

What COVID-19 did to European Aviation in 2020, and Outlook 2021

The COVID pandemic has massively impacted every part of the global aviation value chain. This Think Paper charts a year like none other, using our unique network data to show the impacts on European aviation, and looks ahead to 2021.

Since the pandemic hit, EUROCONTROL has been pushing out live aviation data from across the European network on a daily basis, charting trends and, in our capacity as the EUROCONTROL Network Manager, working tirelessly with all operational stakeholders to coordinate responses and enable airports, airlines and air navigation service providers (ANSPs) to align capacity and demand throughout the long recovery phase. Key reporting products include a [live daily traffic dashboard](#), a [weekly comprehensive assessment](#) tracking the most recent developments, and a [weekly Rolling Network Seasonal Plan](#) that captures the planning intentions of all actors.

This 'Think Paper' provides European aviation leaders with a snapshot of the headline impacts of the pandemic in 2020 on European aviation, and draws conclusions on what needs to happen in 2021. 2020 is behind us now and the rollout of vaccines has already started. It will take time, but we expect steady progress by summer 2021, which will have a positive impact on European aviation.

KEY CONCLUSIONS & OUTLOOK 2021

- European traffic for the whole of 2021 is expected to recover to 51% of 2019 levels, with faster recovery expected from the summer onwards.
- More failures can be expected in 2021, highlighting the need for financial support to the entire industry.
- Airlines and airports need clarity on slot exemptions to plan in 2021.
- Decarbonisation funding must be increased.
- Regional connectivity must be maintained.
- Air traffic services reform is urgently required to ensure scalable capacity in the years ahead, with collaborative decision-making between ops stakeholders guided by the EUROCONTROL Network Manager.
- We must continue to innovate and invest in future technological solutions in all aviation domains.
- We cannot miss the opportunity to 'build back better'.

EUROPEAN AVIATION: 2020 HEADLINE IMPACTS

- Huge financial impact for all European stakeholders:
 - €22.2 billion net losses for airlines.
 - €33.6 billion revenue losses for airports.
 - €4.8 billion in-year revenue losses for ANSPs.
- 1.7 billion fewer passengers
- Massive negative impacts on European flights:
 - 5.0 million flights 2020 vs 11.1 million 2019 = annual loss of 6.1 million flights
 - intra-European traffic **54% down**
 - Europe-Rest of the World traffic **59% down**
 - low-cost carrier flights **62% down**
 - scheduled carrier flights **59% down**
- Markets down by **40%-73%**:
 - 1.3 million flights less in the UK (-61%)
 - 1.2 million flights less in Germany (-56%)
 - 1.0 million flights less in Spain (-61%)
 - 0.9 million flights less in France (-54%)
 - 0.8 million flights less in Italy (-60%)
- Leading aviation groups down by **53%-67%**:
 - Lufthansa Group **-67%** daily average flights (2020: 1,102 flights, 2019: 3,295)
 - Ryanair **-59%** flights (2020: 951, 2019: 2,323)
 - Air France-KLM **-55%** flights (2020: 920, 2019: 2,053)
 - IAG **-65%** flights (2020: 825, 2019: 2,342)
 - Turkish Airlines flights **-53%** (2020: 626, 2019: 1,331)
 - easyJet **-67%** flights (2020: 547, 2019: 1,671)
- 51%** of aircraft in Europe grounded at year-end (4,118 of 8,048 airframes)
- 191,000** announced direct job losses in Europe

COVID impact on flights

Traffic for 2020 closed out at **-55%** of 2019 levels. In total, **5.0 million** flights operated in 2020 compared with **11.1** in 2019, a loss of **6.1 million** flights.

While January and February 2020 saw year-on-year traffic of **-0.4%** and **+0.9%** respectively, March saw a precipitous decline as States closed borders and limited traffic increasingly to essential supplies and repatriation, closing the month at **-86.1%** of 2019 levels (**4,202** daily average flights). By 12 April, the lowest point of the crisis, traffic had bottomed out at an unprecedented **-92.8%** or just **2,099** daily flights. From there on, a very slow recovery started, with the network ending May at **-89.4%** (**3,586** daily average flights).

