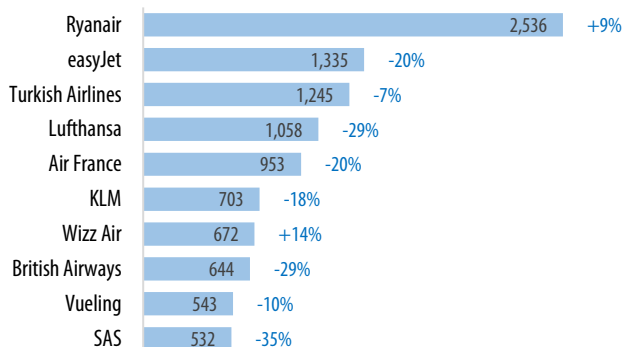


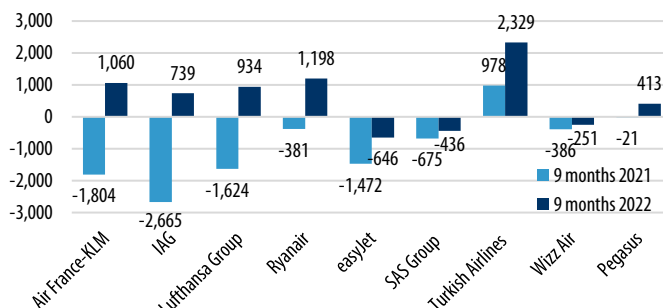
2022 – The year European aviation bounced back, despite war & Omicron/COVID

From a slow start at around 70% of pre-pandemic traffic as a new wave of COVID triggered restrictions, and despite the shock of Putin's brutal invasion of Ukraine, which closed airspace and affected traffic flows, **from March 2022 onwards European air traffic began a steady climb back** to the high 80%, levels maintained ever since – although the global numbers conceal **wide traffic variation** across airlines, airports, ANSPs and States. In total, 2022 saw **9.3 million flights, 83% of 2019 traffic**. That was 1.9 million fewer than 2019, but **3.1 million more than last year**. This Analysis Paper uses our unique network data to examine the state of the network as we head for 2023, in which we predict further strengthening to **92% of pre-COVID levels**, but also huge challenges in terms of matching capacity with demand, and keeping delays down.

Top 10 aircraft operators
(avg. daily flights and % vs. 2019)



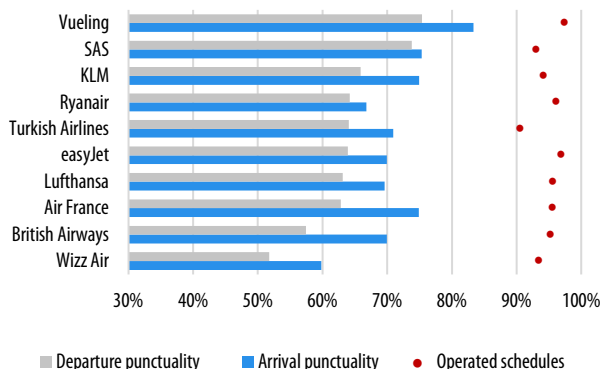
Operating profits - Main airline groups
(9 months 2022 vs. 2021)



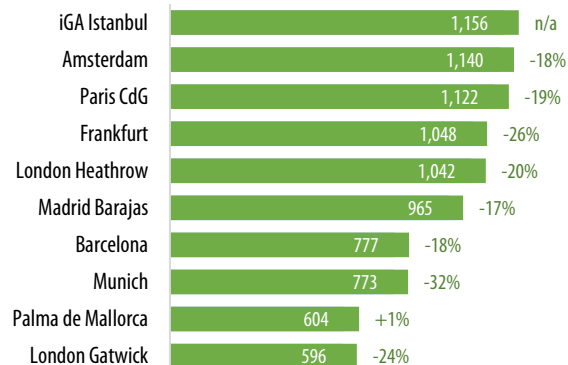
Note: IAG (before exc. items), Lufthansa (adjusted EBIT), Ryanair estimated, SAS (Nov21-Jul22)

Source: Company reports

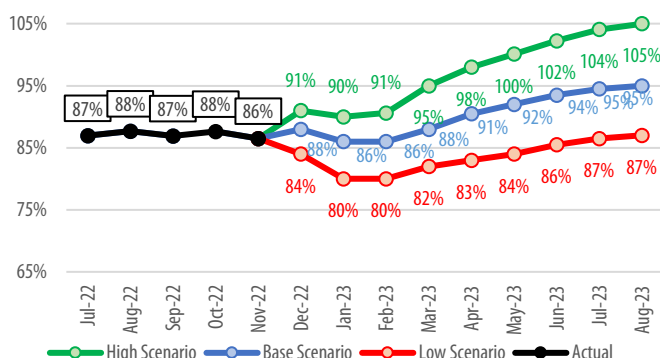
Average punctuality (OTP15) 2022
(Top 10 airlines in number of flights)



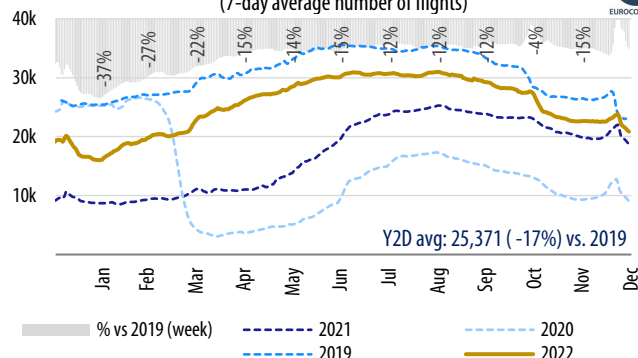
Top 10 airports
(avg. daily dep/arr and % vs. 2019)



EUROCONTROL Traffic Scenarios
Published on 15 December 2022 (base year 2019)



Traffic variation
(7-day average number of flights)



KEY CONCLUSIONS & OUTLOOK 2023

- **2022 saw European aviation weather the storm.** Despite Omicron pushing traffic down from 78% to 68% of 2019 in January, followed by the invasion of Ukraine in late February, traffic still quickly resumed an upwards path to 86% in May, and stayed stable until year-end in a narrow band of 86-88%. All-year traffic reached 83% of 2019, 9.3 million flights, just 1.8 million fewer than 2019.
- **War in Ukraine caused traffic to collapse in Ukraine** while unavailability of airspace significantly impacted traffic in Moldova and States adjacent to Russia and Belarus, as well as altering many traffic flows.
- **The recovery continues to be highly uneven** across airlines, airports, States and air navigation service providers, as well as regional flows – all of which vary between 70% and 110% of 2019 levels on average, with some extreme outliers.
- **Pent-up demand has brought most airline balance sheets back into the black** for the first time since pandemic start, with consumer demand proving resilient despite increasing ticket prices, as the energy crisis caused economic conditions to worsen across all European countries.
- **Low-cost carriers have been the big recovery success story of 2022**, consistently outperforming (at 85% of 2019 overall) the mainline (75%) and regional (74%) sectors, with the segment closing the year with a market share of 32.3%, just behind mainline carriers (32.4%). Meanwhile, all-cargo (106%) and business aviation (116%) continue to remain above their 2019 levels.
- **Delays and punctuality across the network were worse than in 2019**, as the speed of the summer recovery saw staff and capacity shortages across the sector. Arrival and departure punctuality were, at 72% and 66%, around 6-7 percentage points worse in both cases than 2019 – with peak summer seeing this drop in both cases to 40-50%.
- **Connectivity across the network significantly lags flight levels in virtually every State**, highlighting the challenge of returning to pre-pandemic flight levels. Domestic markets in many cases continue to lag the overall recovery averages.
- With travel beyond Europe (74% of 2019) remaining weaker than intra-European traffic (85% of 2019), all of Europe's major **airport** hubs apart from Istanbul iGA remained between -18% and -32% below 2019 levels; some smaller airports serving mostly European-only destinations however ended the year closer to or even above 2019 traffic.
- **If aviation is to remain on track to meet challenging sustainability targets, the pace of change needs to accelerate.** A host of new initiatives were launched in 2022, but further investment and stronger incentives are required.

- **We now expect European air traffic to hit 92% of 2019 next year, and to recover fully during 2025 – one year later than forecasted in June 2022**, in a 'base scenario' prediction that factors in weak economic growth, inflationary pressures and no immediate resolution to war in Ukraine, plus the additional economic pressures that the conflict has triggered.
- **However, 2023 is set to be the most challenging year of the last decade.** Keeping summer delays down will be an immense task for all actors, with airspace issues due to the Ukraine war, new aircraft delivered, possible industrial action, system changes and the progressive reopening of Asian markets all asking real questions of the system.

EUROPEAN AVIATION: 2022 HEADLINE DATA



35 million tonnes

fewer CO₂ emissions than in 2019 (January to November)



2.0 billion passengers

(estimated), 425 million fewer than in 2019



9.3 million flights 2022 vs. 11.1 million 2019 = annual loss of 1.8 million flights (2021: 6.2 million flights)

32,392 peak daily flights (8 Jul 2022), -13% compared to the 2019 peak of 37,228 (28 Jun 2019)

- Intra-European traffic **15%** down
- Europe-Rest of the World **26%** down
- Low-cost carrier flights **15%** down
- Mainline carrier flights **25%** down



17 min/flight of arrival schedule delay, +33% vs 2019

71.7% arrival punctuality, **6.4pp lower** than in 2019



En-route charges billed close to 2019 levels

€7.5 billion (estimated) in 2022, **5%** less than in 2019



Some markets already above 2019 levels. Very wide variation between States (+37% to -36% (excluding Ukraine)):

-  **4,698 daily flights** flights in the UK (-20%)
-  **4,243 daily flights** in Germany (-25%)
-  **4,234 daily flights** flights in Spain (-8%)
-  **3,737 daily flights** flights in France (-13%)
-  **3,165 daily flights** in Italy (-12%)



Leading aviation groups:

-  Ryanair +9% flights (**2,536** daily avg. flights)
-  Lufthansa Group -31% flights (**2,276** daily avg. flights)
-  IAG -19% flights (**1,890** daily avg. flights)
-  Air France-KLM -19% flights (**1,656** daily avg. flights)
-  easyJet -20% flights (**1,335** daily avg. flights)
-  Turkish Airlines -7% flights (**1,245** daily avg. flights)



European Network Performance

Total Traffic

2022 has seen a broad recovery despite two significant setbacks. A short-lived initial phase saw European aviation enter 2022 on an encouraging 78% of 2019 traffic levels, testament to the effectiveness of vaccines at controlling the pandemic (by reference, 2021 had started at just 36% of 2019). However, traffic started plunging once more in January 2022 as the **Omicron** variant triggered a new wave of restrictions, pushing all-month traffic down 10% to 68% of 2019. February 2022 saw a certain easing as the feared impacts of Omicron failed to materialise, with traffic starting to rise gently to 71% of 2019 levels.

Just as the network seemed to be pulling out of this second return to COVID restrictions, the recovery was then dealt a sudden and untimely shock by the **Russian invasion of Ukraine** at the end of February, resulting in chaos and devastation for the Ukrainian population. In addition to closing Ukrainian airspace to civil aviation from this point on, and also that of Moldova for a period, it has had a severe impact on neighbouring airspaces and traffic flows, with sanctions causing a major drop in flows eastward, and massive rises in inflation and energy prices across Europe that have slowed down the long-awaited aviation recovery.

And yet, despite all of this, 2022 is a story of resilience for the aviation sector. Traffic levels may have risen slower than expected, but they have risen steadily: to 71% in February 2022, 76% in March, 82% in April, and 86% in

May – with traffic ever since remaining stable in a narrow **86-88%** bound.

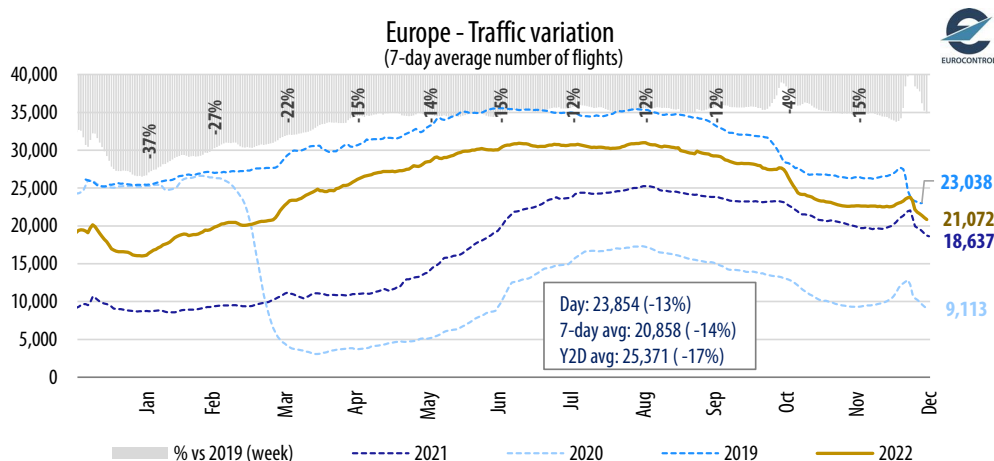
Beneath the positive trend lie many significant challenges, however. The closure of Russian airspace has meant a significant amount of longer re-routings as well as the loss of many routes, while increased military usage of European airspace has also disrupted the usual traffic flows. Summer saw around 90% of 2019 traffic but with less available airspace, resulting in higher-than-expected ATFM delays despite significant coordination by the EUROCONTROL Network Manager (NM) and all operational partners.

While welcome, the rapid increase in demand also revealed major issues across the aviation ecosystem. Almost half of all ATFM **delays** across the year were triggered by unanticipated staffing and capacity shortages at airlines, airports, ground handlers and immigration, all of which reduced capacity and brought about cancellations, substantial delays and uncertainty for passengers.

With December 2022 traffic staying at **87%** of 2019, and all-year traffic ending at **83%** of 2019, 2023 looks set to continue a path of steady recovery, with EUROCONTROL projecting 2023 will climb back to **92%** of pre-pandemic traffic.

Figure 1 shows the traffic (seven-day average) evolution in Europe for 2019 to 2022, and compares 2022 traffic levels with 2019.

