** million flights. 2020 and 2021 losses together make a total of **11.0** million fewer flights since the start of the pandemic.

In January to April 2021, little progress was made as restrictions remained in place and States struggled to make vaccinations widely available. Traffic remained stuck between **-62%** and **-66%** of 2019 levels.

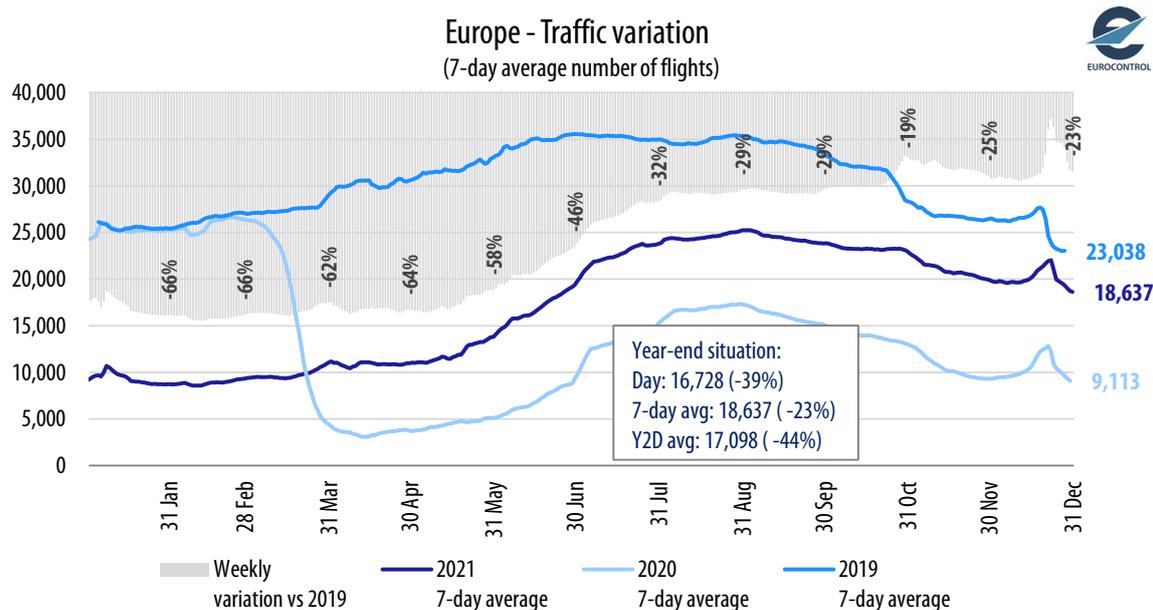
However, the swift pickup of vaccination rates across larger populations by May 2021, and the introduction of the EU Digital COVID Certificate in June, transformed the situation, restoring confidence at State and passenger level. Travel restrictions in participating States and beyond were softening or lifted, with a particularly strong recovery in

intra-European travel (just **-33%** over June-September), although long-haul traffic flows and restrictions remained in place. After a 2020 of lockdowns and very limited travelling, as the 2021 summer season arrived, holiday destinations were quickly in high demand. Traffic progressively increased through June to August, peaking on **27 August** with **26,773** flights (**-28%** of 2019's peak, and all-time network record, of **37,228** flights on 28.06.19).

Post-summer, and despite a steady worsening of the pandemic once more as autumn turned into winter, the European aviation network has remained durable at between **-20%** and **-25%** of 2019 levels, unlike in 2020 when the summer bounce was followed by a precipitous drop to the year-end as new State restrictions were applied across the network.

Figure 1 shows the traffic (seven-day average) evolution in Europe for 2019 to 2021, and compares 2021 traffic levels with 2019.

**FIGURE 1: TRAFFIC EVOLUTION ACROSS EUROPE 2019-2021**



### Focus on States

Traffic was down in all States **compared to 2019** as shown in Figures 2 and 3. For the second year running, the UK tops the list in terms of flights lost (-1.3 million flights, -62%), followed at quite some distance by Germany (-1.0 million flights, -50%), Spain (-742,000 flights, -44%), then France (-654,000 flights, -42%) and Italy (-616,000, -47%). However, in terms of the highest percentage of traffic loss, the UK, Finland and Ireland all saw -62% lower traffic in 2021.

In Figure 4A, we see very different rates of recovery with a clear divide between northern and southern Europe. In % terms (compared to 2019) the most affected State was Ireland (-62%, -183,000 flights) due to its critical reliance on flights to/from the UK (40% of its flights in 2019).

Geographically, the four worst affected countries – Ireland, Finland, UK and Sweden – with Denmark 7<sup>th</sup> – are all at the northern end of Europe, with Scandinavia (except Norway) most affected – Finland (-62%, -137,000 flights), Sweden (-56%, -228,000 flights) and Denmark (-55%, -187,000 flights), with very weak intra-Scandinavian traffic.

Least affected, on the other hand, are the countries towards the south and east of Europe. Albania, down just 8% (-2,000 flights), leads the recovery, with four more countries (Bosnia-Herzegovina, Armenia, Ukraine and Greece) all down under 30%. At the peak of the summer season, some countries came very close to their 2019 levels, in particular Greece, where flight levels reached 94% of pre-pandemic traffic during August.

FIGURE 2: TRAFFIC LOSS ACROSS STATES, 2021 vs. 2019

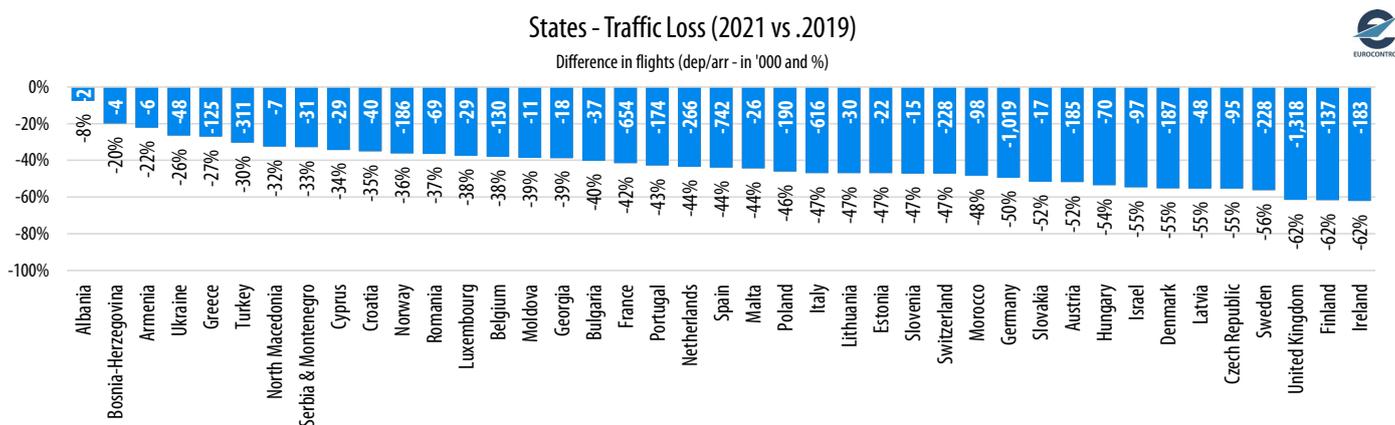
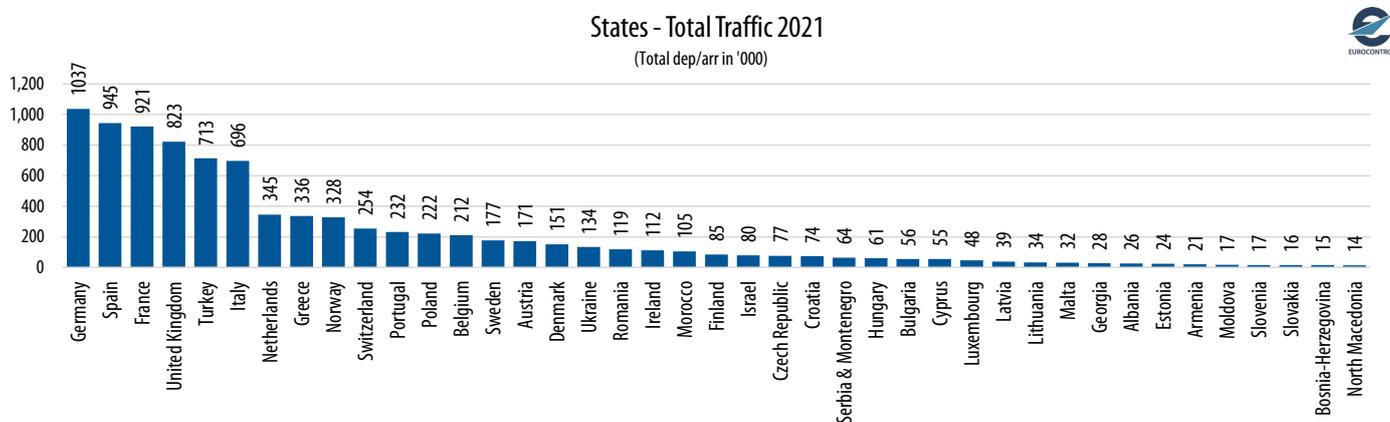