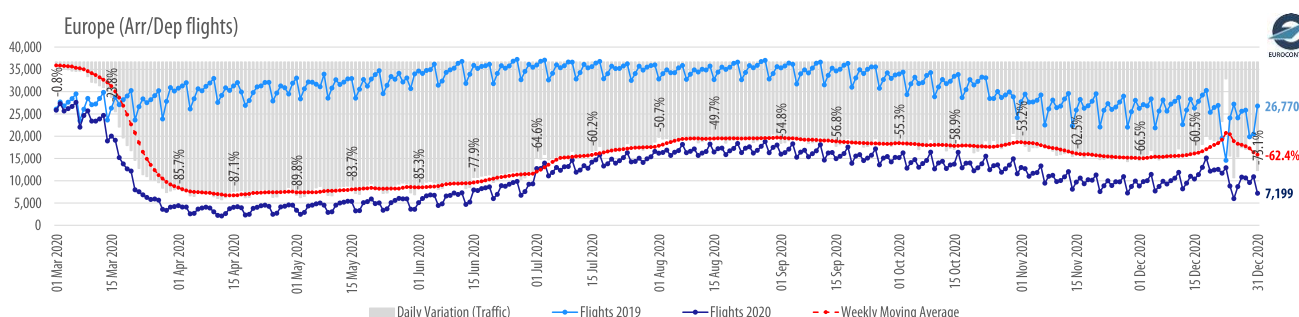
The effectiveness of Europe-wide lockdowns at bringing new infections under control saw European States

increasingly lifting restrictions, with traffic recovering to finish **-73.8%** in June with **9,296** daily average flights.

Traffic stabilised over the summer at around **-51%**, with the **18,802** flights on **28 August** (**-49.0%** of 2019) marking the highest number of flights in 2020. This reflected the lifting of travel restrictions in most States, and the start of the summer season.

However, spiking infection rates across the European area after the summer led States to reintroduce measures in an uncoordinated fashion, causing traffic to decline steadily from **15,964** flights on 1 September, **-54.8%**, to end the year at a weekly daily average of **7,199** flights or **-73.1%**. Figure 1 shows the pandemic impact across Europe for the period 1 March-31 December.

FIGURE 1: PANDEMIC IMPACT ACROSS EUROPE



COVID impact on airlines and aircraft

Ryanair, Europe's largest airline, remained top over 2020, but with a daily operating average of just **951** daily flights over the year vs. **2,323** in 2019, a decrease of **59%**.

The average decline in flights among the top **10 European airlines** was between **-45%** and **-67%**.

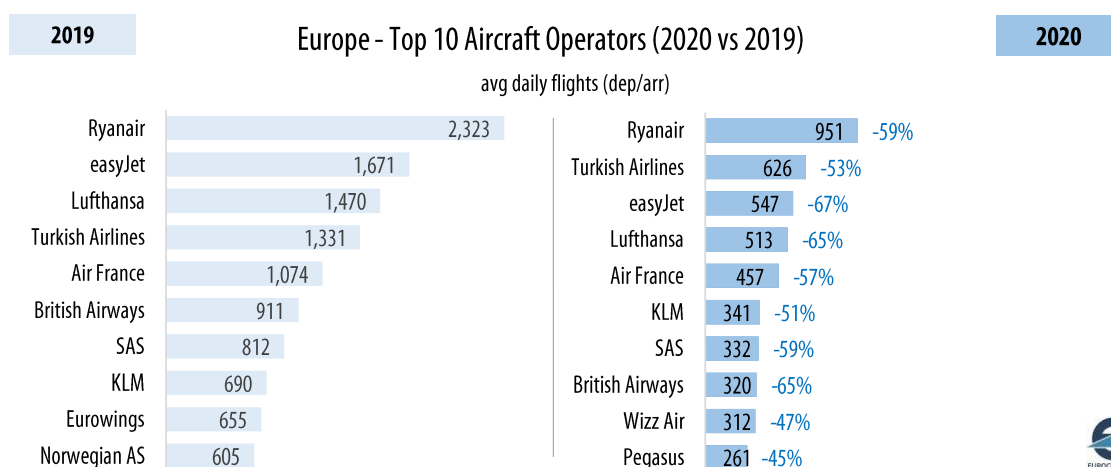
The pandemic, as Figure 2 shows, also triggered two changes in the top 10 airlines compared to last year.

Out went **Eurowings**, massively downsized by parent Lufthansa Group in April, which moves to 14th place, **-69%**

year-on-year, and **Norwegian Air Shuttle**, which continues to struggle despite entering bankruptcy protection in Norway and Ireland, dropping **-73%** and moving to 16th.

Their places were taken by **Wizz Air**, climbing from 12th to 9th following a rapid restart of operations in May and a major base expansion strategy; and **Pegasus Airlines**, up from 14th to 10th on the back of strong domestic demand in Turkey – which also was reflected in **Turkish Airlines** moving up from 4th in 2019 to 2nd in 2020.