FIGURE 1: TRAFFIC EVOLUTION ACROSS EUROPE 2019-2022



Delays and punctuality

The aviation industry struggled to keep up with the rapid increase in demand in 2022, in particular as of May. As a consequence, staff shortages and strikes both at airlines and at airports seriously impacted delays and punctuality across the network.

In terms of delay, arriving on time is the most important indicator for passengers, and in this regard, 2022 proved to be a difficult year. **Arrival schedule delay** (actual arrival time compared with scheduled arrival time) increased to **16.9 min/flight** from 12.7 min/flight in 2019 (+33%). Departure schedule delay was also up to 19.6 min/flight in 2022, rising from 15.3 min/flight in 2019.

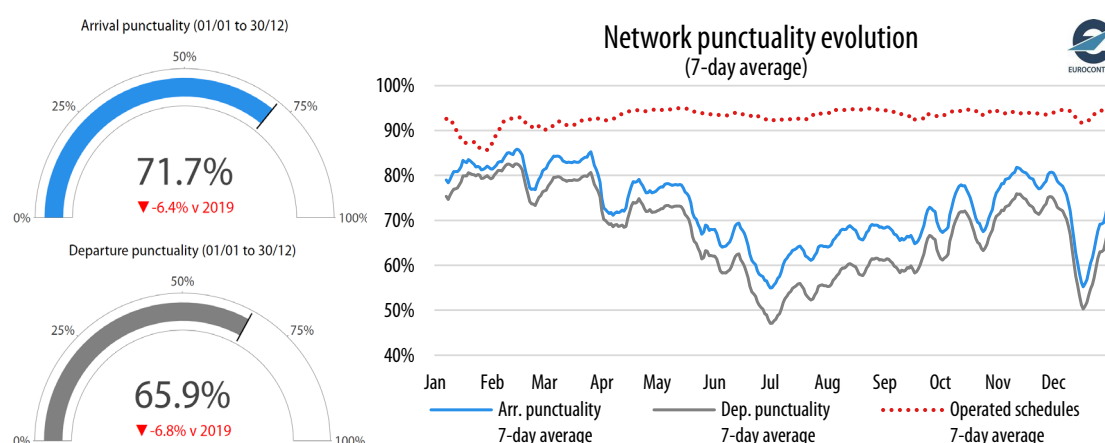
Looking at **punctuality** (OTP15¹), for **arrivals**, average punctuality in 2022 reached **71.7%**, while for **departures**

it stood at **65.9%**, 6.4 and 6.8 percentage points lower than in 2019 respectively.

However, the situation was far worse at the busiest time of the year. Figure 2 shows how over the summer the situation deteriorated markedly, with departure punctuality dipping below 50% at the beginning of July, and staying between 50-60% for most of the summer.

Another symptom of the difficulties experienced by the industry was the number of **scheduled flights that were not operated** (6.9%), almost twice as much as in 2019 (3.5%). This translates into an average of **1,853** non-operated scheduled daily flights in Europe over 2022.

FIGURE 2: PUNCTUALITY AND OPERATED SCHEDULE EVOLUTION OVER 2022



ATFM delay² is a small portion of the total delay but a very significant one, as it is used in the Single European Sky (SES) Performance Scheme to measure capacity both at en-route and airport level. At network level, total ATFM delay in 2022 was 17% lower than in 2019. However, delay per flight was on average **2.17 min/flight**, -0.4% lower compared to 2019 (2.18 min/flight). If we consider only en-route delay, the

average delay per flight was 1.76 min/flight compared to 1.58 min/flight in 2019, an increase of 11%.

ATFM delay peaked in the summer months as Figure 3 shows but stayed below 2019 levels, except in September due to industrial action in France. In October and November, delay was at 2019 levels, while in December it declined to 58% of 2019.

¹ <https://ansperformance.eu/definition/punctuality/>

² <https://ansperformance.eu/definition/atfm-delay/>

FIGURE 3: DELAY MONTHLY EVOLUTION, 2022 vs. 2019

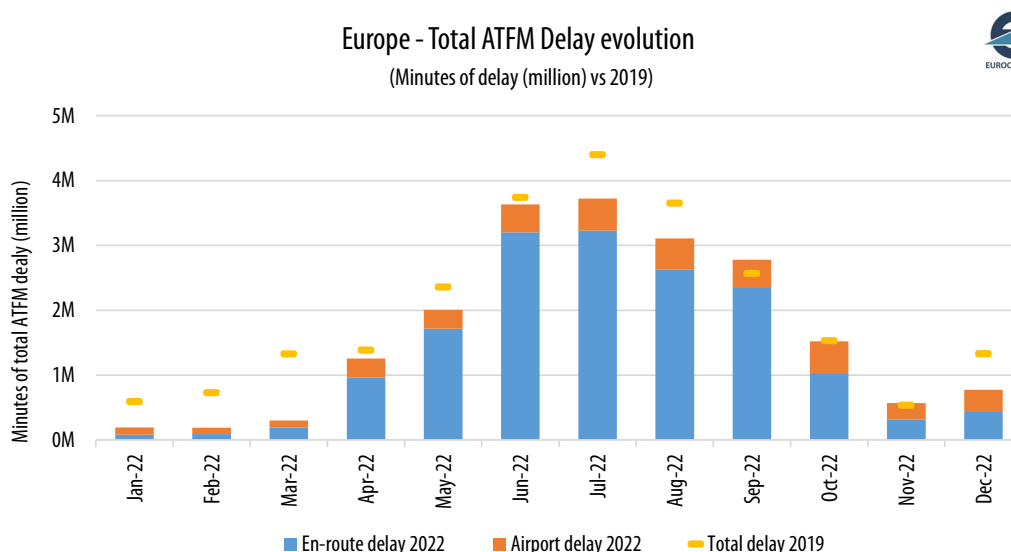
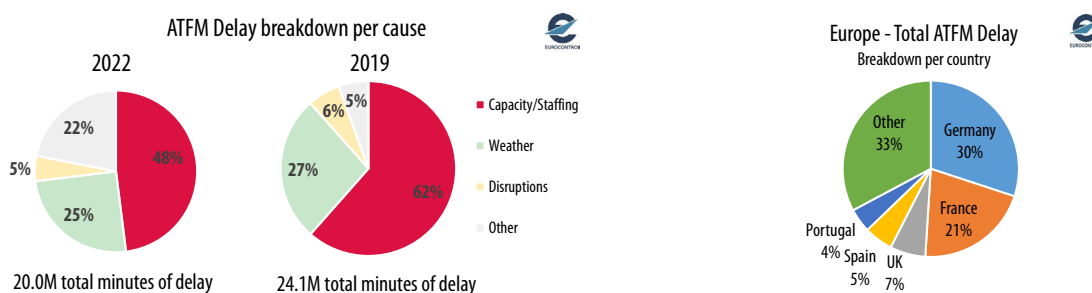


Figure 4 contrasts the breakdown of ATFM delay in 2019 and 2022. In the former, almost all delay was attributed to 2 factors: ATC/airport capacity and staffing (62%), and weather (27%). In 2022, the share of delay attributed to capacity and staffing decreased to 48%, while delay attributed to weather was 25%. However, the share of delay attributed to 'other' causes increased from 6% to 22%, mainly due to system implementations in Reims, Prague and Lisbon area control centres (ACCs).

Per country total ATFM delay remained unevenly spread. The first and third busiest States (the **UK** and **Spain**) together accounted for just 12% of total ATFM delay, whereas the second and fourth busiest (**Germany** and **France**) accounted for over half of all ATFM delay across the network (30% and 21% respectively).

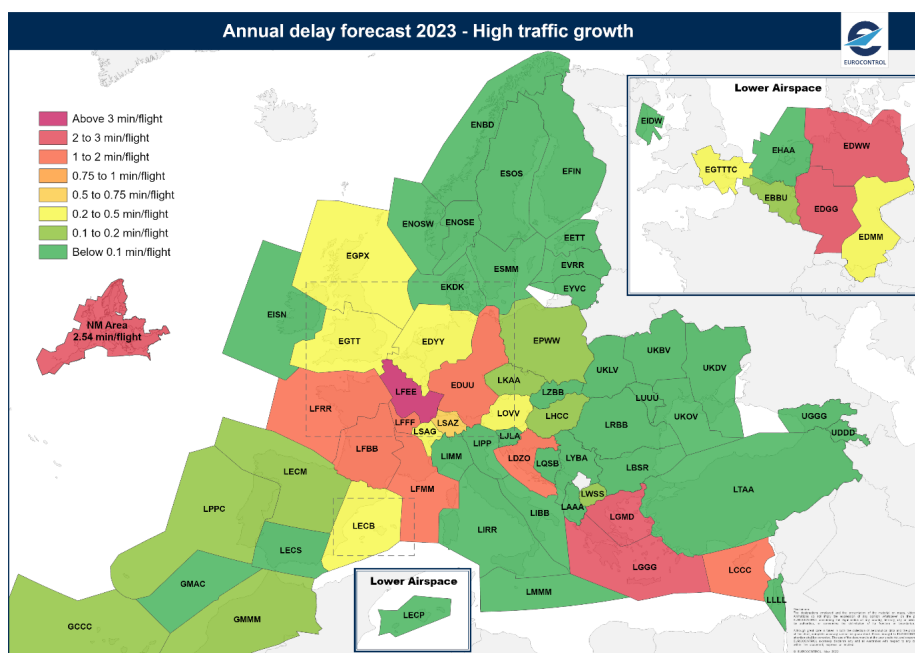
FIGURE 4: DELAY BREAKDOWN PER CAUSE AND PER COUNTRY



Looking ahead to 2023, as shown in Figure 5, we anticipate a risk of major ATFM delays. The EUROCONTROL NM is working closely with ANSPs and airspace users on a number of network mitigation measures, such as detailed transition plans for major ATM projects; enhanced sector opening schemes and revised sector capacities; airspace

reorganisation; and structured agreements on strategic re-routing proposals. In addition, the EUROCONTROL NM is working more closely with the airports to prepare for summer 2023, and will incorporate airport risk assessments into its network strategic planning. As a result of this work, the performance outlook for 2023 is expected to improve.

FIGURE 5: ATFM DELAY FORECAST FOR 2023



En-route charges billed

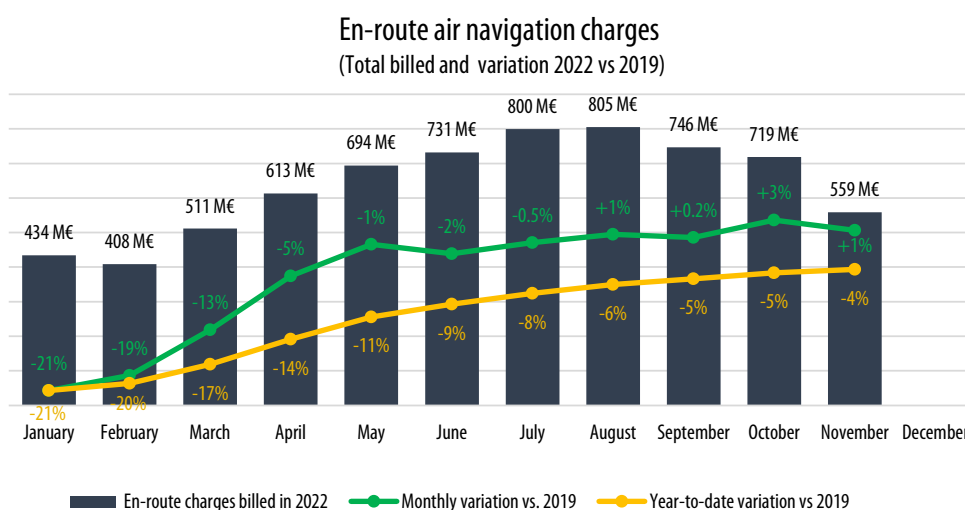
Total traffic may have only reached 83% of 2019, but **route charges have recovered strongly**, with the total amount billed to airspace users in the EUROCONTROL route charges area at **95%** of 2019 levels, totalling €7.0 billion (January to November), as per Figure 6. This reflects a rapid recovery with route charges billed from July 2022 consistently at or above 2019 levels. In total, the estimated billing amount for the full year 2022 is **€7.5 billion**.

The fact that amounts billed in 2022 have caught up or exceeded 2019, despite traffic lagging behind that, reflects the fact that the unit rates charged to the airspace users were, on average, higher than in 2019. It should also be noted that route charges are based on service units, which account for aircraft weight and distance flown, rather than number of flights.

More information on the factors affecting the 2022 unit rates for en-route different charging zones can be found in the [PRC's Performance Insight #4](#), including the impact of the two existing cost-recovery regimes (determined costs and full-cost recovery).

Unit rates are set to increase in 2023 for many European charging zones, in particular those handling most of the traffic, reflecting the current system whereby, for the States subject to the SES regulation, the under-recovery of air navigation service charges from the 2020-2021 shortfall will be addressed from 2023 onwards. As a result, all things being equal, the amounts billed to airspace users are also expected to rise.

FIGURE 6: EN-ROUTE CHARGES BILLED, JANUARY-NOVEMBER 2022 vs. 2019



Focus on States

Figure 7 shows how the recovery towards 2019 traffic levels is happening at largely different rates across States.

In terms of flights lost (arrivals and departures, no overflights), Germany (-509K flights, -25%) is most affected, overtaking the UK (-426K flights, -20%) which had topped the table in the two peak pandemic years. They are followed at some distance by France (-212K flights, -13%) and, owing to zero traffic now for over 10 months, Ukraine (-163K flights, -90%).

Ukraine tops the list in terms of percentage loss. Second is Latvia (-36%, -31K flights), which has also been massively affected by the Russian airspace closure, while third is Slovenia (-32%, -10K), with significantly lower numbers than in 2019 when Adria Airways was still operating.

At the other end of the table, four States have all-year traffic above 2019 levels. Albania, first (+37%, +11K flights), and

Bosnia & Herzegovina, third (+14%, +3K flights), have both profited from the significant expansion of Wizz Air operations to/from both countries. Armenia, second in the list (+32%, +9K flights), has seen a significant increase in traffic to/from the Middle East and Russia. Greece is fourth (+1%, +5K flights), showcasing the strong holiday season in southern Europe this year which is also reflected in the fact that four of the six States recording between 91% and 97% of 2019 are also classic holiday destinations (Portugal, Croatia, Turkey and Spain; the other 2 States over 90% are Romania and Luxembourg).