FIGURE 3: TOTAL TRAFFIC 2021 ACROSS STATES



**FIGURE 4A:** STATE ARRIVALS/DEPARTURES % VARIATION, 2021 vs. 2019

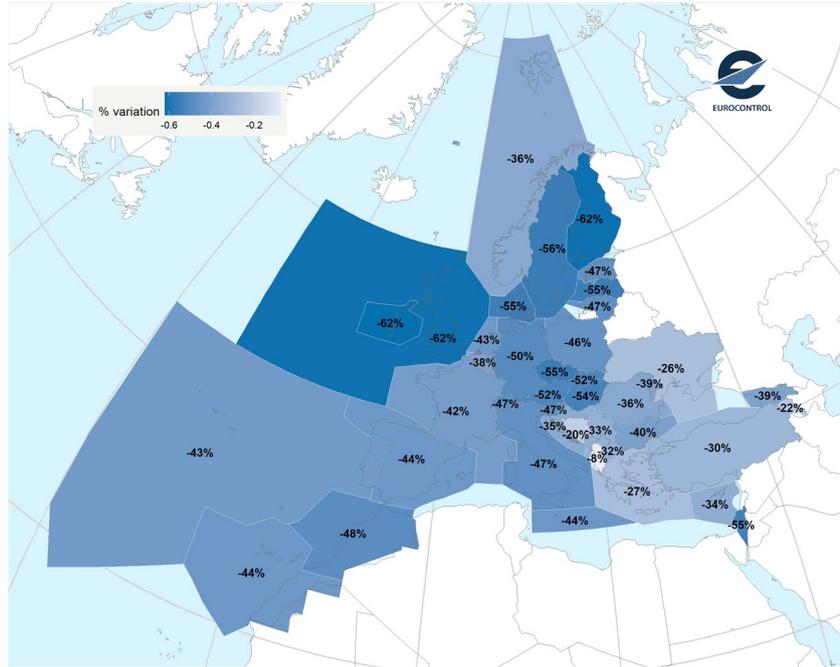
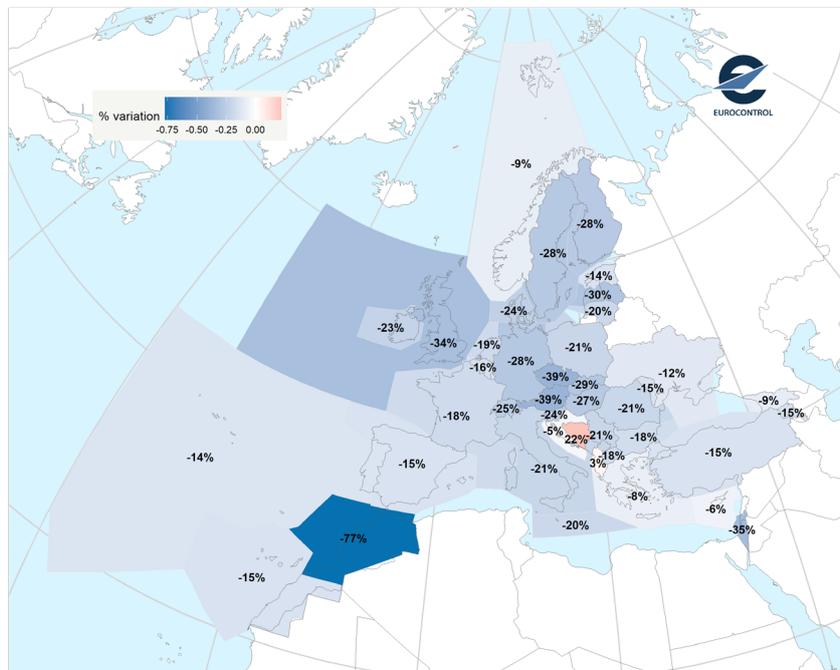


Figure 4B comparing December 2021 and 2019 shows a more nuanced situation. The north-south/east split is to

some extent still there, but with less extreme variation, and more countries in a broad band of 10-25% down.

**FIGURE 4B:** STATE ARRIVALS/DEPARTURES % VARIATION, December 2021 vs. 2019

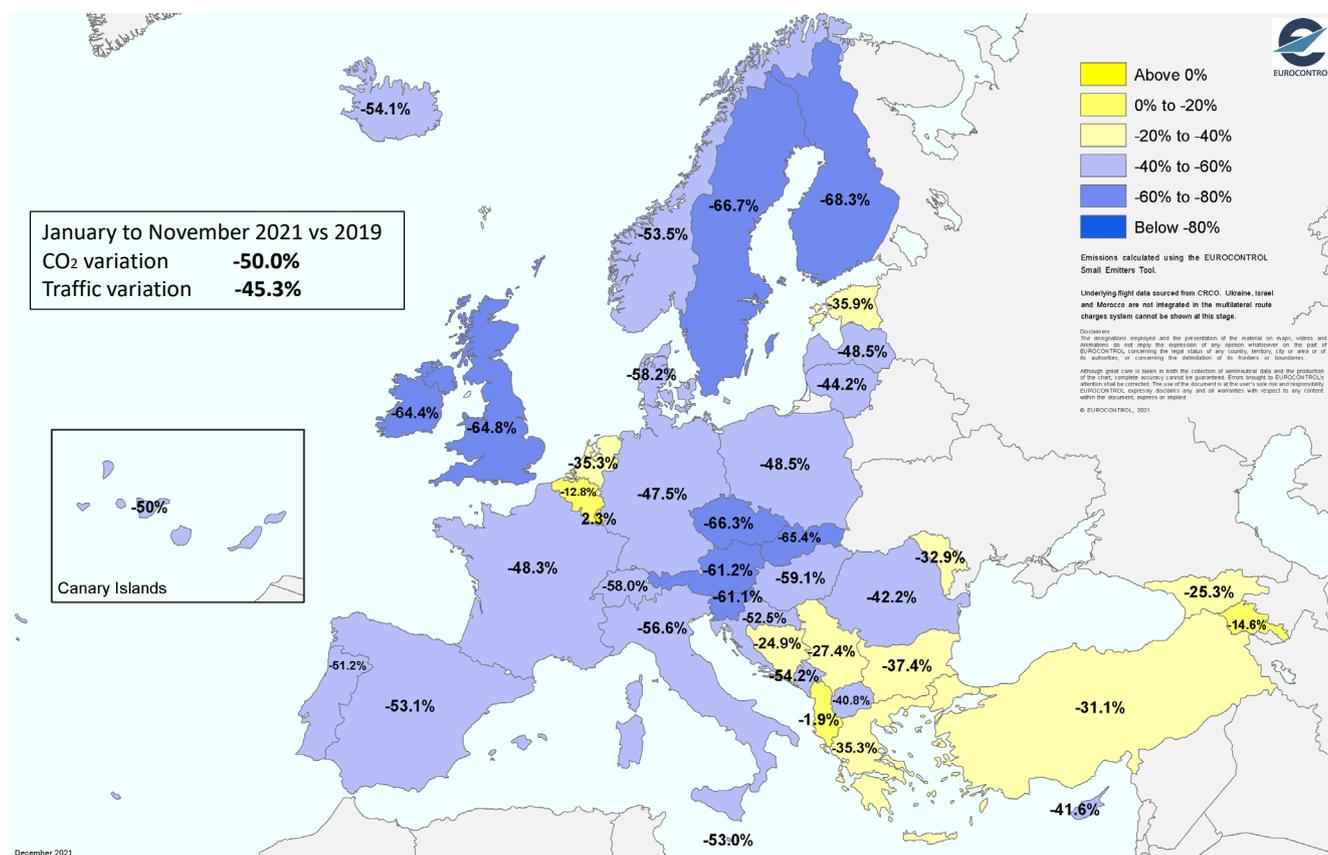


## Sustainability

With a total of **6.2** million flights operated in **2021**, emissions have slightly increased year on year, but remain well below 2019 levels. With January-November 2021 traffic **-45.3%** compared to the same period in 2019, emissions declined by **-50.0%**. 2020, by contrast, saw traffic at -54.5%, with -56.9% lower CO<sub>2</sub> emissions. The overall number however conceals considerable variation across States, as Figure 5 shows.

Reduced emissions were once again helped by relatively little congestion throughout Europe over 2021, despite the recovery in the second half of 2021, which permitted aircraft operators to fly more direct flight profiles. As in 2020, the EUROCONTROL Network Manager relaxed more than **1,200** airspace restrictions, saving airlines up to **26,000** nautical miles a day, resulting in significantly improved flight efficiency.

**FIGURE 5: CO<sub>2</sub> EMISSIONS GROWTH 2021 vs. 2019**



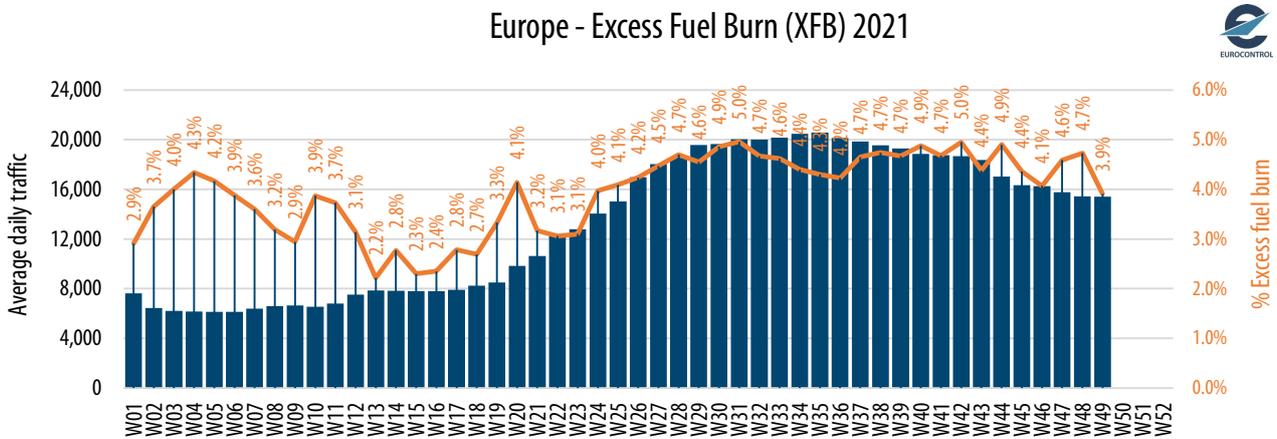
Throughout 2021, the operational indicator Excess Fuel Burn or XFB, which measures the fuel efficiency corresponding to the actions of all stakeholders per city pair, has remained between 2.2% and 5.0%, as per Figure 6.