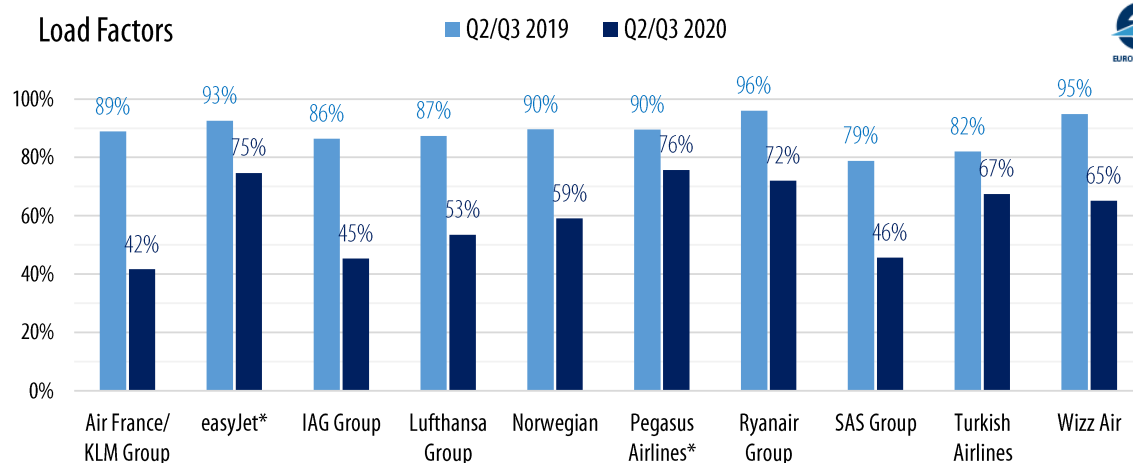
FIGURE 2: TOP AIRCRAFT OPERATORS 2019 vs 2020



Major reductions in the number of flights were exacerbated by extremely low **load factors**. Those flights that did take place in 2020 were typically at best half full. Figure 3 shows how the load factors for the top European airline groups compared to last year during Q2-Q3 2020.

The year closed out with European airline load factors remaining constant at **50%-60%** since the partial recovery in June, with a low point of around **27%** reached in April.

FIGURE 3: LOAD FACTORS, MAIN GROUPS



* Estimated
 Ryanair and easJet report on seats sold.
 2020: Blocked seats not necessarily counted as available.

Source: Company reports

The main aircraft operator market segments have been unevenly impacted by the pandemic, as Figure 4 shows (up to end November).

Least negatively affected has been **all-cargo**, **-1%** compared to 2019, and doubling its market share from 3% to **6%** owing to increased demand for medical supplies, food and other goods.

Business aviation was **-25%** overall on 2019, although the sector recovered rapidly to close to 2019 levels over the summer as businesses sought connectivity where scheduled connections were unavailable.

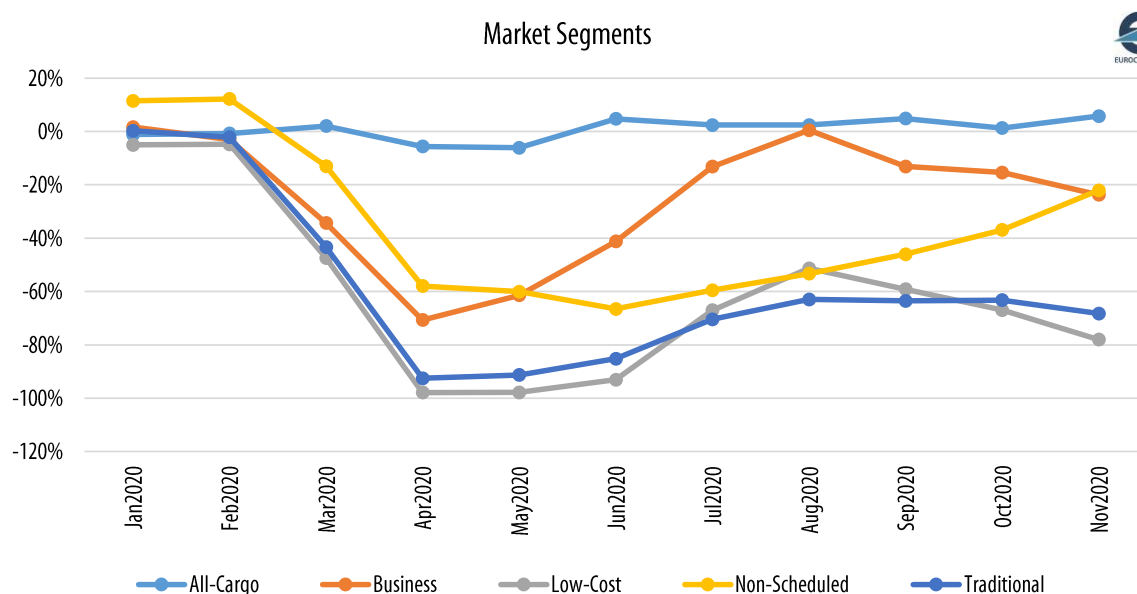
Low-cost carriers were overall **-63%** on 2019 levels, having been the worst-hit of all segments in April, but