As per Figure 8, despite high traffic losses, the UK (1.7 million flights) and Germany (1.5 million flights) still lead the rankings in terms of total traffic, ahead of Spain (1.5 million), France (1.4 million) and Italy (1.2 million).

FIGURE 7: TRAFFIC VARIATION ACROSS STATES, 2022 vs. 2019

Difference in flights (dep/arr - in '000 and %)

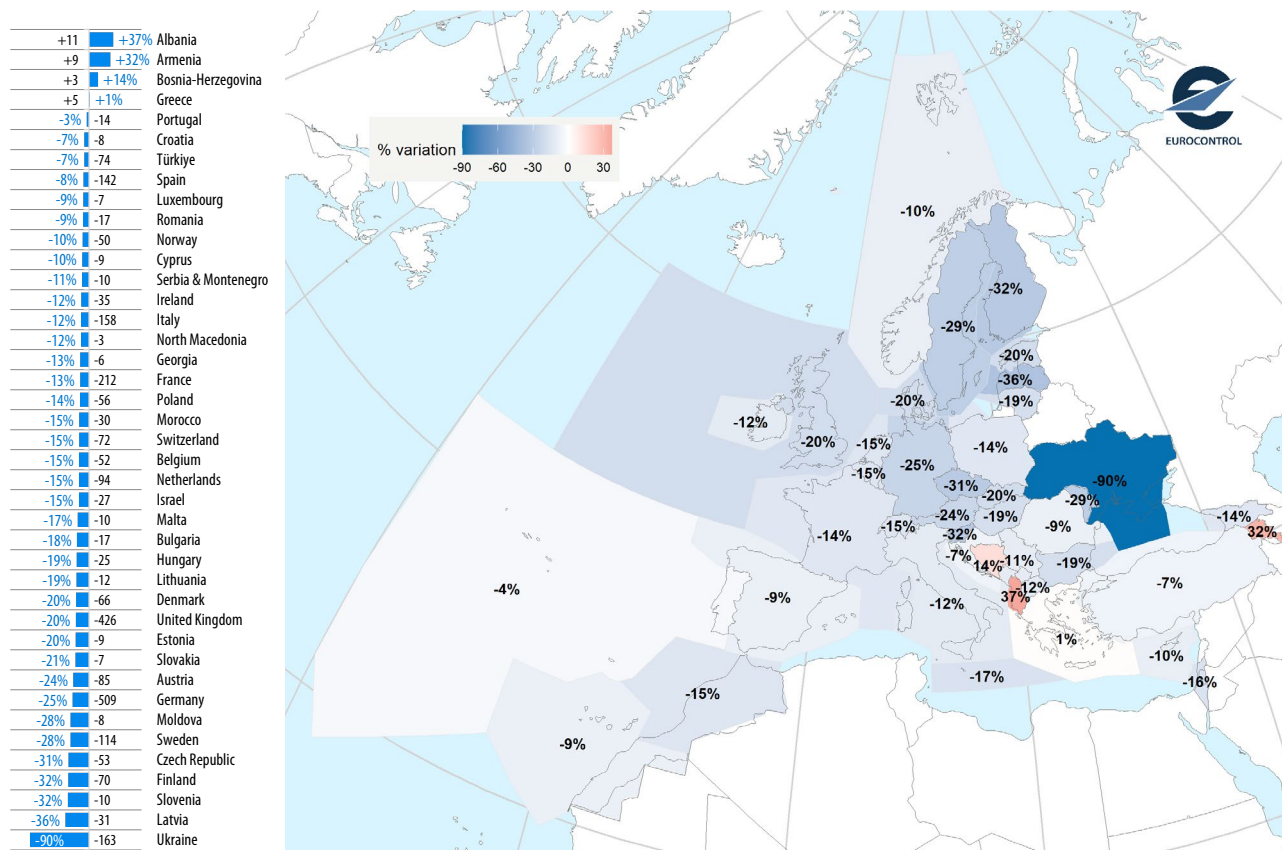
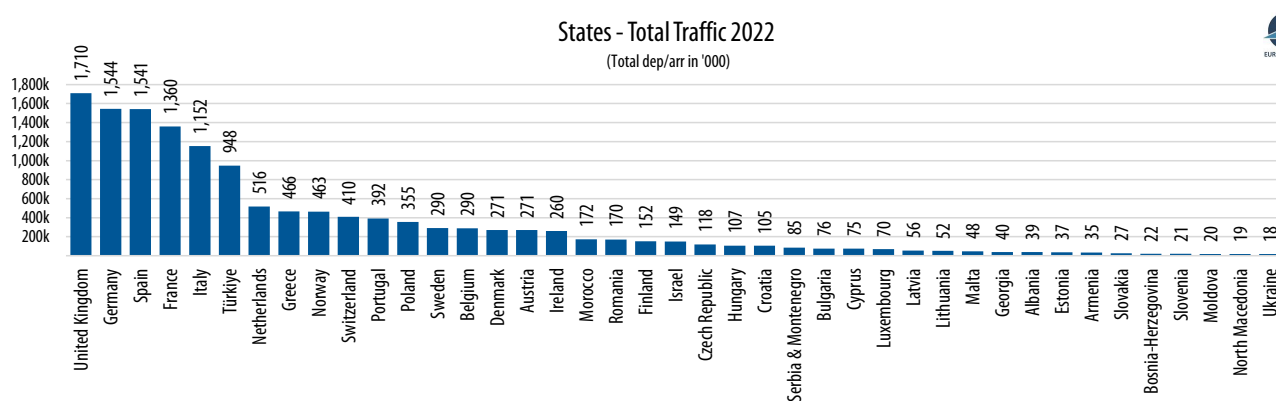


FIGURE 8: TOTAL TRAFFIC 2022 ACROSS STATES



Market Segments

Figure 9 shows the evolution of the different main aircraft operator market segments³ since the start of the pandemic – and clearly shows how markets are returning to similar levels after the distortion of the two main pandemic years.

All-cargo has remained very strong throughout the period, consistently operating at or above 2019 levels. However, with the recovery of the other segments, its market share in 2022 has reverted to 4.2%, down from 6.7% in 2021.

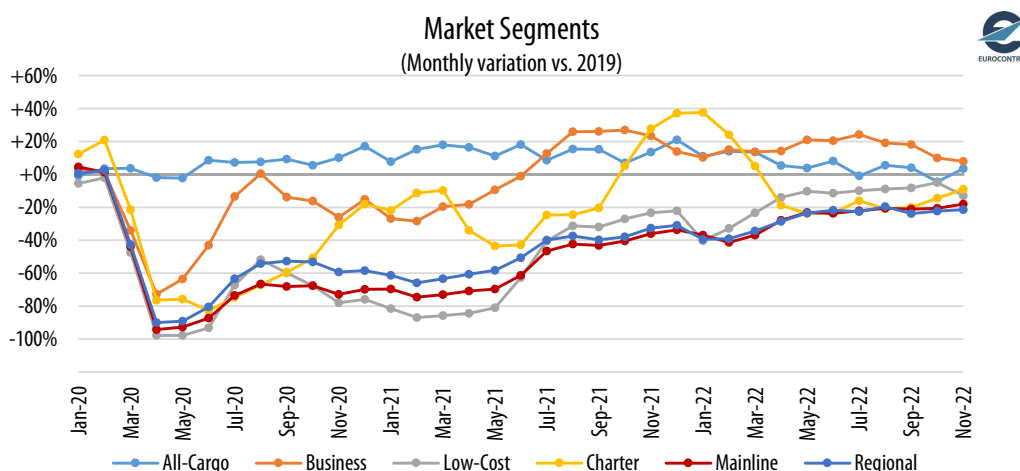
Even stronger in 2022 was **business aviation**, operating at +16% compared to 2019 traffic levels, and consistently over pre-pandemic levels since mid-2021. However, there has been a deceleration in the later months of 2022, with business aviation operating below 2021 levels. As a result, its market share has declined this year (8.6% vs. 11.4% in 2021), but still remains significantly higher than its 2019 share (6.2%).

Charter flights saw increased demand at the end of 2021 and beginning of 2022 but were directly impacted by the Russian invasion of Ukraine, stabilising at -20% vs. 2019 since March; however, the final months of the year have shown an uptick in demand.

Low-cost carriers have been the big recovery success story of 2022. After an early dip following the Omicron wave, the sector expanded quickly to meet soaring demand as travel constraints and restrictions were lifted. The low-cost airlines consistently outperformed most of their mainline and regional counterparts, with the sector as whole closing the year -15% down, and with a market share of 32.3%, only slightly behind mainline carriers.

Demand for traditional **mainline** and **regional carriers** has gone hand in hand throughout 2022. While they were often required to maintain regional connectivity during the worst of the pandemic, neither sector was able to recover as fast as the other market segments when demand returned, with both mainline and regional only reaching 75% and 74% of 2019 respectively. At the end of 2022, the market share for mainline carriers stood at 32.4%, while the regional sector had 13.3% of the total, both down (-3.8% and -1.7% respectively) compared to their 2019 market shares.

FIGURE 9: MARKET SEGMENTS, % CHANGE Y-O-Y



³ Note that new market segment rules were introduced May 2022 (<https://www.eurocontrol.int/publication/market-segment-rules>)

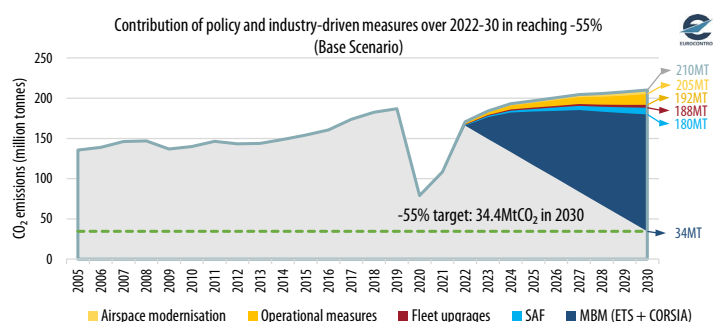
Sustainability

Reaching net zero emissions by 2050 is achievable, but it will require coordinated action by aircraft manufacturers, airlines, airports, fuel companies, ANSPs, the EUROCONTROL NM and governments and regulators. With our report and companion Think Paper [Objective Skygreen 2022-2030](#), EUROCONTROL has assessed what achieving the intermediate target of a 55% reduction in emissions by 2030 compared to 1990 levels would mean for aviation in practical terms, as per Figure 10. We have looked at the impact and extra cost of policy measures, and

at how industry-driven measures can help meet the target and lessen the overall extra cost. Our figures show that emissions reduction requires significant investment, and that is only possible if aviation's revenue is high.

Focusing on 2022 (January-November), CO₂ emissions were **19.6%** lower than in the same period in 2019, whereas the departures responsible for these emissions were **15.1%** below 2019 levels.

FIGURE 10: ESTIMATED CO₂ EMISSIONS 2022-2030, CONTRIBUTION OF POLICY AND INDUSTRY-DRIVEN MEASURES



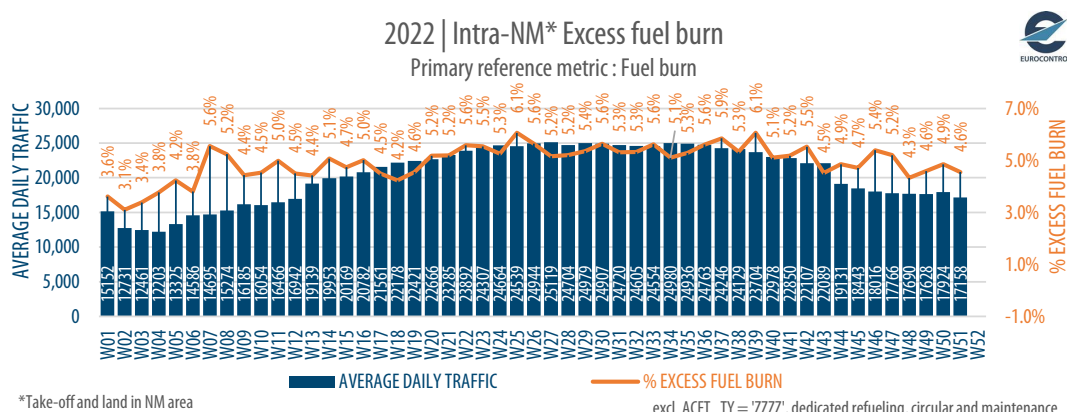
The XFB (**Excess Fuel Burn**) operational indicator measures the fuel inefficiency corresponding to the actions of all stakeholders per city pair. Figure 11 shows how the indicator has remained between 3.1% and 6.1% over 2022.

While traffic remained low (around 15,000 flights per day) during the winter schedule (the first 12 weeks of the year), the XFB oscillated between 3.1% and 5.0%, with the indicator also capturing the impact of the violent storms of Weeks 7 and 8 with a peak of 5.6%.

Later in the year, as traffic increased towards the peak summer months, the XFB stabilised, ranging between 4.5% and 6.1% from mid-May (Week 20) until Week 43 (the end of the summer schedule).

While these XFB values are up slightly on those in 2021, peak traffic has also increased by approximately 25% since last year. Furthermore, in 2022 the XFB has remained well below pre-pandemic levels (7-8% to 9.7% in 2019), showing that the efforts made by the industry to improve flight efficiency are producing results.

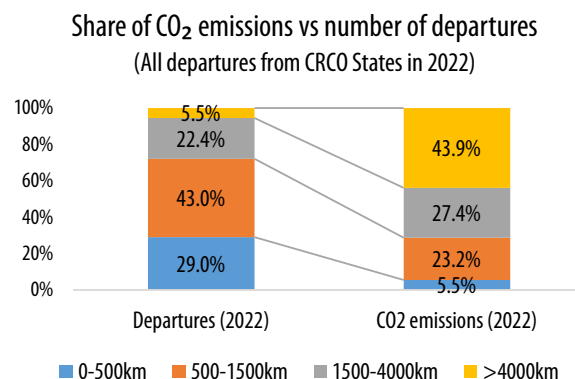
FIGURE 11: EXCESS FUEL BURN (XFB), 2022



Long-haul flights still have the highest impact on emissions. Figure 12 shows that in 2022, **5.5%** of the flights over 4,000 km were responsible for **43.9%** of all emissions whereas short-haul flights (below 500 km), with a share of **29.0%** of all flights, were only responsible for **5.5%**.