As traffic steadily grew in the peak summer months, the XFB somewhat stabilised, ranging between 4% and 5% from mid-June (Week 24) until end-November.

It is noticeable that while traffic remained low (around 8,000 flights per day) in the first 20 weeks of the year, the XFB oscillated between 2.2% and 4.3%.

It is clear that actions taken during the pandemic to improve flight efficiency have enabled the XFB to remain well below the values experienced in 2019 before the pandemic (7-8% to 9.7%).

**FIGURE 6:** EXCESS FUEL BURN (XFB), 2021

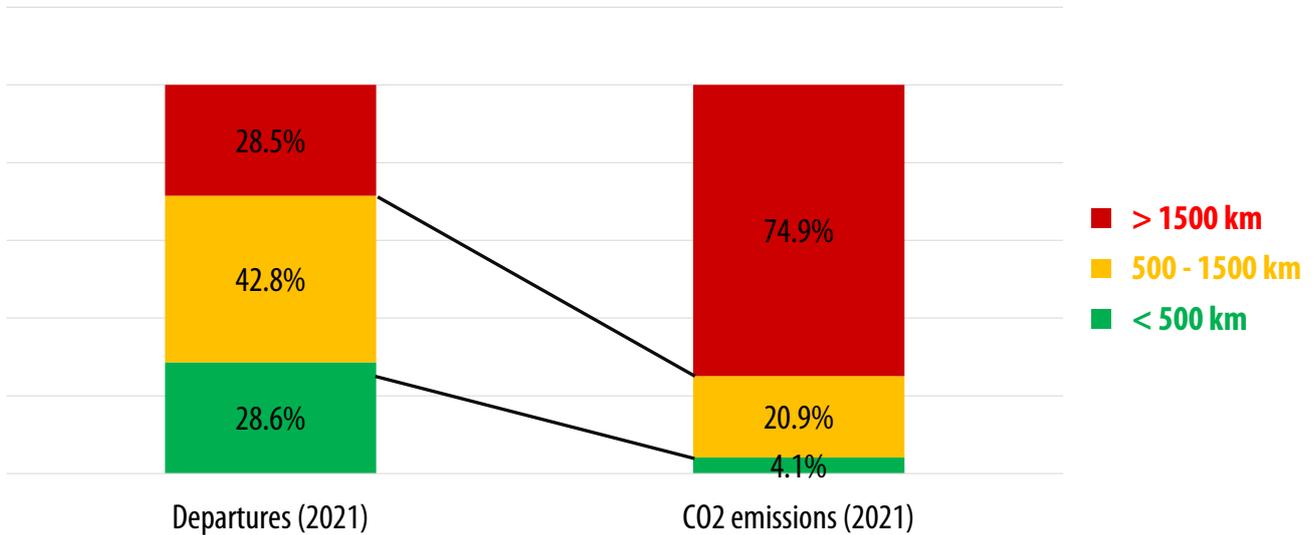


Long-haul flights still have the highest impact on sustainability, with their considerably reduced volume contributing to lower emissions. Figure 7 shows how in 2021, flights over **1,500 km** were responsible for **74.9%**

all emissions, whereas the share of such flights was only **28.6%** of departures. These proportions are practically identical to 2019, the last in a 'normal' year before the pandemic.

**FIGURE 7:** CO<sub>2</sub> EMISSIONS vs. NUMBER OF DEPARTURES, 2021

### Share of CO<sub>2</sub> emissions vs number of departures (All departures from CRCO States in Jan-Nov 2021)



Throughout the year, EUROCONTROL has been busy charting environmental impacts in a whole host of publications, from a series of [Aviation Sustainability Briefings](#), to Think Papers [on Greening European ATM's ground infrastructure](#), [on Plane and train: Getting the balance right](#), and [on Flying the 'perfect green flight'](#), to Data Snapshots [on the evolution of taxi-out times in summer 2021](#), [on how aircraft are flying higher, more efficiently and more sustainably](#), [on CO<sub>2</sub> emissions from flights so far this year](#), [on horizontal en-route flight efficiency](#), [on Sustainable Aviation Fuel availability and uptake](#), [on emissions by flight distance](#) and [on emissions from flights in 2020](#), as well as organising a major [Aviation Sustainability Summit](#).

## European airline performance

The feared wave of airline bankruptcies did not in the end materialise, with the only high-profile casualty being the final demise of Alitalia, which would in any case swiftly be replaced by a successor airline in **ITA Airways**. However, the situation for Europe’s airlines remains highly challenging, especially for those carriers not receiving State aid. All airlines have been facing lower load factors, averaging around **50-60%**, and operating over the year many fewer flights. While the summer pick-up was welcome for all carriers flying intra-European routes, with some low-cost carriers able to ramp up capacity to close to or even exceeding 2019 levels, total pandemic losses still weigh heavily on revenues and balance sheets.

Figure 8 shows that for the seventh year in a row, **Ryanair** remained the top airline in Europe over 2021, increasing capacity impressively over the summer to reach above 100% of 2019 levels in the closing months of the year. In total, however, this was offset by very low levels in 2021Q1, yielding a yearly daily average of **1,321** daily flights, **-43%** compared to 2019.

**Turkish Airlines**, which held the top position up until mid-August, stays second as it did in 2020 with **938** daily flights (**-30%** vs. 2019), buoyed by very strong domestic traffic in Turkey across most of the year, plus solid summer holiday traffic.

Positions 3-6 saw most of Europe’s major airlines shuffle places depending on how reliant they are on long-haul travel, with one notable absence from 2019: **British**

**Airways** dropped to 12<sup>th</sup> place (-70% vs. 2019), impacted by travel restrictions to/from the UK which have been imposed more regularly than in other European States. This also significantly impacted 2019’s 2<sup>nd</sup> busiest group, **easyJet**, which slid to 5<sup>th</sup> place at -64% of 2019, the highest impact in this year’s top ten.

The two other absences from the 2021 list are **Eurowings** and **Norwegian Air Shuttle**, who both lost their top 10 slots in 2020, and currently stand at 16<sup>th</sup> and 24<sup>th</sup> place respectively in 2021.

Their places were taken by three low-cost carriers – Pegasus Airlines, Wizz Air and Vueling – reflecting, in general, the ability of such carriers to recover faster than their traditional counterparts in the second half of 2021.

**Pegasus Airlines** benefited from the strength of the Turkish domestic market to climb from 14<sup>th</sup> in 2019 to 10<sup>th</sup> in 2020 and 8<sup>th</sup> place this year. **Wizz Air**, up from 12<sup>th</sup> to 9<sup>th</sup> in 2020 and 7<sup>th</sup> now, rapidly expanded operations as of June, with major fleet and base investments like Ryanair. And entirely new to the top 10 is **Vueling**, which climbed one position to reach 10<sup>th</sup> place thanks to the strong recovery of Spanish domestic traffic, especially from June onwards.

Just outside the top ten, with a loss of only **7%** of its 2019 levels, **Widerøe** climbed from 22<sup>nd</sup> in 2019 to 11<sup>th</sup> place as Norwegian domestic traffic remained strong through most of the pandemic.

**FIGURE 8A: TOP 10 AIRCRAFT OPERATORS, 2019 vs. 2021**

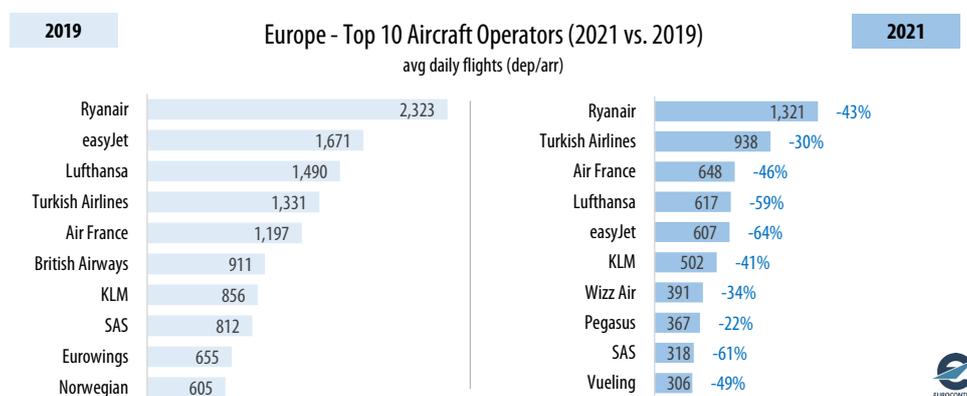


Figure 8B compares December 2021 with the same period in 2019, showing clearly how traffic is recovering in a more familiar way. Only **Eurowings** fails to make the winter top 10, with **Vueling** taking 10<sup>th</sup> place; the other carriers occupy similar places with three highlights – the rise of

**Turkish Airlines** into second place, **British Airways** proportionally worst affected dropping three places to 9<sup>th</sup>, and the pandemic-defying performance of **Ryanair**, which managed in December to operate at 2019 levels, unlike the rest of the pack, all between -9% and -46% down.