recovering quicker than traditional carriers over the summer.

Traditional scheduled carriers finished at **-60%** of 2019 traffic, weathering the height of the pandemic slightly better than the low-costs thanks to the need for cargo ops and repatriations, but recovering more slowly over the summer.

Non-scheduled flights have steadily recovered since June and are the only segment aside from all-cargo to continue growing in November. Overall, however, non-scheduled flights are **-43%** compared to 2019.

FIGURE 4: MARKET SEGMENTS, % CHANGE Y-O-Y (UP TO END NOVEMBER)

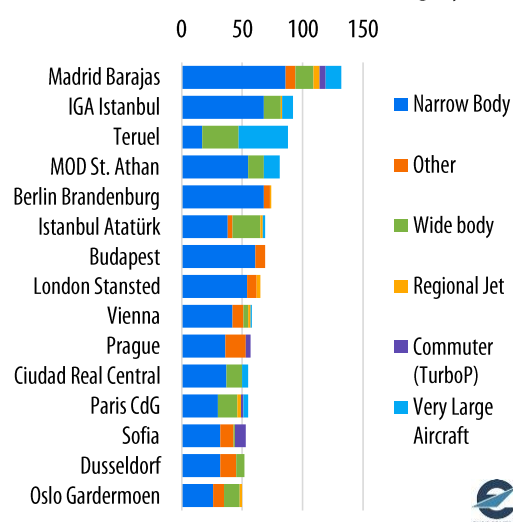


COVID has also had a massive impact on **airlines in Europe** as Figure 5 shows, with **51%** of the European fleet grounded at year end, **4,118** of 8,048 airframes parked up and inactive for more than 7 days at the end of 2020, and with similar proportions in all size categories. This is however a major improvement on the height of the pandemic in April, when 87% had been placed out of service.

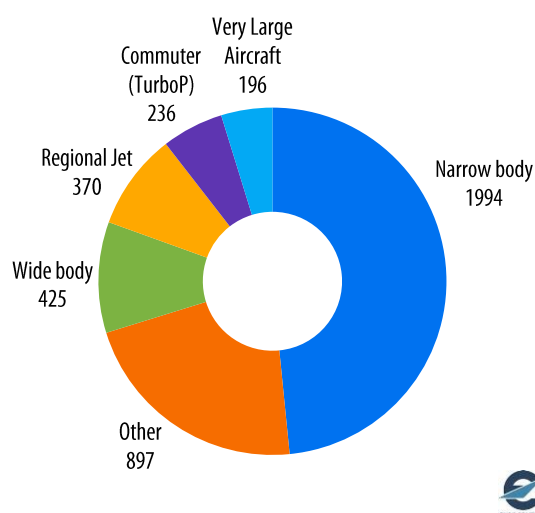
Airlines have in parallel announced purchase deferrals and accelerated retirements of older aircraft. Iconic types like the Boeing 747 and even some Airbus 380 are unlikely to return to passenger ops. Aircraft continue to be parked up out of use around Europe and beyond: at year-end, Madrid Barajas topped the list of grounded locations in Europe with 132 stored aircraft, followed by Istanbul Airport (92), while unusual sights in the top 15 are long-term storage airfields like Teruel (88), St. Athan (81) and Ciudad Real (55).

FIGURE 5: EUROPEAN AVIATION FLEET: GROUNDED BY LOCATION & CATEGORY AS AT END 2020

Locations of GROUNDED aircraft incl. category



Breakdown GROUNDED by aircraft category



COVID impact on airports

2020 saw a total year-on-year loss of an estimated **1.7 billion passengers**, with ACI estimating revenue losses of **€33.6 billion** for European airports over the course of the year.