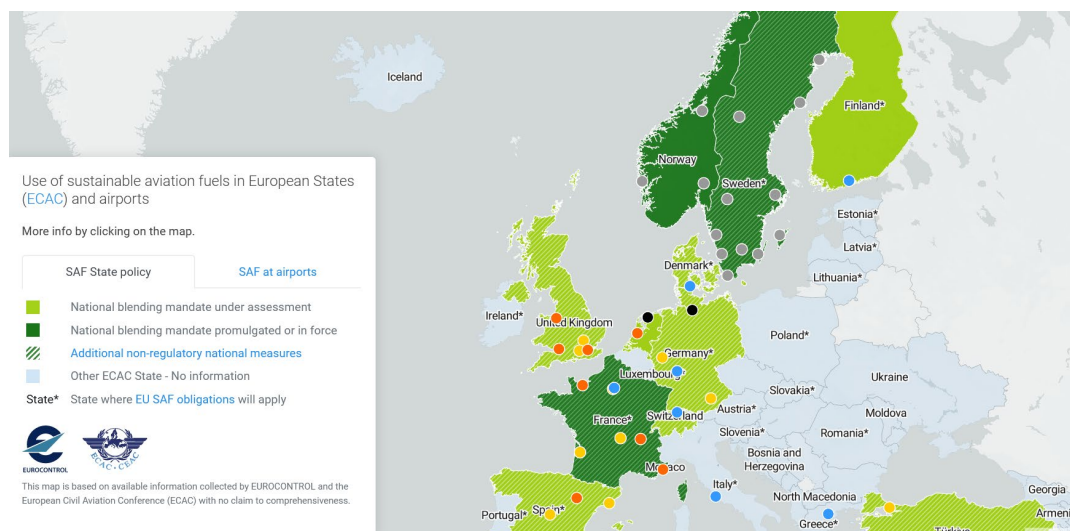
Despite this, in the short term, it is the short-haul sector which has the greatest potential to reduce emissions with the entry into service of electric, hybrid and hydrogen-powered aircraft in the coming years, and efforts are increasing in this regard, with initiatives like the new Alliance for Zero Emission Aviation (AZE) which was launched at EUROCONTROL's HQ in November 2022.

FIGURE 12: CO₂ EMISSIONS vs. NUMBER OF DEPARTURES, 2022



The other main avenue towards reducing emissions in the short term is by increasing the supply and use of sustainable aviation fuels (SAF). EUROCONTROL and the European Civil Aviation Conference (ECAC) have launched a cooperation on SAF in Europe to inform stakeholders about national regulatory measures, the status of **SAF** use at specific airports, and to report on unique trial cases. With EU and national rules currently being worked on and put in place for aviation, the map (see Figure 13) provides an overview on the current status on SAF, the use and availability of which is expected to evolve over the coming months and years (<https://www.eurocontrol.int/shared/saf/>).

FIGURE 13: EUROCONTROL-ECAC MAP ON THE USE OF SAF IN EUROPEAN STATES



Finally, this summer's heatwaves and thunderstorms indicate the growing risk of climate change to aviation. Together with ACI-EUROPE, EUROCONTROL has established the European Aviation Climate Change Adaptation Working Group, to support operational stakeholders in adapting to the impacts of climate change and building up climate-resilience.



European airline performance

2022 saw many airlines rebuild their balance sheets, with virtually all the leading airline groups back in the black and posting sizeable operating profits. Once again, there was no wave of airline bankruptcies, and while rising jet fuel prices meant ticket prices did not decline, this nevertheless failed to depress demand (see the *Economic Impacts* section for more analysis).

Traffic

Europe's leading carrier, as per Figure 14, continued to thrive in 2022, with **Ryanair** staying firmly top in 2022 for the eighth year running. The group closed the year strongly at **+9%** of 2019 levels, continuing their growth trend, with a daily average of **2,536** flights.

easyJet, which had struggled during the peak pandemic years due to travel restrictions to/from the UK, reclaimed second spot in the rankings (up from 5th last year) with **1,335** average daily flights (-20% vs. 2019), reflecting strong seasonal summer performance.

Turkish Airlines remained strong all-year round including a summer spent operating above 2019 levels, but dropped one place to third (**1,245** daily flights, -7% vs 2019) for the whole year.

Three flag carriers occupy positions 4-6. **Lufthansa**, **Air France** and **KLM**, as traditional mainline carriers reliant on a hub model, have recovered slower than their low-cost counterparts. In particular, Lufthansa (-29% vs. 2019) has seen a very weak recovery in German internal demand, with a rise in alternative methods of travel or reduced business travel by air.

As in 2021, **Wizz Air** holds on to 7th place with **672** daily flights, and remains the top 10 carrier with the strongest

growth rate, **+14%**, compared to pre-pandemic 2019. This has seen the carrier strongly expand operations in countries like Italy, Spain and Albania.

With UK travel restrictions being lifted, **British Airways** is in 8th position, back in the top ten after having lost its spot in the list in 2021. However, the carrier is still far from 2019 levels (-29%), resulting in a 2022 average of **644** daily flights.

Vueling has climbed one position vs. 2021 to 9th place thanks to the robust recovery of Spanish domestic traffic and a very strong holiday season.

SAS finished with a -35% loss of traffic vs. 2019, the highest in the top ten, sliding to 10th position. In addition to the weak recovery of the Scandinavian market, SAS was hit by strikes by ground handling staff in Copenhagen in the spring, and by the pilot union later in July.

The only absence from the 2021 list is **Pegasus Airlines**, now in 11th place.

As was the case in both 2020 and 2021, **Eurowings** and **Norwegian Air Shuttle** remain absent from the list, currently standing at 12th and 14th place respectively.

FIGURE 14: TOP 10 AIRCRAFT OPERATORS, 2019 vs. 2022

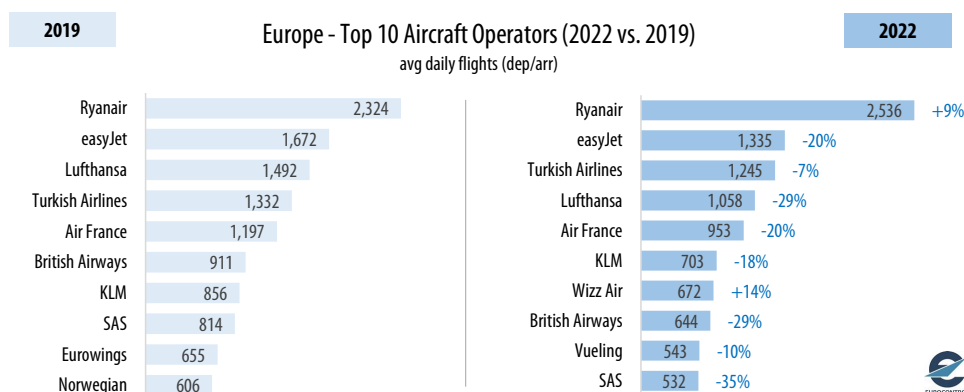


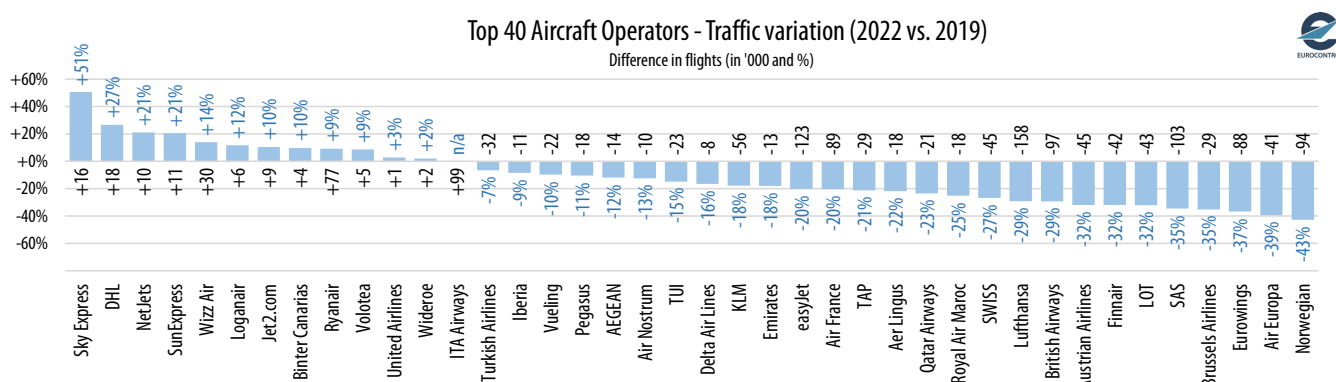
Figure 15 looks at the cumulative traffic variation for the top 40 aircraft operators over 2022. The recovering demand for travel is reflected in the fact that 12 airlines are up on 2019 levels, compared with only three last year.

The category of most flights added is also headed by **Ryanair**, with **+77K** flights more than in 2019, followed by **Wizz Air** with **+30K**. The largest percentage increase, on the other hand, was recorded by **Sky Express**, **+51%**, with another two cargo carriers in the top four (DHL and SunExpress). **NetJets** is third with **+21%**, showcasing the strength of the business aviation market segment.

At the other end of the scale, **Lufthansa** suffered the highest loss in terms of number of flights with **-158K**, followed by **easyJet** with **-123K** despite its strong recovery in 2022.

As was the case last year, **Norwegian** tops the list in terms of percentage loss (**-43%** and **94K** fewer flights). **Air Europa** (**-39%** and **-88K**) and **Eurowings** (**-37%** and **-88K**) are the only other major airlines operating at less than 65% of pre-pandemic levels.

FIGURE 15: TRAFFIC VARIATION ACROSS THE TOP 40 CURRENT AIRCRAFT OPERATORS, 2022 vs. 2019



Delays and punctuality

High levels of traffic combined with staff shortages and strikes at both airlines and airports tested passengers' patience this year.

Figure 16 shows how all-causes departure delays between January and November 2022 increased significantly to an average of **17.6 min/flight**, up from 13.1 min/flight in 2019.

Reactionary delay (caused by late arrival of aircraft, crew, passengers or baggage from previous journeys) was the

main contributor with **8.1 min/flight**, 42% more than in 2019. Airline, ground handling and airport delays, directly impacted by the previously mentioned staff issues, was the second main driver, contributing 5.4 min/flight (+42% vs. 2019).

Over the summer (May to September 2022), all-causes departure delays reached an average of 22.2 min/flight, considerably above 2019.

FIGURE 16: DEPARTURE DELAY⁴ (ALL-CAUSES) BREAKDOWN, 2022 (Jan-Nov) vs. 2019 (Jan-Nov)

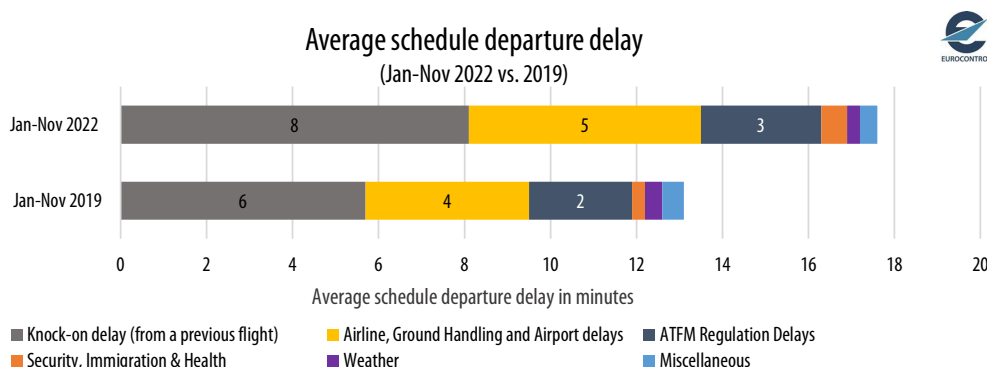


Figure 17 on the next page shows the **average schedule delay** (actual arrival/departure time minus scheduled time; early flights are considered to be delay-neutral) for the top 10 airlines in terms of traffic in 2022. While there are considerable differences, despite the strong increase in reactionary delays, **all airlines were still able to keep their arrival delays in 2022 below their departure delays**.

Only SAS and Vueling showed an average **departure delay** below 15 min/flight, with Wizz Air closing the ranking with 32 min/flight.

In terms of **arrival delay**, Air France and KLM joined SAS and Vueling with an average delay of below 15 min/flight; Wizz Air however registered 27 min/flight.

Punctuality (OTP15) was affected by the same factors that contributed to delay, and Figure 18 paints a similar picture for the top 10 airlines.

Vueling and SAS topped the ranking again with 75% and 74% punctual departures, and 83% and 75% punctual arrivals respectively.

All airlines except Wizz Air and British Airways recorded departure punctuality higher than 60%; whereas for arrivals, all bar Wizz Air had punctuality levels above 65%.

All the top airlines had better arrival than departure punctuality, indicating the use of schedule buffering. British Airways and Air France saw the largest performance gains during flight, with arrival punctuality improving by more than 10% compared to departure punctuality.

While topping the punctuality ranking, SAS recorded the second lowest percentage of **operated schedules**⁵ (93.2%) over 2022. This translates into 39 daily scheduled flights not being operated; a large component of this lies in industrial action in July, and a further reduction in planned schedules during September and October to align with crew and other staff resources. Only Turkish Airlines had a lower operated schedule percentage (90.7%).

Best-in-class were Vueling and easyJet, operating 97.6% and 97.1% respectively of their scheduled flights during the year.

⁴ Delay causes as reported by airlines to EUROCONTROL, this covering 70% of commercial pax traffic in Europe.