**FIGURE 8B: TOP 10 AIRCRAFT OPERATORS, December 2021 vs. 2019**



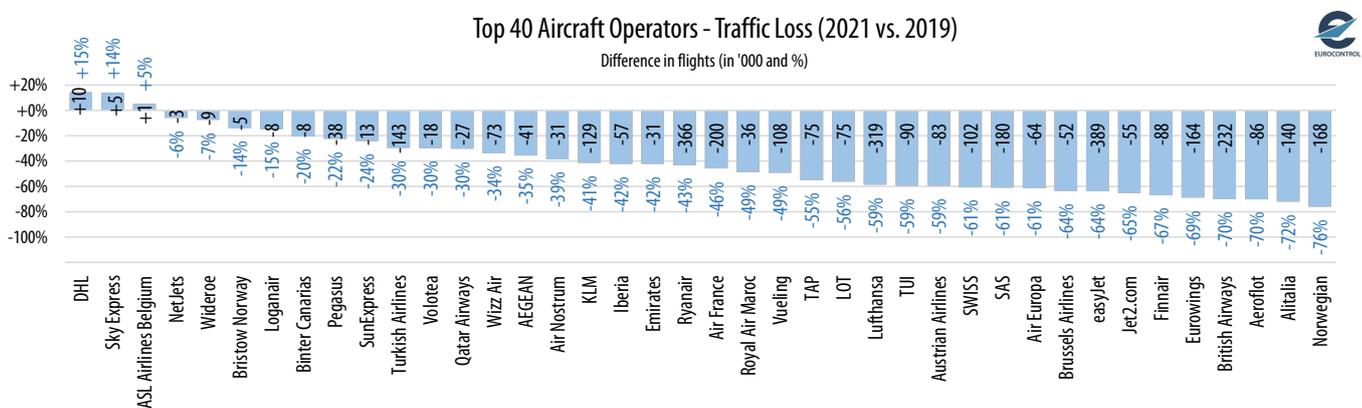
Figure 9 looks at the cumulative traffic losses for the top 40 aircraft operators over 2021. Here, **Ryanair** at -43% of 2019 traffic translates into -366K flights, putting Europe's busiest airline only mid-table in % terms. Fellow low-cost carrier **easyJet**, 8<sup>th</sup> worst affected at -64%, suffers from being the airline with the greatest total loss of flights, 389K fewer than in 2019.

operate more flights in 2021 than in 2019. Notable also is the fourth-placed operator, business jet leasing giant **NetJets**, operating just -6% on 2019 levels.

League leaders are **DHL**, operating 10K more flights than 2019 and up 15% - one of only three carriers (all cargo) to

At the other end, staggering percentage losses for **Norwegian** (-76% and 168K fewer flights), **Aeroflot** (-70% and 86K fewer) and **British Airways** (-70% and 232K fewer), followed by another 13 airlines operating at over 50% less than pre-pandemic. (Alitalia also appears, but comparison is distorted as the airline ceased operations in October).

**FIGURE 9: TRAFFIC LOSS ACROSS THE TOP 40 CURRENT AIRCRAFT OPERATORS, 2021 vs. 2019**



## Market Dynamics

### Market Segments

Figure 10 shows how the different main aircraft operator market segments have weathered the pandemic.

**All-cargo** has been the only segment consistently operating at, or above, 2019 levels through the pandemic as the demand for goods has not decreased, while global cargo traffic has held up unlike international passenger flows outside Europe. It ended 2021 at **+9.6%** of 2019 with 6% of market share (double that of 2019 at 3%).

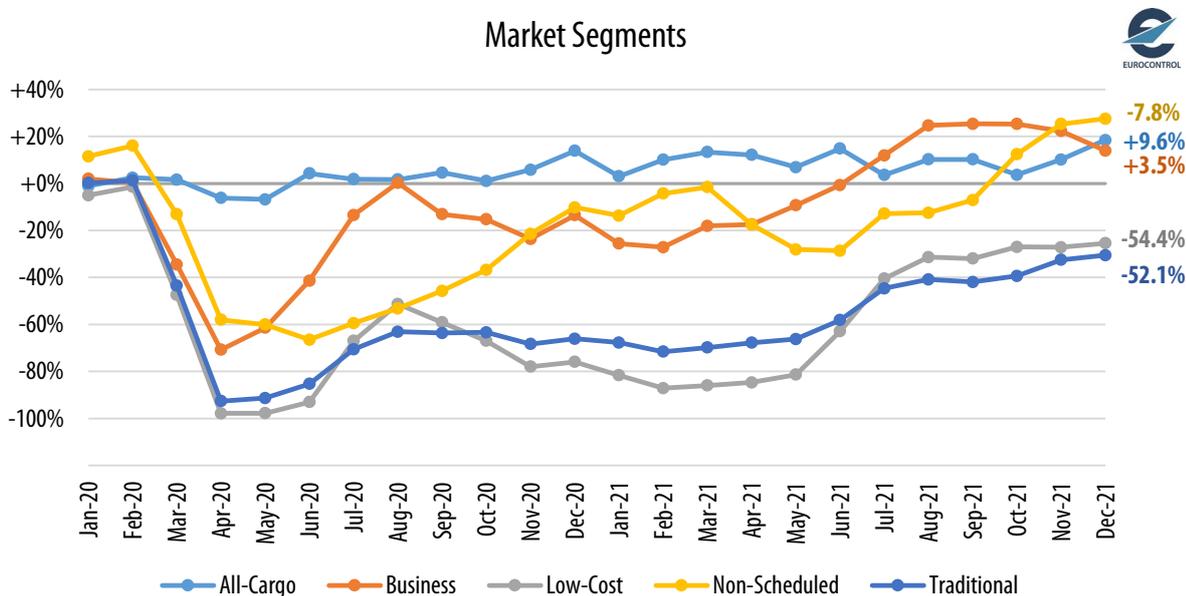
**Business aviation** was **+3.5%** in 2021, significantly increasing its market share (12%) compared to 2019 (6.4%), as some business travellers reacted to the loss of previously available scheduled routes and switched to this segment, as our [Data Snapshot 19](#) outlines in more detail.

Similar factors may have impacted the surge observed for **non-scheduled** from June onwards, with more ad hoc flights seeing the segment end the year at only **-7.8%**.

As in 2020, **low-cost carriers** recovered quicker over the summer than traditional carriers, with some of them operating at 2019 levels since August. However, they closed the year having operated in total at **-54.4%** of 2019 levels.

**Traditional scheduled carriers** finished at **-52.1%** of 2019 levels. While traditional hub and spoke operations were significantly impacted by lower international connecting traffic, they maintained domestic connectivity throughout the year, with levels above those of the low-cost carriers in the periods of lower seasonal demand.

**FIGURE 10: MARKET SEGMENTS, % CHANGE Y-O-Y**



### Fleet data

Aircraft operators have used the crisis as an opportunity to optimise their fleets from an operational, economic and environmental point of view.

Traditional carriers like Air France, Lufthansa or British Airways have historically operated a wide variety of aircraft.

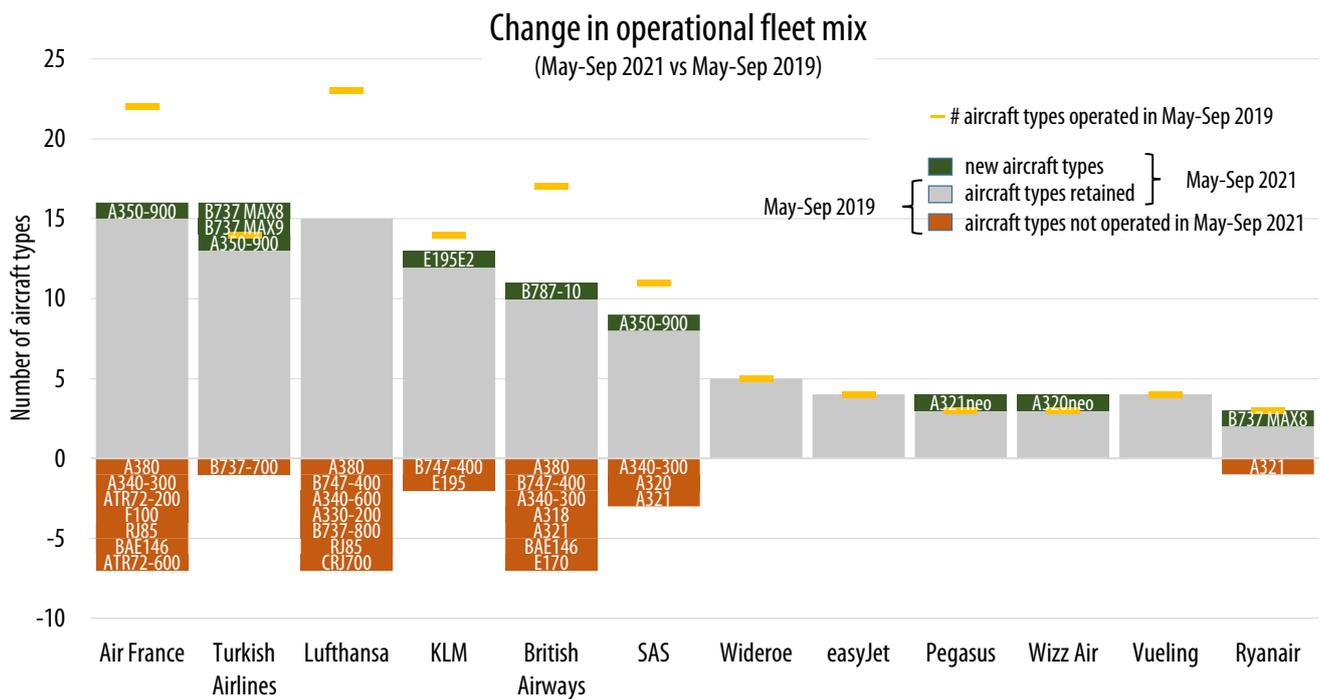
However, if we compare summer 2021 with 2019, we can see in Figure 11 how the main scheduled airlines are now operating much more streamlined fleets. Larger or older aircraft (especially four-engined types like the A340, A380, and B747) have been parked up awaiting the return of long-haul travel or permanently retired, and replaced with

more fuel-efficient twin-engined types (e.g. A350 and B787), with older versions of popular models similarly taken out of the fleet mix.

Low-cost carriers have always operated a much more limited variety of aircraft and that trend continues.

However, as they renew their fleet with more modern and fuel-efficient versions of their aircraft (e.g. Airbus neo and B737 MAX), we have seen a much increased usage rate of these newer aircraft compared to their older versions.