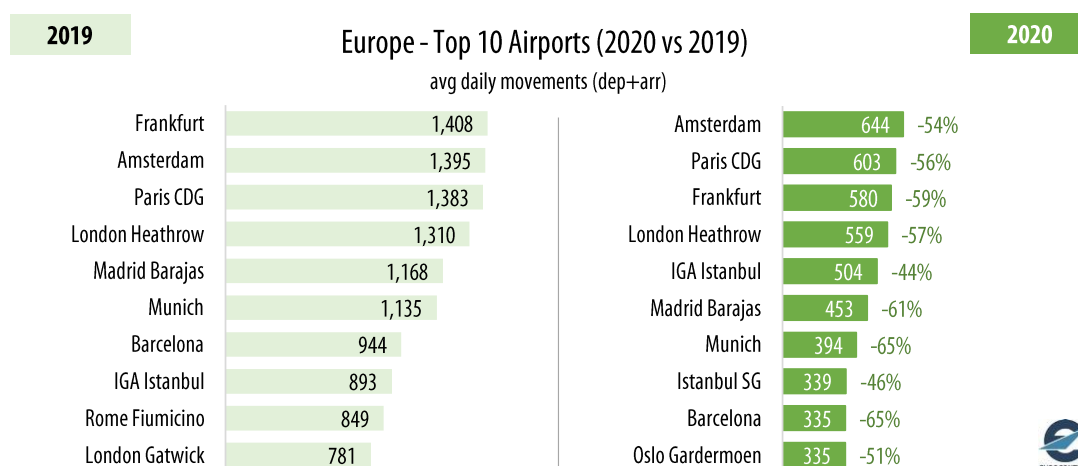
The recovery in the number of passengers has been significantly weaker than that of flights, reflecting the use of smaller aircraft and low load factors, as already reported.

Figure 6 shows the top 10 European airports in 2019 and 2020. Average daily movements have dropped by between

half and two-thirds at all, and there are some notable changes owing to the pandemic. Top in 2019 with 1,408 daily movements, Frankfurt drops to third in 2020 with **580**, while Amsterdam finished 2020 in top spot with **644** movements – but **-54%** of 2019 flights.

Two airports drop out of the 2020 list, Rome moving to 14th and London Gatwick to 23rd, replaced in 2020 by two airports that have preserved more of their domestic traffic: Oslo (2019: 14th), and Istanbul Sabiha Gökçen (2019: 19th).

FIGURE 6: TOP 10 AIRPORTS, 2019 vs 2020

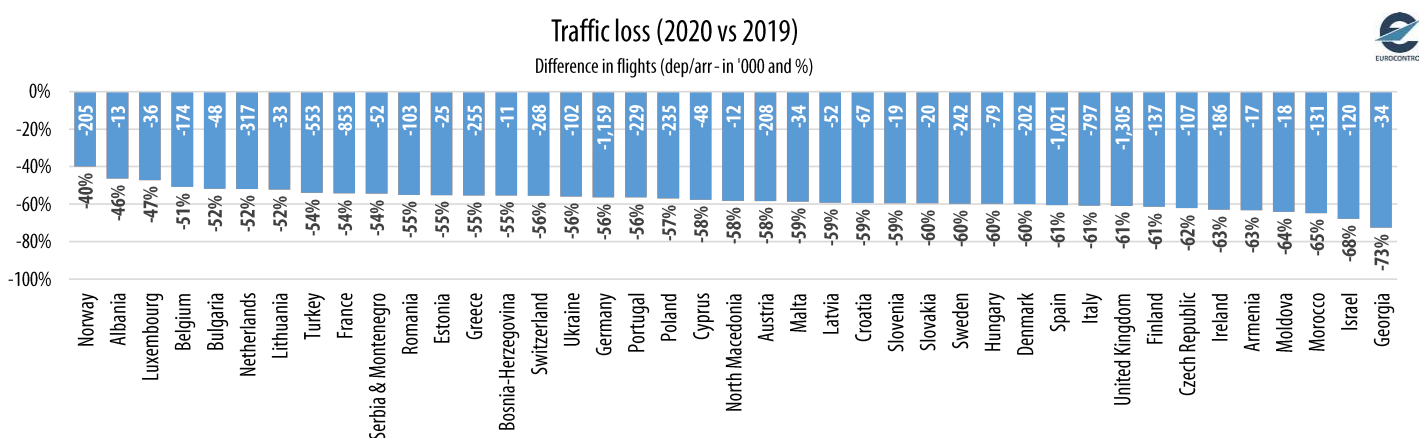


COVID impact on European States

2020 traffic was down in all States between **40%** and **73%** as per Figure 7, with eye-catching declines in the UK (**-1.3 million** flights and **-61%**), followed by Germany (**-1.2 million** flights, **-56%**), Spain (**-1.0 million** flights, **-61%**), France (**-853,000** flights, **-54%**) and Italy (**-797,000**, **-60%**).