⁵ <https://ansperformance.eu/definition/opschedules/>

FIGURE 17: AIRLINE SCHEDULE DELAY, 2022

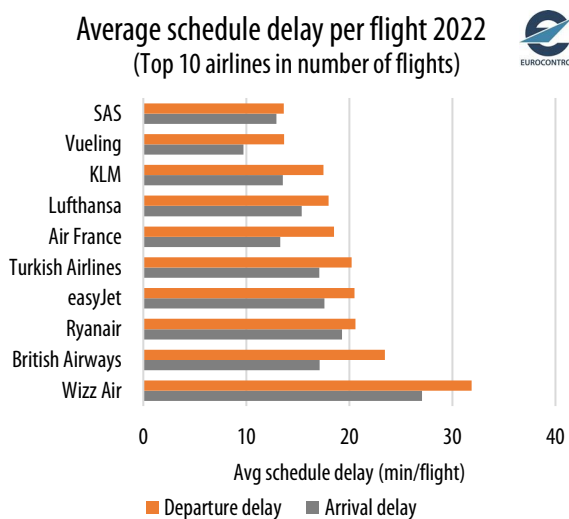
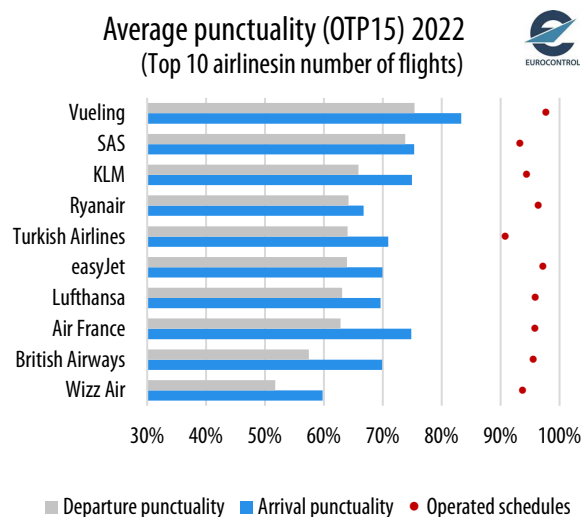


FIGURE 18: AIRLINE PUNCTUALITY AND OPERATED SCHEDULES PERCENTAGE, 2022

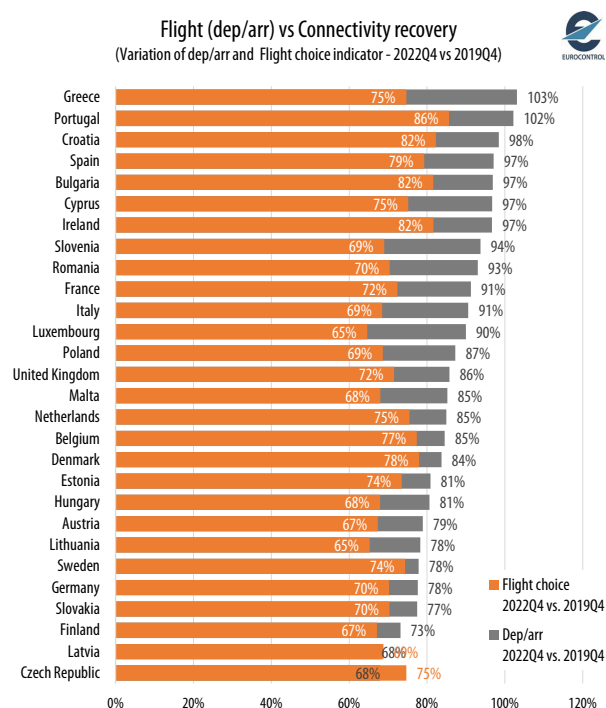


Connectivity

The pandemic seriously limited passengers' options to travel around Europe let alone beyond, with airlines cutting or limiting their offer on some routes, in particular less profitable ones.

EUROCONTROL's flight choice indicator, which evaluates how many options a person has on average to get to their destination within Europe, shows how connectivity has improved since peak-pandemic, but still lags well behind 2019 values in virtually all cases, as Figure 19 – contrasting total traffic with flight choice per country for 2022Q4, and pre-pandemic 2019Q4 – clearly shows.

FIGURE 19: CONNECTIVITY 2022Q4 vs. 2019



Flights over Q4 ranged from 68% to 103% of 2019 levels, whereas connectivity across the network was down in a much narrower range of 65%-86%. The highest loss of flight choice can be found in **Luxembourg** (65% of 2019), **Lithuania** (65%) and **Finland** (67%), the latter two affected by the closure of Russian airspace. And seven other States have flight choice levels below 70% of 2019 – Austria, Hungary, Malta, Italy, Poland, Latvia and Slovenia.

On the other end of the spectrum, we have **Portugal** (86% of 2019), with also the second highest recovery in terms of flights, plus **Croatia** (82%) and **Ireland** (82%), which are the closest to their 2019 levels in flight choice.

In terms of the gap between flight and flight choice recovery, **Greece** stands out with a 28% differential, followed by Slovenia and Luxembourg (25%). (The gap for Slovenia, however, is artificially distorted, as the 97% flight recovery when compared with 2019Q4 coincides with the collapse of operations of Adria Airways in September 2019.)

Another way to analyse connectivity is to look at the routes that were "lost" during the pandemic and compare with the newly opened ones.

The left side of Figure 20 on the next page shows European routes (including to Russia and Belarus) that had one or more flights⁶ per day in 2019 and are **no longer operated** (with less than 25 total flights over 2022). In total there are **233** such routes. The right shows **newly opened routes** (one or more flights per day in 2022, vs. less than 25 total flights in 2019), a total of **49**.

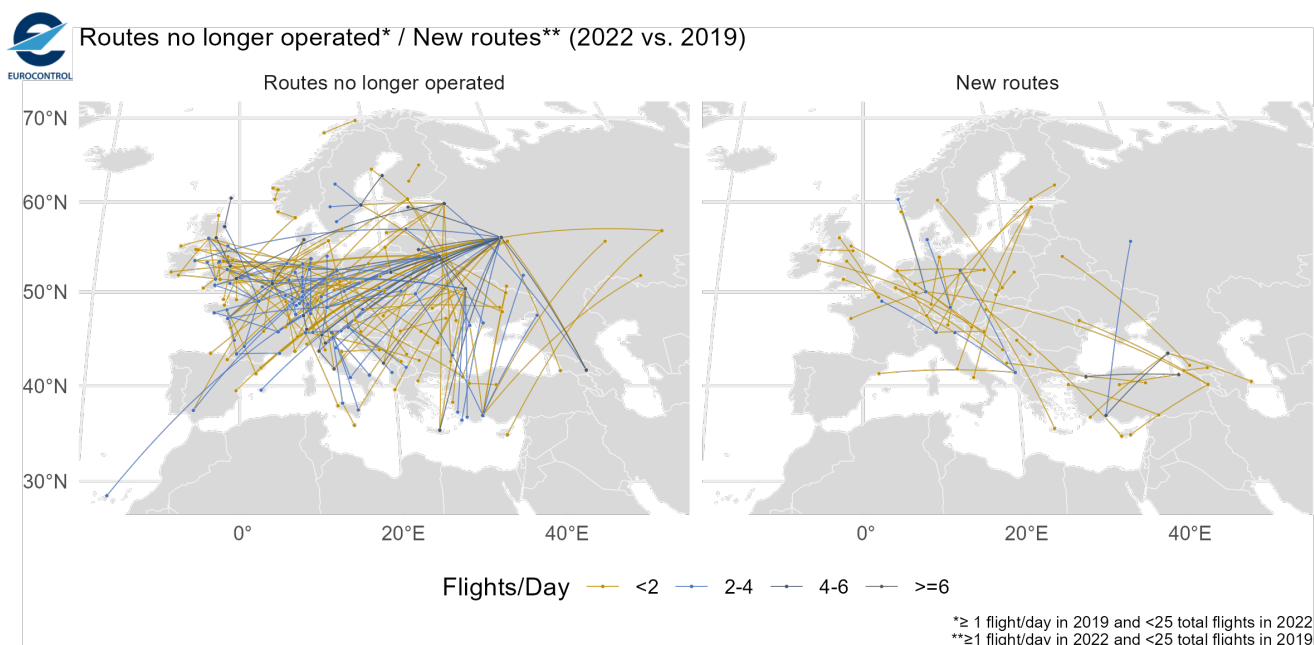
The impact of the war in Ukraine can clearly be seen as **87 of the 233 no longer operated routes are to/from Russia, Belarus or Ukraine**. Other routes to/from neighbouring countries have also been indirectly impacted by the conflict.

There are other contributing factors that account for the lost connections - the bankruptcy or disappearance of carriers like Adria Airways, Montenegro Airlines, Stobart Air or Alitalia, and the temporary cessation of operations of Flybe, have all directly impacted some routes. Environmental policies and substitution by other methods of transport have also had an impact, in particular on shorter domestic routes.

Overall, although we see some improvement with respect to 2021, the choice of destinations available to passengers is still far from pre-pandemic levels and, considering the current economic and political environment, it is difficult to see a full recovery in the short term.

⁶ Excluding cargo, military and business aviation.

FIGURE 20: EUROPEAN ROUTES NO LONGER OPERATED / NEW ROUTES 2022 vs. 2019



Network flows

Figure 21 shows how **intra-European** traffic accounted in 2022 for 81% of all network traffic with **7.3** million flights in total. All other principal flows combined add up to 1.7 million flights.

If we examine the top country pairs (Figure 22) we see that, despite the relative weakness of some domestic flows, they still make up eight of the top 10 European flows. Only three international flows – **Spain-UK**, **Spain-Germany** and **Spain-France** – make the top 10, all with a strong recovery (only -11%, -12% and -3% vs. 2019, respectively).

The figure shows the slower-than-average recovery of some domestic markets. In particular, the **UK** and **Germany** (-25% and -38% vs. 2019) drop to 4th and 8th place in the list. The **Turkish** domestic market, one of the most resilient during the worst of the pandemic, has also slowed down in 2022, -19% overall during the year.

FIGURE 21: SHARE OF TOTAL FLIGHTS

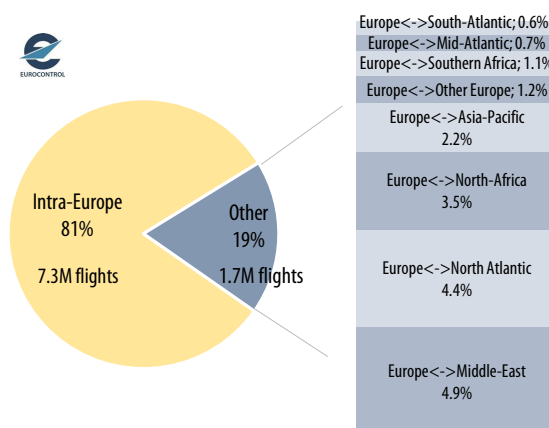
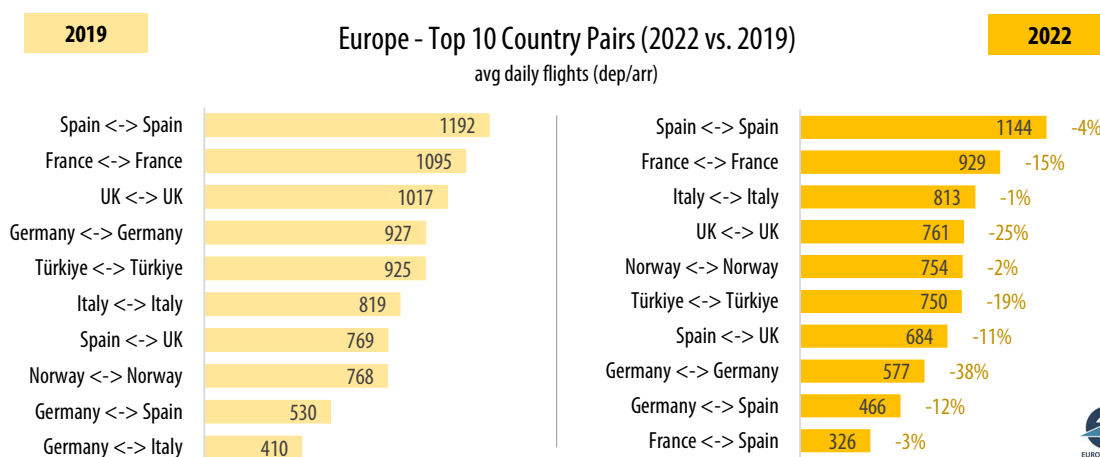


FIGURE 22: TOP COUNTRY PAIRS WITHIN EUROPE, 2019 vs. 2022



Figures 23 and 24 show all global flows compared to 2019. Intra-European flights represent 81% of the total flights, unchanged from last year despite the impact of the Russian invasion of Ukraine on flights to/from Russia and Belarus (-71% vs. 2019), and a still very low Asia/Pacific flow (-33% vs. 2019).

All other principal flows have recovered at similar rates between -9% and -21% vs. 2019 except for **Mid-Atlantic**

traffic, which recovered to 2019 levels as holidaymakers took advantage of the lifting of travel restrictions and returned to **Central America and the Caribbean** (and with North American traffic not far behind at just -9% down).

FIGURE 23: TRAFFIC FLOWS TO/FROM EUROPE, 2022 vs. 2019

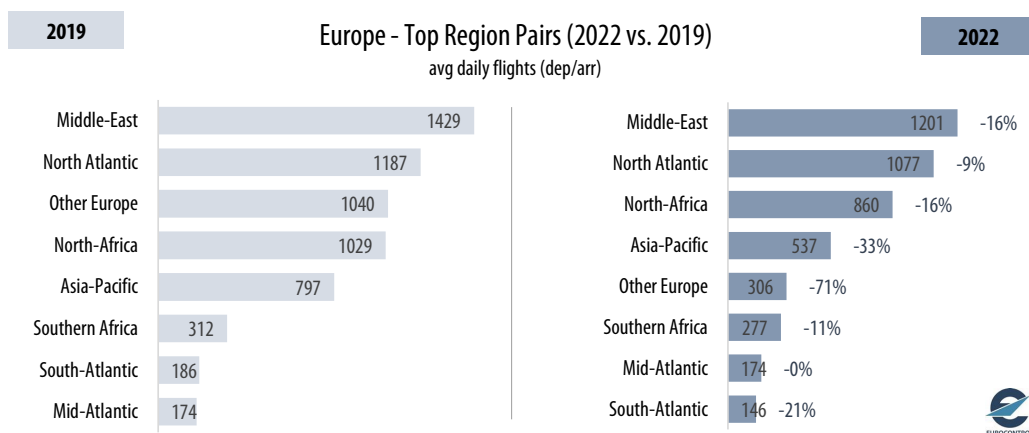
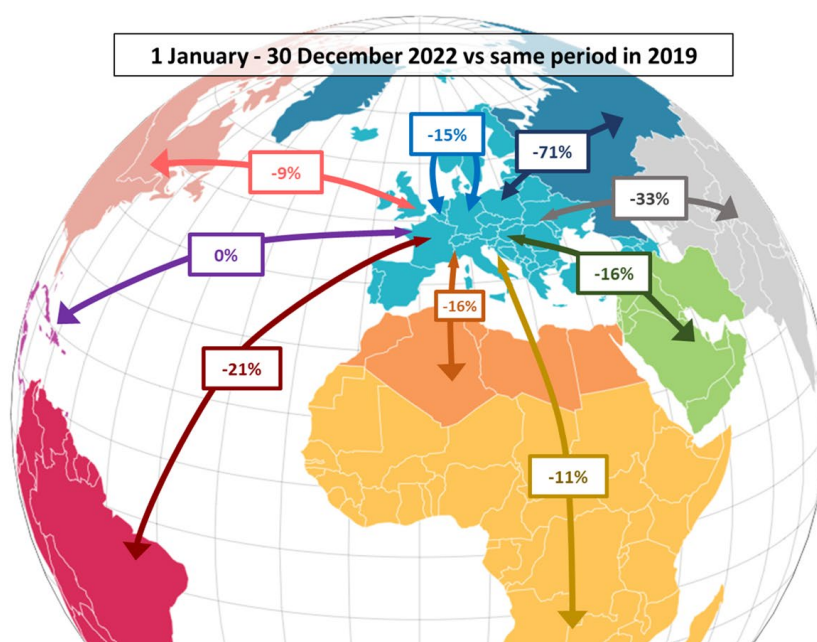


FIGURE 24: TRAFFIC EVOLUTION BETWEEN REGIONS, 2022 vs. 2019



Airports

Strong demand in the second half of the year has meant that, although passenger recovery still lags behind that of flights, it is quickly closing the gap. According to Airports Council International (ACI), the number of passengers in Europe from January to November was 1.7 billion, -23% lower than in 2019. ACI EUROPE estimates that 2022 will close with **2.0 billion** passengers in Europe, 425 million (-17.5%) below 2019 levels. Full passenger recovery for Europe is not expected by ACI until 2024.