**FIGURE 11: CHANGE IN OPERATIONAL FLEET MIX**

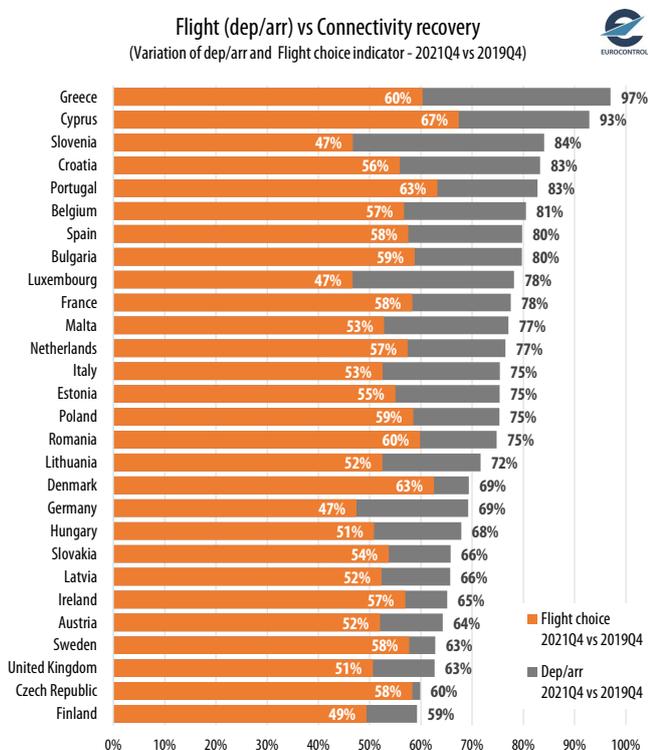


## Connectivity

The pandemic has also significantly limited passengers' options to get from A to B, with airlines offering minimal frequency on some routes, and cutting others, especially less profitable ones, reducing competition and passenger choice (and certainly supporting robust demand from business for business aviation flights).

Figure 12 contrasts total traffic with flight choice per country for 2021Q4, and pre-pandemic 2019Q4.

**FIGURE 12: CONNECTIVITY 2021Q4 vs. 2019**



To calculate available flight options, we use our 'flight choice' indicator, which evaluates connectivity by

measuring how many options a person has, on average, to get to their desired destination within Europe.

The figure clearly shows that connectivity lags behind the recovery of flights in all countries, in some cases considerably. In terms of flights, **Greece** and **Cyprus** top the table, benefiting, like many classic holiday destinations, from an extended summer season this year. Both are for Q4 at close to 2019 levels at 97% and 93%, but with notably reduced connectivity of just 60% and 67%.

Whereas Q4 flights range from at 59%-97% of 2019 levels across the network, connectivity is down everywhere in a much narrower range of 47%-67%, with four States – **Finland, Germany, Luxembourg** and **Slovenia** – all only able to offer passengers less than half of pre-pandemic intra-European flight choices. At its best, connectivity only scrapes above 60% in five States – **Cyprus** leading the way on 67%, followed by **Denmark** and **Portugal** (both 63%), then **Greece** and **Romania** (both 60%).

Three States stand out in terms of a much narrower gap between total flights and connectivity, all lower down the table in terms of flight recovery against pre-pandemic levels. While **Slovenia** has the largest gap between total flights and connectivity at 37%, that gap is at its smallest in the **Czech Republic** (just 2%), **Sweden** (5%) and **Denmark** (6%).

Overall, the recovery in 2021 may have been more sustained than in 2020, but passengers are clearly far from recovering the full range of flight choices that were once available to them within Europe – with global connectivity far worse, as the section on traffic flows clearly indicates.

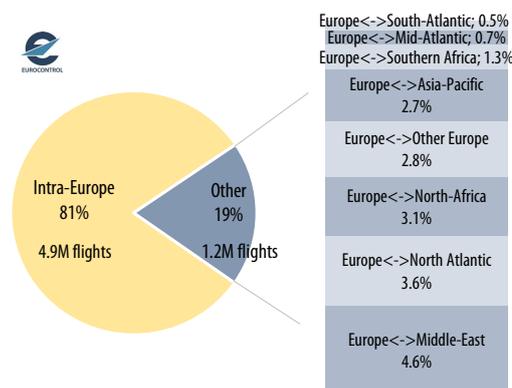
## ✈️ Network flows

At **4.9 million flights**, **intra-European traffic** accounted for 81% of all network traffic, with all other flows combined only amounting to **1.2 million flights** as per Figure 13. Of those intra-European flows, only two non-domestic pairs (Spain ↔ UK and Spain ↔ Germany) make it into the top 10, as Figure 14 shows.

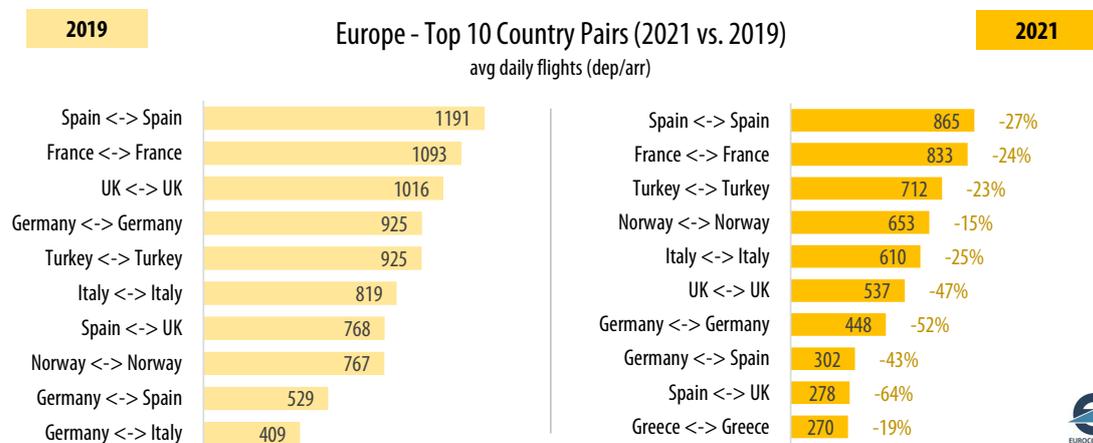
The top four flows as per Figure 14 show the relative resilience of Turkish and Norwegian domestic traffic (-23% and -15%), with UK and Germany dropping down the table at -47% and -52% on 2019 levels.

Traffic between Spain and UK, usually so strong, barely makes the list after a year of intermittent travel restrictions to/from the UK (-64% of 2019); the only other international country pair to make the top 10, Germany-Spain, is also down, albeit to a lesser extent (-43%).

**FIGURE 13: SHARE OF TOTAL FLIGHTS**



**FIGURE 14: TOP COUNTRY PAIRS WITHIN EUROPE, 2019 vs. 2021**



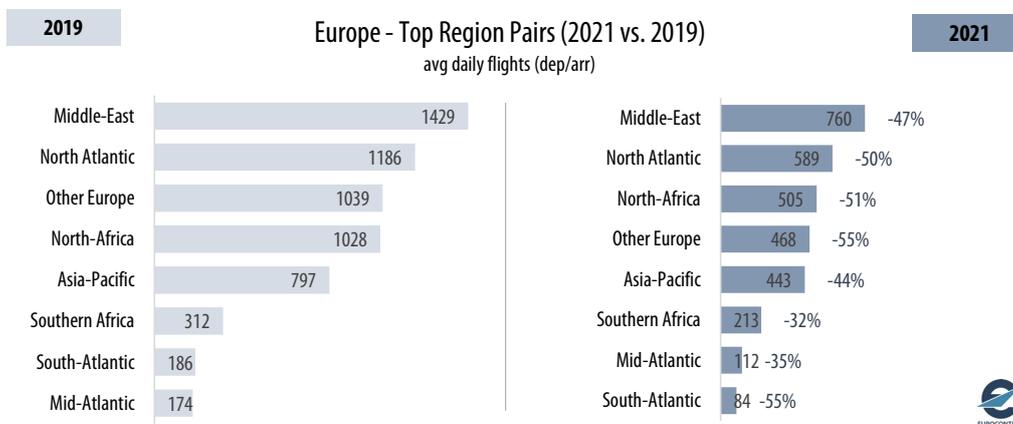
Figures 15 and 16 on the next page show how all global flows are also down compared to 2019. Intra-European flights, which represent 81% of the total flights, were -43% of 2019 levels.

As in 2020, Southern Africa (-32%) is the least negatively affected, reflecting the strength of the cargo market. It is followed by Mid-Atlantic flows (-35%), which saw a surge as of October as the holiday season shifted from southern Europe to the Caribbean. Asia-Pacific stayed almost at the same levels of 2020 (-44%), reflecting the fact that travel is still restricted to most Asian countries.

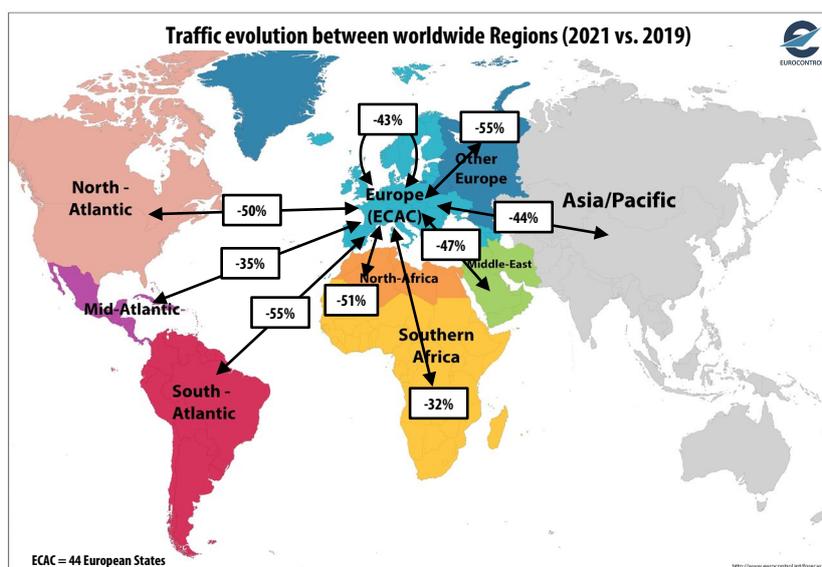
The rest of traffic flows ended the year between -47% and -55% of their 2019 levels, with South Atlantic being the most affected (-55%). Traffic to/from Russia and Belarus stood also at -55%, with EU flight restrictions to the latter having an impact from the summer.

Figure 17 provides a snapshot of December 2021 vs. 2019 global flows to/from Europe, with many regions showing a clear percentage recovery compared to the annual view in Figure 15, with the exception of North Africa (-51% annual, slipping even further to -52% in December).

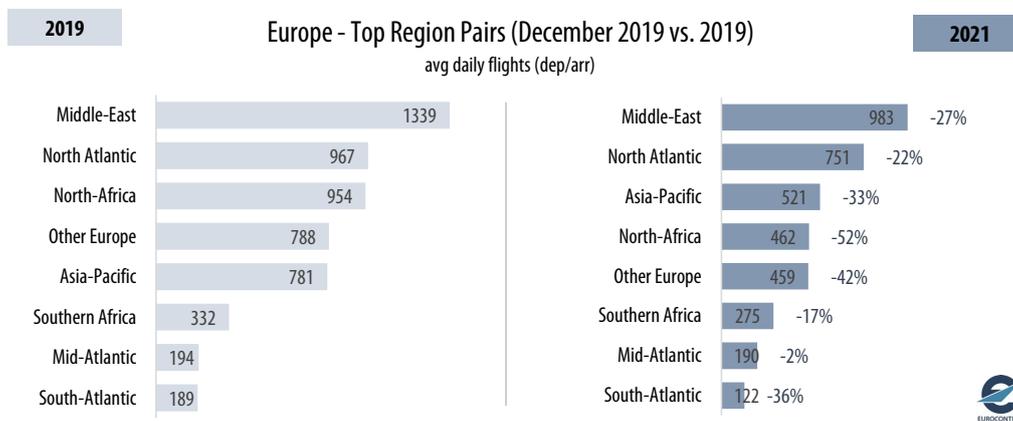
**FIGURE 15: TRAFFIC FLOWS TO/FROM EUROPE, 2021 vs. 2019**



**FIGURE 16: TRAFFIC EVOLUTION BETWEEN REGIONS, 2021 vs. 2019**



**FIGURE 17: TRAFFIC FLOWS TO/FROM EUROPE TO OTHER REGIONS, December 2021 vs. 2019**



### Airports

The recovery in the number of passengers in 2021 (-60% vs. 2019) continues to lag behind the recovery of flights (-44%), as the use of smaller aircraft and low load factors are still a reality. This trend is likely to persist in the coming years, with ACI estimating that in Europe, passenger levels are only expected to recover fully to 2019 volumes by 2025, one to two years after EUROCONTROL’s forecasts predict flights will have mostly recovered to 2019 levels. In 2021 the estimated year-on-year passenger loss was of **1.4-1.5 billion** (vs. 1.7 billion in 2020).

Figure 18A shows the top 10 European airports in 2019 and 2021. The different traffic variations among the airports reflect the 2021 main trends, with the Turkish market remaining strong all year and traditional holiday destinations making a strong recovery during the summer.

That said, **Amsterdam** still managed to finish the year on top with **767** daily movements (-45% of 2019 flights)

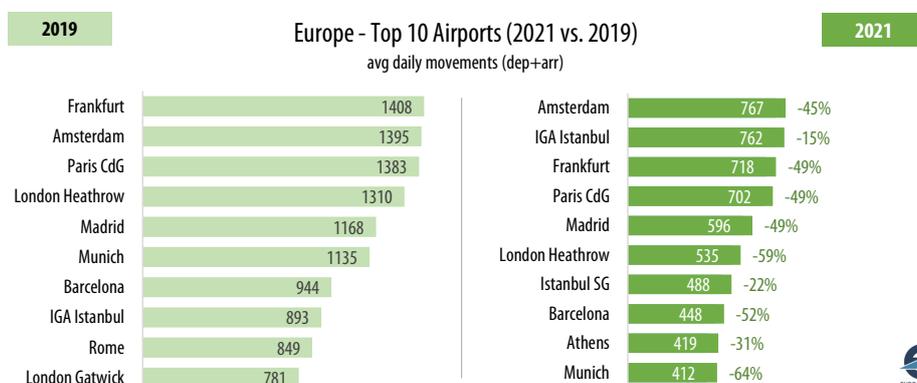
narrowly overtaking **IGA Istanbul (762** daily flights; -15% of 2019), which had held the top spot for much of 2021.

Two airports which dropped out of the list in 2020 have slid further down the rankings in 2021 - **Rome** moving to 20<sup>th</sup> reflecting major reductions in international travel, while **London Gatwick** has slipped for now to 47<sup>th</sup> place owing to ongoing UK travel restrictions and reduced demand, particularly in the first half of the year.

Both the airports that have displaced them, **Istanbul-Sabiha Gökçen** (19<sup>th</sup> in 2019) and **Athens** (23<sup>rd</sup> in 2019), have benefited from stronger summer traffic and resilient domestic flows.

Figure 18B compares Decembers 2021 and 2019, with most top airports showing traffic closer to 2019 levels. Of note are domestic flight-boosted **Oslo** and **Istanbul-Sabiha Gökçen**.

**FIGURE 18A: TOP 10 EUROPEAN AIRPORTS, 2019 vs. 2021**



**FIGURE 18B: TOP 10 EUROPEAN AIRPORTS, DECEMBER 2021 vs. DECEMBER 2019**



Figure 19 looks at the cumulative traffic losses for the top 40 airports over 2021. 2019's two busiest airports, **Amsterdam-Schiphol** and **Frankfurt**, have also lost significant amounts of traffic (229K and 252K respectively), but appear mid-table in terms of percentage of traffic loss.

In terms of total flights lost, **London-Heathrow** is worst-hit at 283K fewer flights, followed by **Munich** at 264K.

And in terms of % of traffic lost, **Munich** again appears as the second worst-hit with -64% of 2019 traffic, only exceeded by **Manchester** at a staggering -67% of pre-pandemic flows (136K fewer flights), with **Düsseldorf**, **Rome-Fiumicino**, **Helsinki**, **Dublin** and **Stockholm-Arlanda** all closely clustered behind within 3 percentage points (-64% to -61%, 122-196K fewer flights).

**FIGURE 19: TRAFFIC LOSS ACROSS TOP 40 AIRPORTS, 2021 vs. 2019**

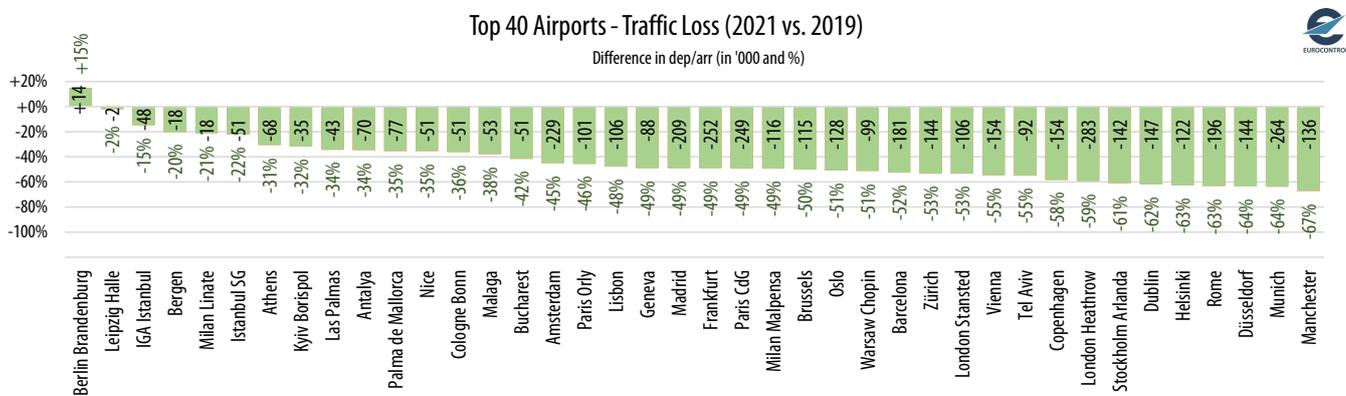
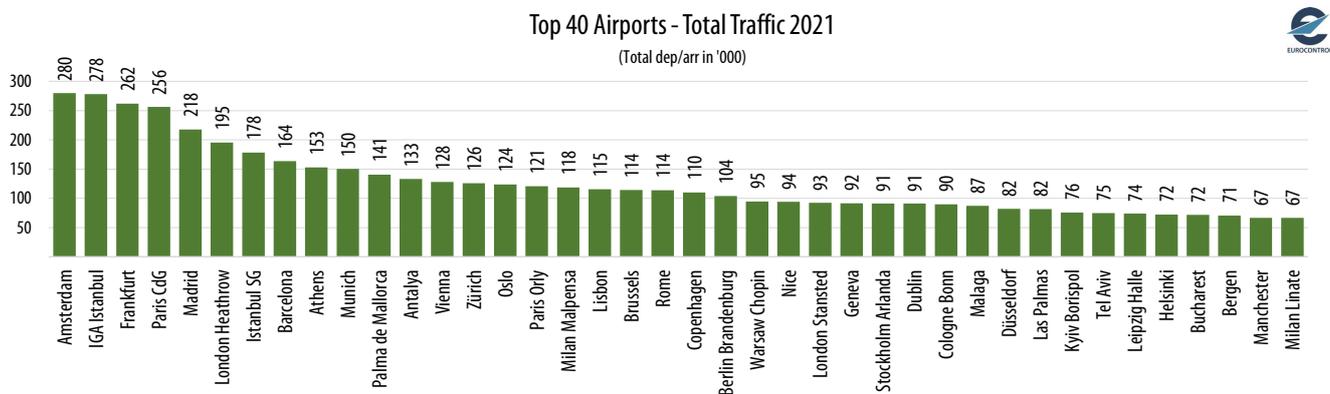


Figure 20 shows the total flights across the top 40 airports in the European network, showing a much tighter range thanks to the pandemic.