Traffic

Figure 25 shows the top 10 European airports in 2019 and 2022. One striking feature is that with the sole exception of iGA Istanbul (which did not make the 2019 top 10 as it only entered into full ops in 2019Q2, but which spent the rest of 2022 at around 100% of 2019 levels), traffic at Europe's big hub airports remains significantly depressed.

It was again a very close race for the top spot with **iGA Istanbul** narrowly finishing the year on top with **1,156** daily movements. **Amsterdam Schiphol** takes second spot with **1,140** daily flights (-18% vs. 2019).

Frankfurt has lost 362 daily flights compared to 2019 and goes from first to fourth position, as the German market has been one of the slowest to recover. **Paris CDG** and **London Heathrow** complete the top 5.

On the back of a very strong holiday season, and continued demand outside the traditional summer months, **Palma de Mallorca** is a new entrant in the annual top 10, and the only airport in the list to finish above 2019 levels (+1%).

It is also noteworthy that **London Gatwick** is back in 10th place after having finished 2021 in 47th position, struggling for most of the peak pandemic years due to UK travel restrictions and low demand, but recovering quickly in 2022.

Rome Fiumicino is the only 2019 airport to remain outside the 2022 list despite a solid recovery this year that has seen the airport rise to 11th (vs. 20th in 2021), just outside the top 10.

FIGURE 25: TOP 10 EUROPEAN AIRPORTS, 2019 vs. 2022

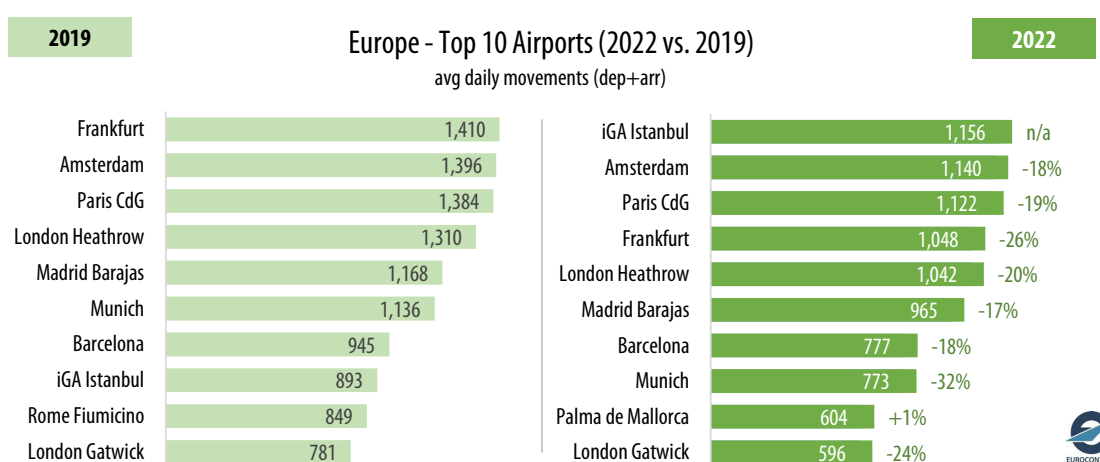


Figure 26 on the next page looks at the cumulative traffic losses for the top 40 airports over 2022. Only one airport in

the top 40, **Palma de Mallorca** (+1%)⁷, finished 2022 above its 2019 traffic levels.

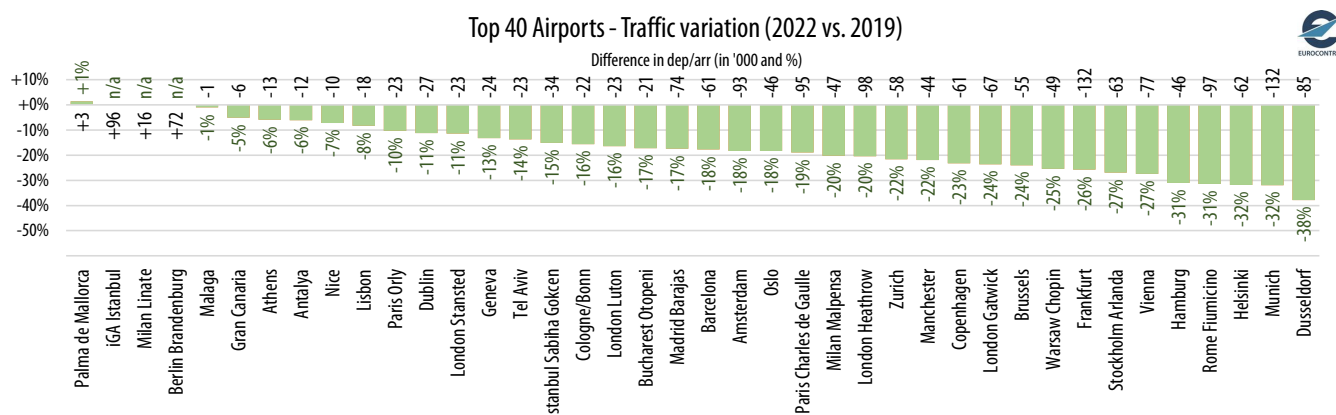
⁷ iGA Istanbul opened in April 2019 and Berlin Brandenburg in November 2020. Milan Linate was closed during the months of August to October 2019, so 2022 traffic numbers for these airports are not comparable.

The two busiest German airports, **Frankfurt** and **Munich**, recorded the largest traffic losses (**132K** for both airports) and are 8th and 2nd in terms of percentage loss.

There are another two German airports in the bottom five in terms of percentage, **Dusseldorf** (-38%) and **Hamburg**

(-31%). These line up alongside **Helsinki** (-32%), affected by both the closure of Russian airspace due to the invasion of Ukraine and the weak Scandinavian market, and **Rome Fiumicino** (-31%).

FIGURE 26: TRAFFIC VARIATION ACROSS TOP 40 AIRPORTS, 2022 vs. 2019



Delays and punctuality

Figure 27 looks at the **arrival and departure punctuality** (measured as within 15 minutes) of the top 20 European airports in 2022. On average, for these airports, arrival punctuality dropped 4.8% compared to 2019, whereas departure punctuality was down 6.4%.

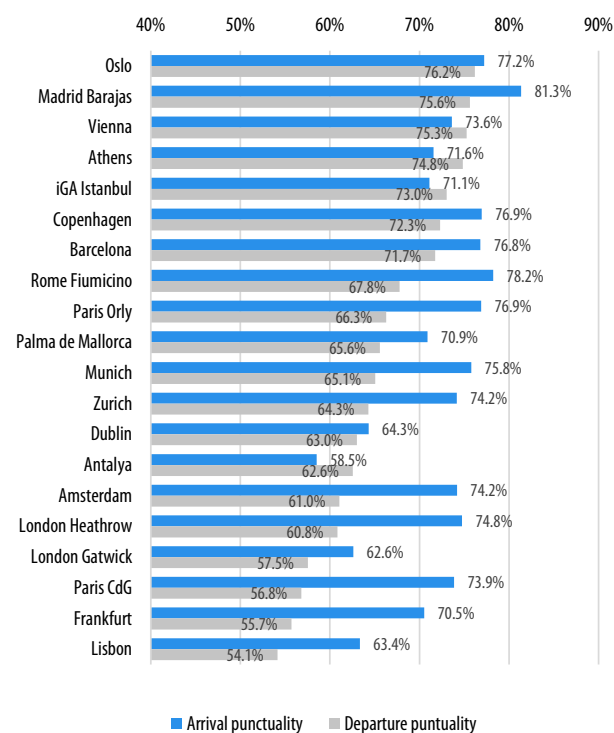
With the exception of iGA Istanbul, the busiest 'hub and spoke' airports had the largest differential between departure and arrival punctuality, with Paris CDG, Frankfurt, London Heathrow and Amsterdam Schiphol showing negative differentials of 13% or larger.

The two airports recording the lowest departure punctuality were **Lisbon** (54.1%), mainly due to airline and reactionary delays, and **Frankfurt** (55.7%), which was reportedly hit by severe airport staff shortages. The other two airports with departure punctualities below 60% were **Paris CDG** (56.8%), affected by strikes during the summer, and **London Gatwick** (57.5%).

Oslo and **Madrid** top the list in both arrival and departure punctuality.

FIGURE 27: AIRPORT PUNCTUALITY 2022

Average punctuality (OTP15)
(Top 20 airports - sorted by descending departure punctuality)



If we look at airport **ATFM delay**, although some airports showed improvement compared to 2019, most experienced significant delay increases in 2022.

Figure 28 shows the total ATFM delay for the top 20 airports generating airport ATFM delay in 2022, broken down by delay cause.

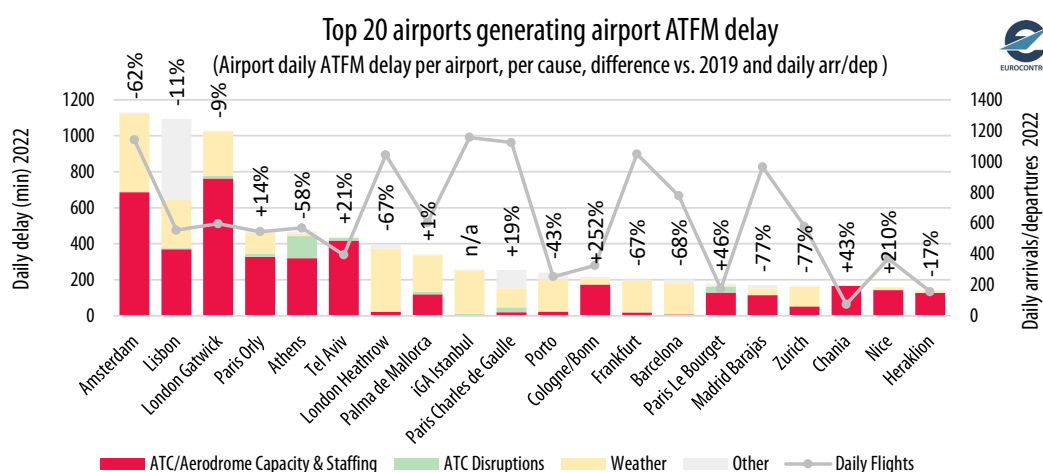
Amsterdam Schiphol generated the most total ATFM delay, although 62% less than in 2019. As the second busiest airport in Europe, delay per flight was only at an average of 0.99 minutes.

Lisbon is second in total minutes of ATFM delay with long-standing runway capacity issues compounded by an ATM

system implementation in October, which accounted for most of the delay allocated to 'Other' causes. **London Gatwick** completes the top three with ATFM delay due mostly to a combination of airport capacity and ATC staffing issues.

Lisbon and London Gatwick are also second and third in ATFM delay per flight with 1.97 and 1.72 min/flight respectively, only exceeded by **Crete Chania** with 2.23 min/flight of ATFM delay. Of the airports in Figure 28, **Madrid** has the lowest delay per flight with only 0.18 min/flight.

FIGURE 28: TOP 20 AIRPORTS GENERATING AIRPORT ATFM DELAY IN 2022





Air traffic management

Traffic

At network level, the average number of daily flights in 2022 was 25,371, 17% down on 2019. However, as Figure 29 shows, there were large differences in traffic variation between air navigation service providers (ANSPs).

9 ANSPs recorded positive growth figures compared to 2019, mostly in central-southern Europe and the Caucasus. At the other end of the chart, we have the ANSPs of the three Baltic states, where traffic was particularly down, and with Ukraine and Moldova massively impacted by airspace closures.

Both ends of the chart are significantly impacted by the Russian invasion of Ukraine and the subsequent restrictions, which have to some extent shifted traffic patterns away from the conflict or restricted areas. The EUROCONTROL Network Manager estimates that during the summer, some 650 daily flights were forced to take more southerly routes, impacting central-southern Europe. Flights from Türkiye to Moscow started avoiding Ukrainian airspace either westwards, increasing traffic levels in central-eastern Europe (e.g. Hungary, Serbia or North Macedonia) or eastwards via the Caucasus region.

FIGURE 29: TRAFFIC VARIATION ACROSS ANSPs, 2022 vs. 2019

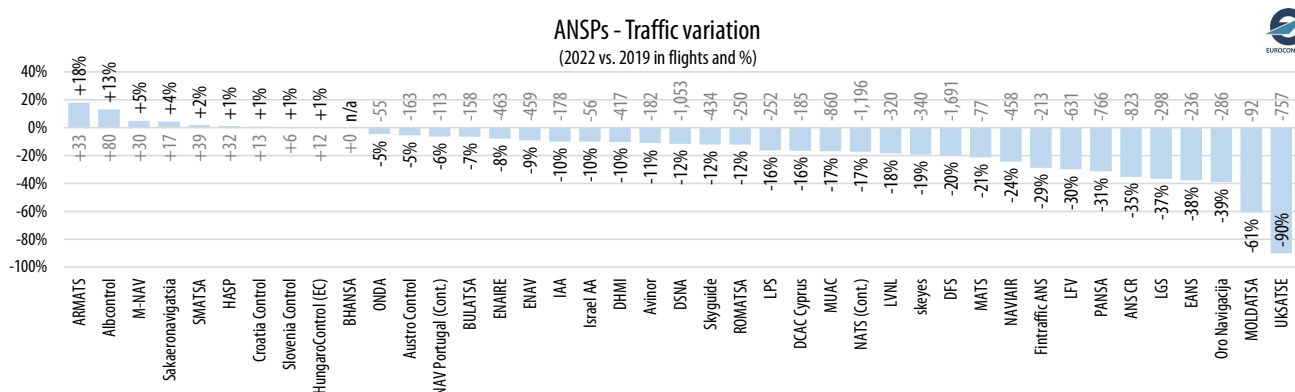
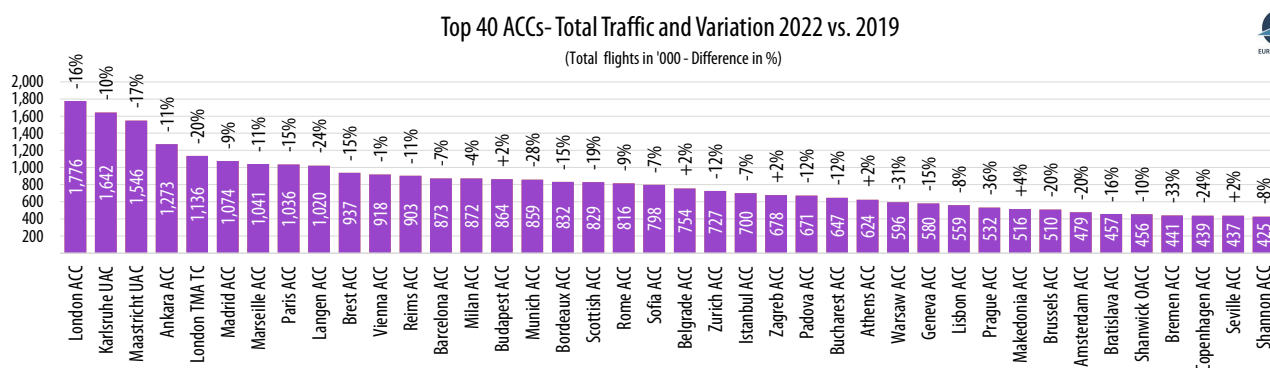


Figure 30 on the next page charts traffic at European Control Centres, comparing total traffic handled in 2022 with 2019. The busiest in 2022 was **London ACC** with 1,776K flights and -16% vs. 2019, followed by **Karlsruhe UAC**, 1,642K flights and -10% on 2019 levels and **EUROCONTROL's Maastricht UAC** (1,546K, -17%).

Six centres saw traffic levels above 2019 – Makedonia ACC (+4%, +22K), Seville ACC (+2%, +10K), Budapest ACC (+2%, +20K), Belgrade ACC (+2%, 15K), Zagreb ACC (+2%, 13K) and Athens ACC (+2%, +11K).

The largest traffic drops within the 40 busiest centres were in **Prague ACC** (-36%, 300K flights), **Bremen ACC** (-33%, -215K) and **Warsaw ACC** (-31%, -273K).

FIGURE 30: TOP 40 CONTROL CENTERS COMPARISON



Delays

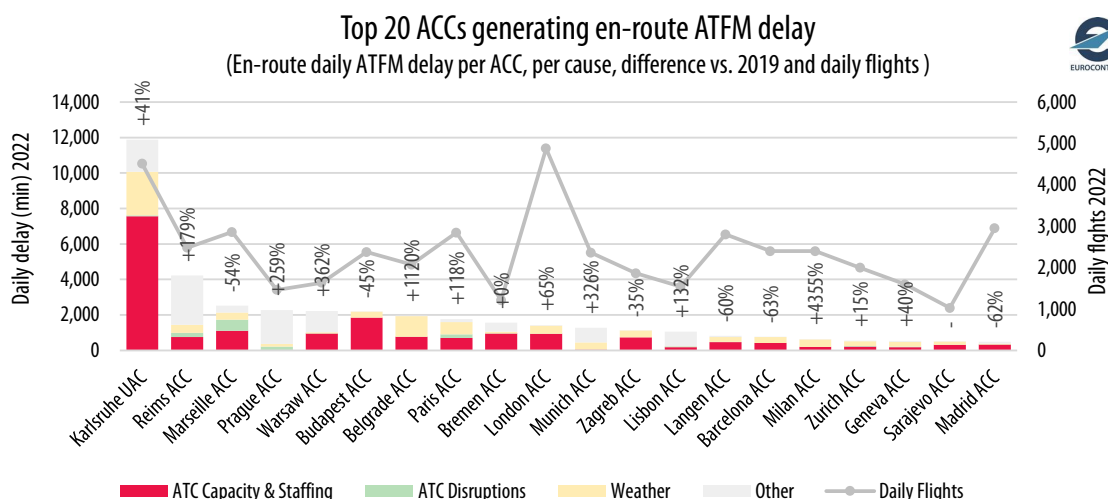
Figure 31 presents average daily delay at the 20 control centres generating the most en-route ATFM delay in Europe.

Karlsruhe UAC stands out in 2022 with by far the highest delay levels, 2.6 minutes per flight (1.7 min/flight in 2019) and reaching a peak of 4.5 min/flight over the summer period (May-September). While traffic levels in Karlsruhe UAC over the summer were at 98% of 2019, delay almost doubled as the capacity provided was insufficient.

Reims and **Prague** ACCs implemented new systems in April and February 2022 respectively. In both cases, the recovery of previous capacity levels was slower than expected, and impacted the busy summer period.

Marseille ACC experienced some capacity/staffing issues but was also affected by a strike in the month of June.

FIGURE 31: THE 20 CONTROL CENTRES GENERATING THE MOST EN-ROUTE ATFM DELAY IN 2022



En-route charges billed

Figure 32 shows that in 2022, en-route charges billed increased for 18 charging zones compared to 2019 while traffic, measured in terms of total service units (TSUs), increased for 6 charging zones over this period. As previously explained, the main reason behind the increase in charges billed to airspace users is the application of higher chargeable unit rates in 2022 compared to 2019.

And in 2023, en-route unit rates will increase in 20 out of 41 charging zones, Figure 33 shows.

For States subject to the SES regulation, these increases mostly reflect the carryovers arising from the traffic downturn in 2020 and 2021, which are to be charged to airspace users starting in 2023. For States not subject to the SES regulation, the shift in traffic trends resulting from the invasion of Ukraine is also reflected in the 2023 unit rates.

FIGURE 32: EN-ROUTE CHARGES BILLED PER CHARGING ZONE vs. 2019

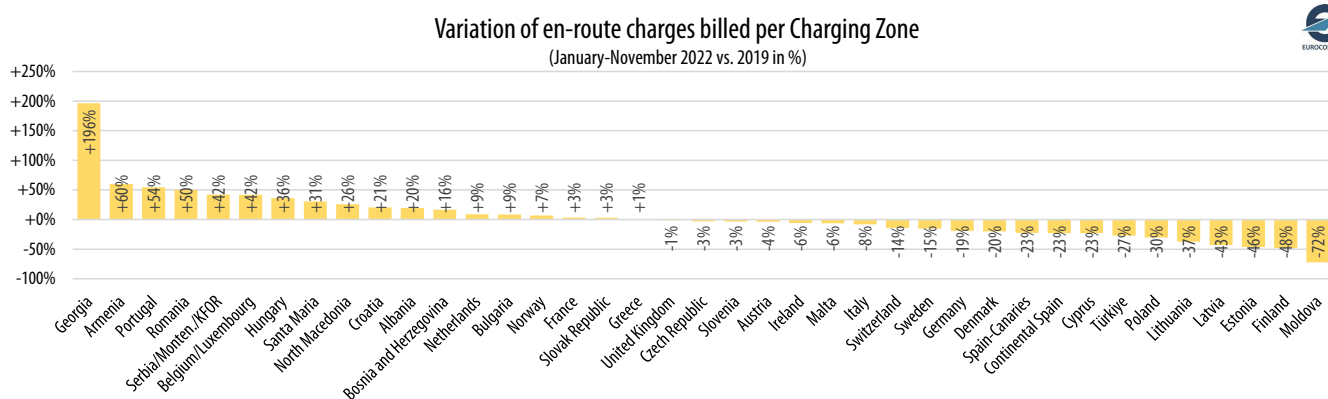
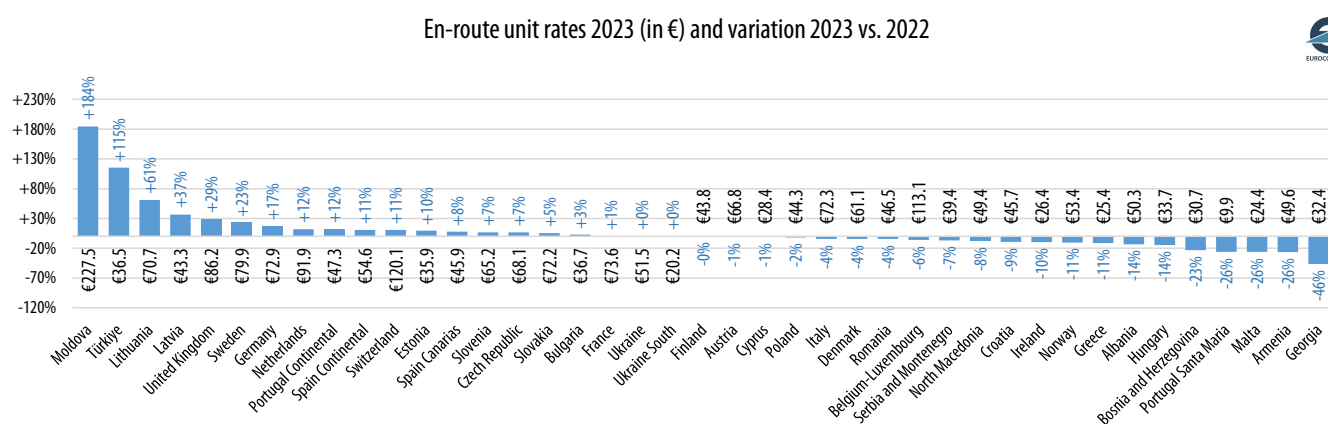


FIGURE 33: EN-ROUTE UNIT RATES 2023 AND VARIATION vs. 2022





Economic environment

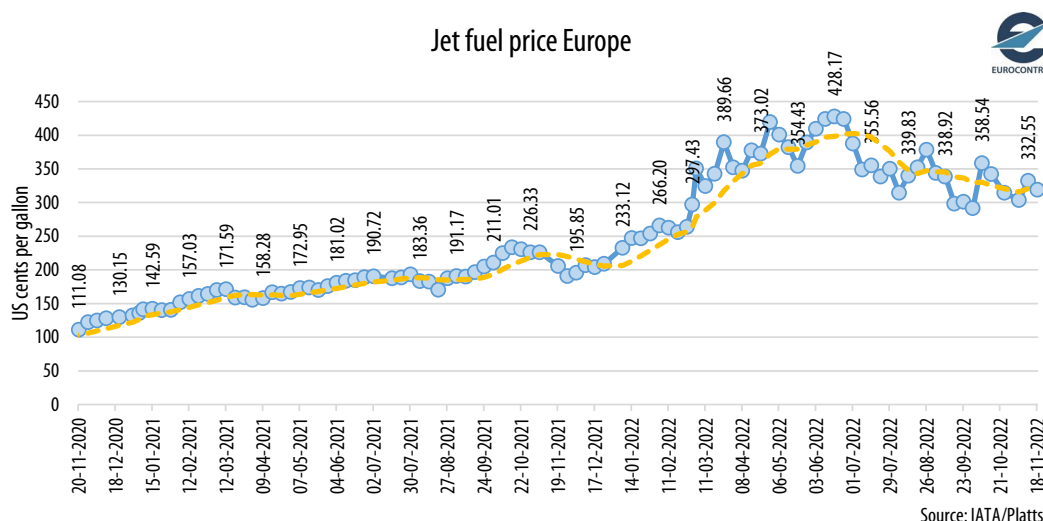
Energy prices had been rising steadily throughout the pandemic, but the Russian invasion of Ukraine has caused them to spike, and triggered an **inflation** crisis, as well as putting severe pressure on supply chains which had already been disrupted by the pandemic. Soaring energy prices have translated into higher food prices as well, all of which is having a significant impact on the purchasing power of consumers. While all economies worldwide have been hit hard, Europe has been particularly negatively impacted because of its traditionally high consumption of Russian natural gas.

The effectiveness of the recent price cap (60 dollars per barrel) for Russian oil decided by the EU and G7 countries is uncertain at this stage.

Like other energy products such as diesel, petrol and gas, **jet fuel prices** in Europe have more than doubled in the span of one year, going from an average of 110 US cents per gallon in November 2021 to an average of 335 US cents per gallon in November 2022, as per Figure 34.

With fuel often the largest operating cost, this is a major challenge for a sector still recovering from the COVID-19 pandemic.

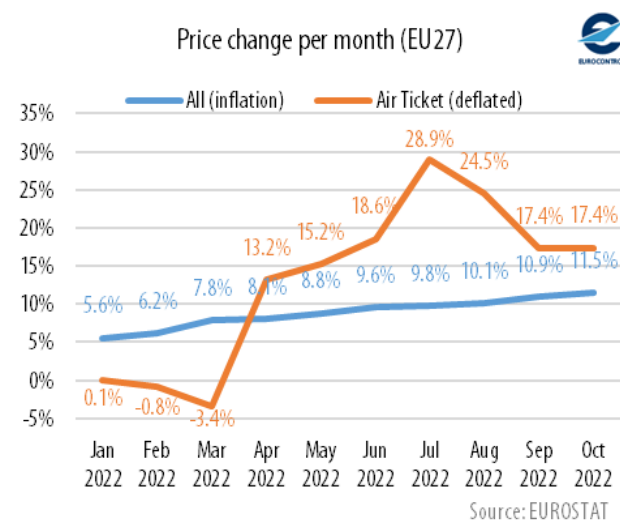
FIGURE 34: JET FUEL PRICE EVOLUTION IN EUROPE



Inflation is expected to average 9.3% in the EU in 2022. Prices should peak at year-end and remain high in 2023.