In 2019 Frankfurt topped the table with 514K flights, while the gap to 40th place Stuttgart was 381K. In 2021, that gap had shrunk to 213K between top-placed Amsterdam and 40th place Milan-Linate.

**FIGURE 20: TOTAL FLIGHTS (DEPARTURES/ARRIVALS) 2021 ACROSS TOP 40 AIRPORTS**



## Air traffic management

ANSPs have also been severely hit by the decrease in revenues due to the traffic drop as shown in Figure 21. Estimated losses in 2021 compared to 2019 amounted to **€3.7 billion** (€4.7 billion in 2020) despite the cost-cutting measures implemented by ANSPs (staff reductions/furloughs, salary/benefits reductions, early retirements, postponement of investments, etc.).

However, most of these losses are scheduled to be recovered via increases in Unit Rates (which are paid by aircraft operators for services provided) in the coming years. In the case of non-SES States, which operate under the full-recovery principle, revenue under recoveries in year n are fully recovered over up to 5 years starting from year n+2. For SES States, which operate under the Performance Scheme, a small percentage of the losses are

borne by ANSPs. However, more than 90% of the under-recoveries will be borne by airspace users from 2023 onwards (or the year following the adoption of the performance plan) and spread over 5 to 7 years. This is according to the exceptional measures amending the Performance Scheme due to the COVID-19 pandemic. In short, the effect of COVID is going to be felt heavily by airspace users in the coming years operating across all States.

Figure 21 shows how en-route revenue losses have changed thanks to the pandemic, with 5 States (**France, Germany, Italy, Spain** and the **UK**) hit extremely hard with major revenue losses.

**FIGURE 21: EN-ROUTE REVENUE LOSSES PER CHARGING ZONE vs. 2019**

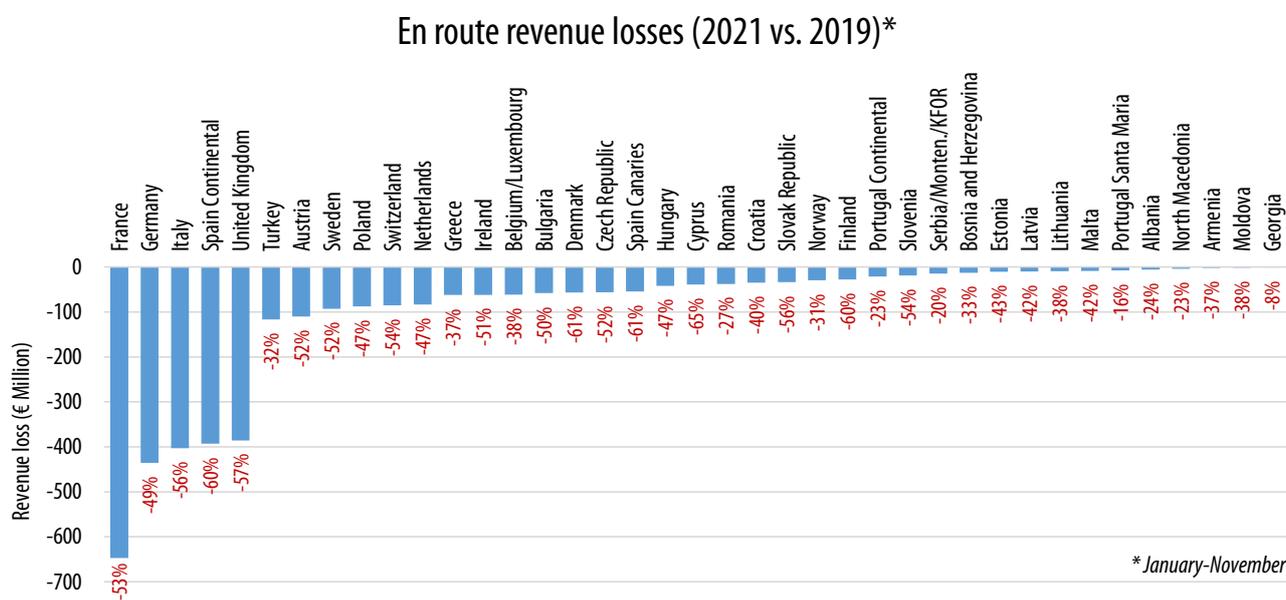
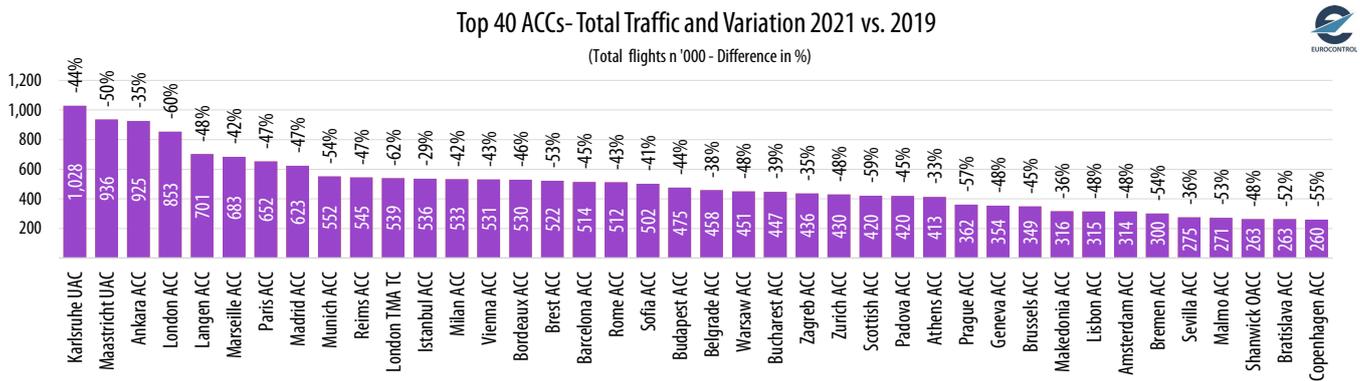


Figure 22 charts the impact on Area Control Centres comparing total traffic handled in 2021 and in 2019. Busiest was **Karlsruhe UAC**, 1,028K flights and -44% on 2019 levels, followed by **EUROCONTROL's Maastricht UAC** (936K, -50%) and **Ankara ACC** (925K, -35%).

In terms of greatest traffic drop, the three worst-impacted centres were all in the UK, with **London TMA** (-62%, 539K flights) hardest hit followed by **London ACC** (-60%, 853K) and **Scottish ACC** (-59%, 420K).

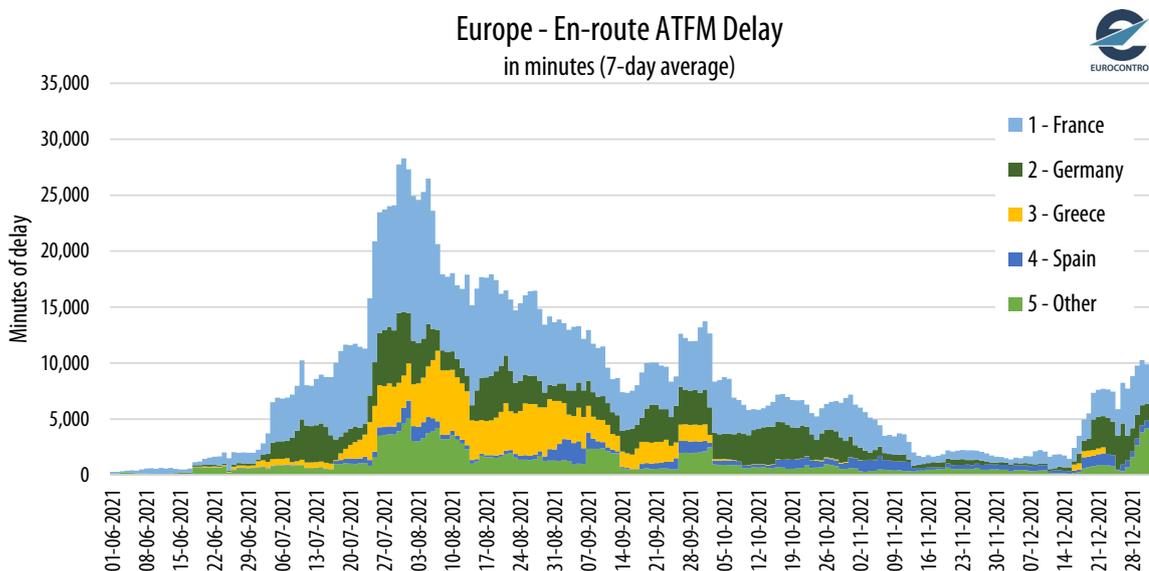
**FIGURE 22: TOP 40 ACC COMPARISON**



En-route ATFM delay, as Figure 23 shows, remained unevenly spread, peaking as ever during the busier summer months and accumulating in four countries, with 46% of total delays occurring in French airspace, 21% in

German airspace, 14% in Greek airspace and 6% in Spanish airspace. This once again shows how a few delay black spots can have a massive overall impact on the network.