As Figure 35 shows, air **ticket prices** have increased by 14% compared to 2021 (peaking at +29% in July 2022), well above the average rate of inflation in the economy since April 2022, which reflects inter alia sustained demand, reduced flight choice, and higher jet fuel prices. Some routes' profitability, particularly from Scandinavia, has also been impacted by airspace closures that have forced European airlines to fly longer routes.

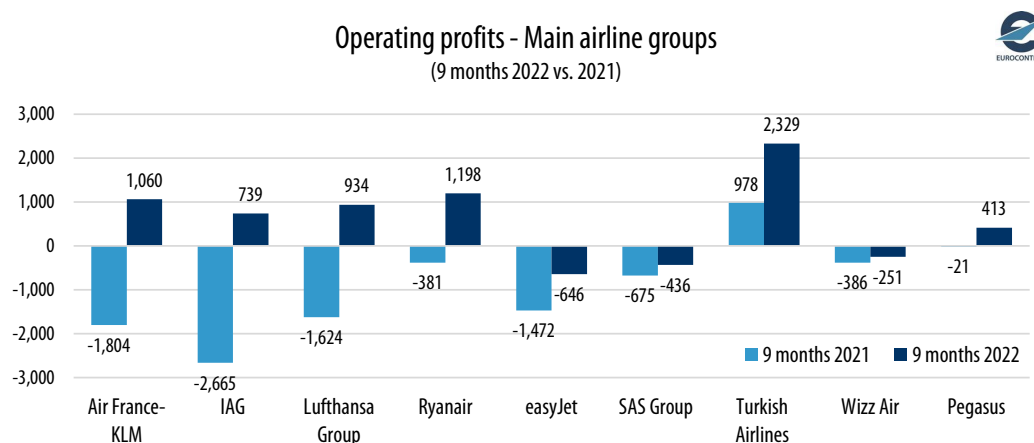
FIGURE 35: INFLATION ANNUAL RATE CHANGE 2022



Nevertheless, despite a difficult economic environment across all European countries, most of the major European airline groups posted net operating profits over the first three quarters of 2022, as per Figure 36.

Turkish Airlines recorded the highest operating profits, €2.3 billion, followed by Ryanair and Air France/KLM group, both with operating profits above €1 billion. Only easyJet, Wizz Air and SAS Group continued to fail to make an operating profit in the first 3 quarters of 2022, but all improved on their 2021 same-period results.

FIGURE 36: OPERATING PROFITS OVER THE FIRST THREE QUARTERS OF 2022, MAJOR EUROPEAN AIRLINE GROUPS



Note: IAG (before exc. items), Lufthansa (adjusted EBIT), Ryanair estimated, SAS (Nov21-Jul22)

Source: Company reports

At the global level IATA, the International Air Transport Association, expects that most airlines will fully turn the corner and return to profitability in 2023, and is forecasting a net profit for airlines of \$4.7 billion – a 0.6% net profit margin (compared to 3.1% in 2019).

For 2022, IATA still expects global airline net losses to total \$6.9 billion, although this is a significant improvement compared to the staggering losses recorded during peak pandemic of \$42.0 billion and \$137.7 billion in 2021 and 2020 respectively.



What lies ahead: 2023 outlook & beyond

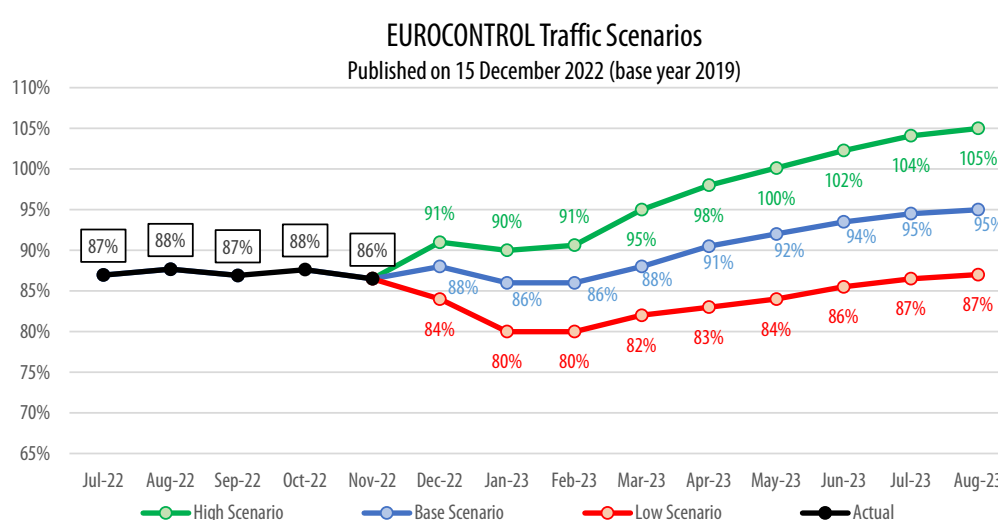
With the war in Ukraine still continuing, and in light of the growing energy and inflation crisis, EUROCONTROL has recently revised its short-term and medium-term forecasts.

In the short term, EUROCONTROL's updated Traffic Scenarios for the next 8 months (published 16 December 2022) predict steady growth over the period, reaching 95% of 2019 traffic by August in our Base Scenario in a year that

we expect, as per our medium-term forecast, to see annual traffic at 92% of 2019 traffic (10.2 million flights).

Both forecasts factor in greater caution from the market, with recent months revealing actual traffic persistently slightly below predicted traffic, even on a relatively short-term basis. Overall, traffic has stayed below our April 2022 base scenario since the start of the Winter season.

FIGURE 37: TRAFFIC SCENARIOS



The various downside risks – particularly relating to the economy, fuel prices and staff shortages/industrial relations – are also reflected in our updated medium-term forecast covering the 2022-2028 period, which was issued on 17 October 2022, as per Figure 38.

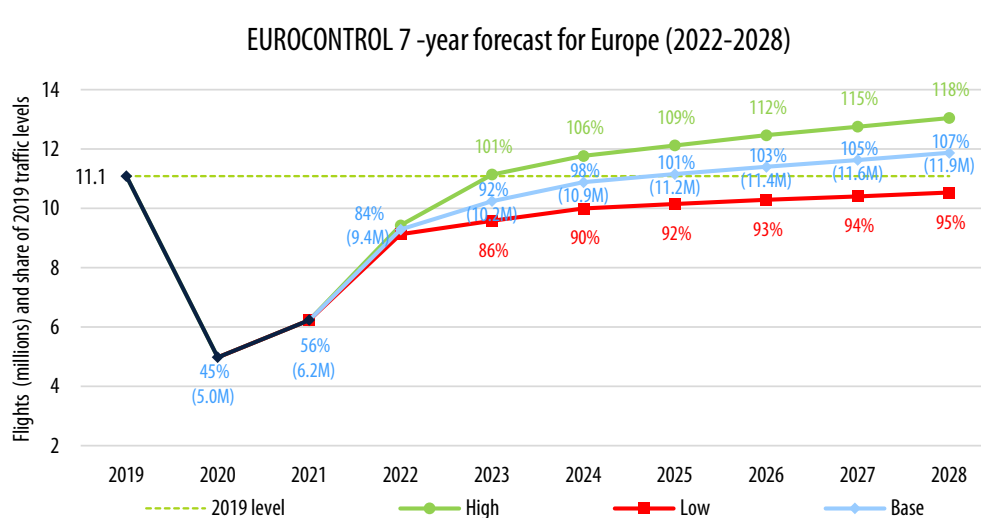
The **Base scenario** ('most likely', and the one that since the start of the pandemic has proven the closest to actual outcomes) represents a slight downward revision on the previous forecast from June 2022, owing to rather weak economic growth, high inflation and the lack of capacity in European aviation this summer. The recovery to 2019 levels is now expected to take place during 2025 – one year later than forecasted in June 2022. The Base scenario is based on GDP remaining weak for most European states, inflation (including the jet fuel price) impacting demand,

and lower passenger confidence/propensity to fly on economic grounds.

The **High scenario** envisages more optimistic GDP growth, a more limited impact on demand from inflation, and stronger passenger confidence.

Finally, the **Low scenario** considers the impact of several downside risks, including a number of States in recession in 2023, and demand for travel strongly reduced by the effects of inflation. This scenario considers also the possibility of a periodical reimposition of travel restrictions due to resurgence of COVID-19 variants. This forecast does not foresee a recovery to 2019 levels until the last year of the forecast, 2028.

FIGURE 38: 7-YEAR TRAFFIC FORECAST



Getting closer to pre-pandemic traffic levels will not however be easy. As 2022 showed, ramping up back to close to 90% of 2019 traffic over the summer caused all actors immense difficulties. Well-publicised staffing and capacity problems across the aviation ecosystem were exacerbated by supply chain issues triggered by the worsening economic outlook brought about by Putin’s war of aggression. While staffing issues may progressively be solved, the risk of industrial action in response to economic conditions is rising. With sadly no end in sight to the war in Ukraine, airspace unavailability will continue to disrupt flows and put pressure on certain sectors; this will further exacerbate demand for airspace, as airlines take delivery of new aircraft and restore capacity, and demand from the key Asian markets progressively returns following China’s decision in December 2022 to ease travel restrictions and reopen to international air travel. And planned system changes will also impact flows and capacity. **All of this means that 2023 is set to be the most challenging year for the network in terms of matching capacity with demand, and keeping delays down, and will require formidable efforts from the EUROCONTROL Network Manager and all operational actors, who are already planning carefully based on lessons learnt in 2022.**

Conclusions

2022 finally saw European aviation climb back to a stable 86-88% of 2019 traffic levels that has been maintained since May, and despite a series of challenges in the form of capacity and staffing shortages and severe economic pressures accelerated by the war in Ukraine.

With that recovery has come a return to profitability for many actors that has gone some way to restoring badly damaged balance sheets, and prospects for 2023 remain positive: EUROCONTROL's latest forecast predicts that traffic will recover to 92% of 2019 next year, and a full recovery in 2025 – a year later than predicted earlier in the year, reflecting a series of significant downside risks.

The steady recovery of traffic, however, poses its own huge challenges as we saw in summer 2022. 2023 will be a watershed year for the network, requiring the EUROCONTROL Network Manager and all ops actors to pull out all the stops to keep delays down against a backdrop of ongoing airspace issues triggered by the Ukraine war, extra aircraft in the system, possible industrial action, ongoing staffing challenges, system changes and the return of demand from China and the Far East.

Delivering on aviation sustainability is also a major challenge for the future. Good initiatives were launched in 2022, but achieving tangible progress requires urgent attention if we are to remain on track to decarbonise European aviation by 2050. Increasing the availability of Sustainable Aviation Fuels is a key priority for 2023.

KEY CONCLUSIONS

- 2022 saw European aviation weather the storm. Despite Omicron pushing traffic down from 78% to 68% of 2019 in January, followed by the invasion of Ukraine in late February, traffic still quickly resumed an upwards path to 86% in May, and stayed stable until year-end in a narrow band of 86-88%. All-year traffic reached 83% of 2019, 9.3 million flights, just 1.8 million fewer than 2019.
- War in Ukraine caused traffic to collapse in Ukraine while unavailability of airspace significantly impacted traffic in Moldova and States adjacent to Russia and Belarus, as well as altering many traffic flows.
- The recovery continues to be highly uneven across airlines, airports, States and air navigation service providers, as well as regional flows – all of which vary between 70% and 110% of 2019 levels on average, with some extreme outliers.

- Pent-up demand has brought most airline balance sheets back into the black for the first time since pandemic start, with consumer demand proving resilient despite increasing ticket prices, as the energy crisis caused economic conditions to worsen across all European countries.
- Low-cost carriers have been the big recovery success story of 2022, consistently outperforming (at 85% of 2019 overall) the mainline (75%) and regional (74%) sectors, with the segment closing the year with a market share of 32.3%, just behind mainline carriers (32.4%). Meanwhile all-cargo (106%) and business aviation (116%) continue to remain above their 2019 levels.
- Delays and punctuality across the network were worse than in 2019, as the speed of the summer recovery saw staff and capacity shortages across the sector. Arrival and departure punctuality were, at 72% and 66%, around 6-7 percentage points worse in both cases than 2019 – with peak summer seeing this drop in both cases to 40-50%.
- Connectivity across the network significantly lags flight levels in virtually every State, highlighting the challenge of returning to pre-pandemic flight levels. Domestic markets in many cases continue to lag the overall recovery averages.
- With travel beyond Europe (74% of 2019) remaining weaker than intra-European traffic (85% of 2019), all of Europe's major airport hubs apart from Istanbul iGA remained between -18% and -32% below 2019 levels; some smaller airports serving mostly European-only destinations however ended the year closer to or even above 2019 traffic.
- If aviation is to remain on track to meet challenging sustainability targets, the pace of change needs to accelerate. A host of new initiatives were launched in 2022, but further investment and stronger incentives are required.
- We now expect European air traffic to hit 92% of 2019 next year, and to recover fully during 2025 – one year later than forecasted in June 2022, in a 'base scenario' prediction that factors in weak economic growth, inflationary pressures and no immediate resolution to war in Ukraine plus the additional economic pressures that that has triggered.
- However, 2023 is set to be the most challenging year of the last decade. Keeping summer delays down will be an immense task for all actors, with airspace issues due to the Ukraine war, extra aircraft in the system, possible industrial action, system changes and the progressive reopening of Asian markets all asking real questions of the system.

Methodology & sources

The bulk of data used in this paper are 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](#)).

All references to the year 2022, unless a different time period is specified in the text, refer to the period 1st January to 30th December, and whenever this is compared to previous years (e.g. 2019), the comparison is to the same period of these years.

Other sources used are inflation and ticket prices data from EUROSTAT, jet fuel prices from IATA/Platts, airline operating profits from company reports and airport passenger 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.



SUPPORTING EUROPEAN AVIATION