**FIGURE 23: EN-ROUTE ATFM DELAY IN MINUTES OVER 2021**





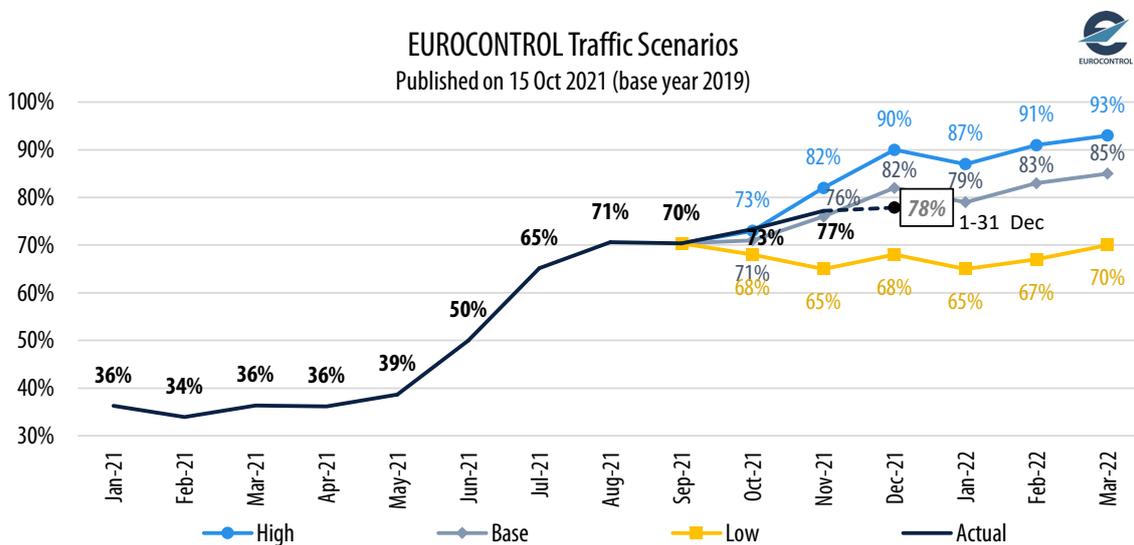
## What lies ahead: 2022 outlook & beyond

EUROCONTROL updated its June 2021 traffic outlook upwards on 15 October 2021 (Figure 25), following higher than expected flight levels during summer 2021. Since then, however, the actual levels have been in line with the base scenario, and dipping below that as December traffic has started to stall in the face of renewed restrictions as States react to the new Omicron variant. All in all, 2021 ended with total traffic **-44%** of 2019, closing the year with

a monthly daily average that stood at **-22% lower** than the same period in 2019.

The challenge for the first months of 2022 will be to stay close to the base scenario as countries ramp up booster campaigns and manufacturers look to modify vaccines to counter better Omicron; progress on both will enable a progressive relaxation of travel restrictions.

**FIGURE 25: DRAFT TRAFFIC SCENARIOS**



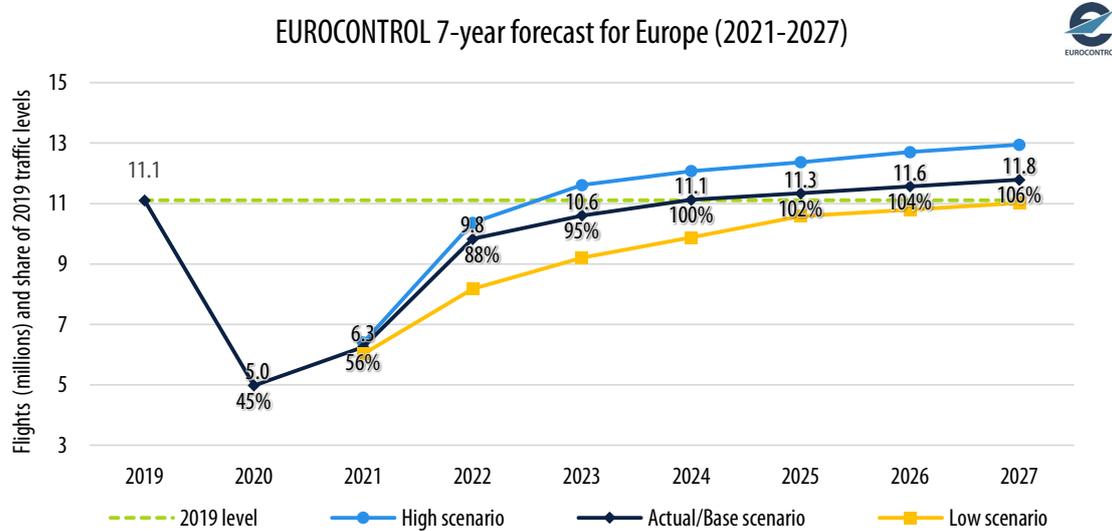
On 15 October EUROCONTROL also updated its medium-term forecast covering 2021-2027, as per Figure 26.

The total number of flights for 2021 corresponds to 56% of 2019 levels, in line with the **Base scenario** ('most likely') for 2021. In this scenario, the forecast predicts a return to 2019 levels by between 2023 (95%) and 2024 (100%).

The **Base scenario** for both the coming months and the medium term relies on the continuation of vaccination campaigns globally and in Europe, with vaccines and especially boosters proving effective against infection and new variants.

This scenario differs from the **High scenario**, which factors in a fully coordinated inter-regional approach, progress on dealing with COVID, and a faster recovery of flights outside Europe. However, the emergence of the Omicron variant looks set, if not to reverse the gains of 2021, at least to stall growth for the time being, which means that actions taken at State level in 2022Q1 will be key to determining how traffic further evolves over the year. In this regard, some major airlines are already displaying caution by cutting capacity in January by up to 30%.

**FIGURE 26:** 7-YEAR TRAFFIC FORECAST



The risk that aviation currently faces is that the **Low scenario**, which we have so far avoided in the aviation recovery, can once again not be fully ruled out. States are currently confronted with the need to accelerate booster campaigns or target population segments which have shown reluctance to be vaccinated, in order to control pandemic impacts. The risk that new or tweaked vaccines may be needed to tackle emerging COVID variants, or that governments will return to reintroducing lockdowns, travel restrictions or other measures, cannot be ruled out, while the longer the pandemic continues, the greater the

economic risk, including high energy prices, or even that people's propensity to fly begins to decline.

Nevertheless, the steady recovery of 2021 looks unlikely to be unwound, with all scenarios predicting an eventual recovery to normal or close to normal traffic levels by 2024/2025. In the high scenario, we reach 2019 levels by mid-2023, and by end-2023 in the Base scenario. Only in the Low scenario will traffic only fully recover by 2027, but even here, already by 2025 traffic will have reached close to normal pre-pandemic volumes.

## Conclusions

European aviation started 2021 in waiting mode as States sought to roll out vaccines. Summer 2021 delivered a better than expected recovery, and despite a worsening pandemic situation once more, as first Delta then Omicron have proven successful at evading vaccines, our sector is well placed to recover fairly swiftly to close to 2019 levels if confidence returns.

However, while the partial recovery has extended a lifeline to airlines, airports, manufacturers and everyone connected to aviation, 2022 will prove crucial if the sector is to regain profitability – and make progress on sustainability. 2021 saw widespread agreement on core actions that need to be taken – yet tangible progress still lags behind. Our core message in last year's 1 January Think Paper on 2020 impacts - *that we cannot miss the opportunity to 'build back better' in terms of relooking at the way the system is financed, regulated and integrated, and how it addresses sustainability* – remains a challenge that the sector needs to progress on, and progress quickly if we are to remain on track to decarbonise European aviation by 2050.

### KEY CONCLUSIONS

- 2021 saw a partial but sustained traffic recovery in Europe, starting with -64% in January vs 2019 levels, and ending it at -22% of 2019 levels in December. Mass vaccinations and the EU Digital COVID certificate helped deliver a solid summer recovery, and traffic has remained relatively stable at over 70% since the summer. However, total 2021 traffic was -44% of 2019 levels, 4.9 million flights fewer than 2019 – and not substantially better than 2020 (6.1 million fewer).
- The impacts of reduced traffic continued to be unevenly shared, with the five worst-impacted countries all in the north (-55% to -62% traffic), while the five least-impacted were all in the south (-8% to -27%).

- Greater predictability and returning travel have helped airlines and airports stay afloat, without however bringing balance sheets back into the black. Airline losses for 2021 stood at €18.5 bn with 1.4-1.5 bn fewer passengers, even if this was not as heavy as 2020's disastrous losses (€22.2 bn and 1.7 bn). Load factors (around 50-60%) are weighing on profitability, with the major airline groups operating 30-64% fewer flights.
- Aviation showed its resilience in 2021 to a crisis that had paralysed economies in 2020. Despite rising infection levels and new COVID variants, European societies have learned to manage the crisis, and aviation has been able to provide basic connectivity, even if, at around 55%, flight choice within Europe lags well behind traffic levels.
- While all aviation actors have embraced the need to build back more sustainably, the pace of change – particularly in making Sustainable Aviation Fuels more available – has not yet started to accelerate. Investment in new technological solutions must continue.
- Omicron triggered travel restrictions that constrained flights in the first half of December to 75%, but eased in the second half (81%) owing to the holiday period. The situation for January is less clear however, and some major airlines are already displaying caution, cutting capacity by up to 30% in January.
- 2022 traffic is expected to recover to 70-90% of 2019 levels – even though right now, the evolving pandemic has seen traffic fall away from our optimistic forecast to converge increasingly on our baseline forecast

## Methodology & sources

The bulk of data used in this paper is taken from EUROCONTROL’s unique aviation databases, notably [daily data on the latest network traffic situation](#) as well as a [range of other key indicators](#) from the Aviation Intelligence Portal. In this document, “Europe” should be understood as the “EUROCONTROL Network Manager area”, which encompasses our 41 Member States and 2 Comprehensive Assessment States (see our scope [here](#)).

Other sources used are airline losses data from [IATA](#) and airport passenger losses data from [ACI](#). Airline load factors are taken from publicly available company reports.

Any queries on the data in this report should be sent to our Aviation Intelligence Unit at [aviation.intelligence@eurocontrol.int](mailto:aviation.intelligence@eurocontrol.int).



## SUPPORTING EUROPEAN AVIATION