Least affected in % terms was Norway due to its critical dependence on aviation connectivity, down **-40%** on its 2019 flight counts by **205,000** flights. At the other extreme are Georgia (**-73%**, **-34,000 flights**), Israel (**-68%**, **-120,000 flights**) and Morocco (**-65%**, **-131,000 flights**), all of which, unlike other States, did not see a significant recovery during the summer.

FIGURE 7: TRAFFIC LOSS ACROSS STATES



Where active aircraft have been flying has also changed thanks to COVID.

Medium-distance flights have been hardest-hit, as per Figure 8. While the under 500 km category – domestic and short-range intra-Europe – only dropped by **43%**, the

medium category 500-2,000 km – international European and to adjacent regions – dropped by **58%**.

Long-haul (2,000-4,000 km) and ultra-long-haul (4,000+ km) decreased by **64%** and **52%** respectively, lower rates of decline that reflect the continued importance of cargo operations.

FIGURE 8: YEAR-ON-YEAR COMPARISON OF FLIGHTS BY DISTANCE

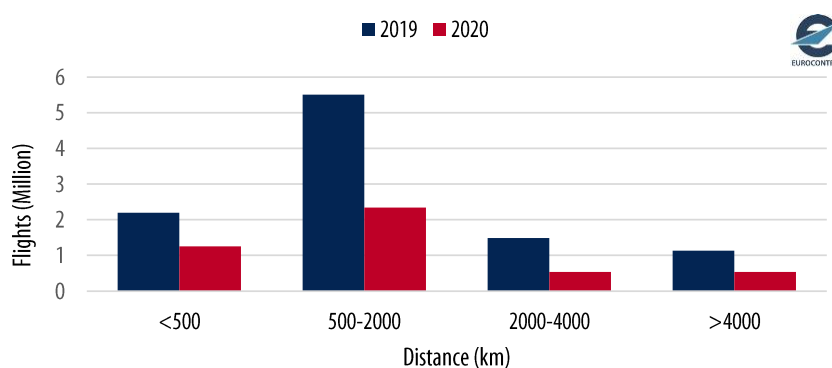
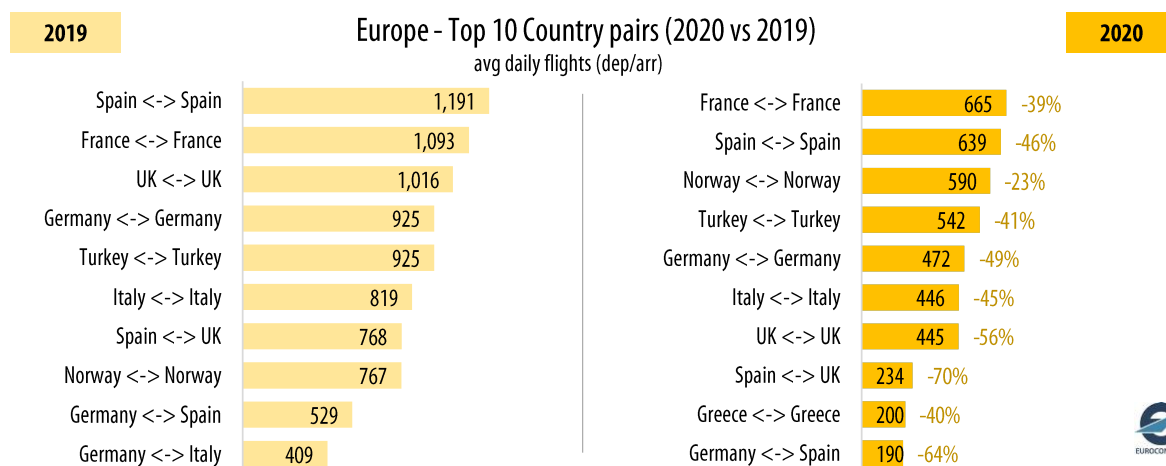


Figure 9 provides a stark comparison of how **intra-European traffic flows** have changed thanks to the pandemic. In 2020, domestic flows predominated, with a notable increase observed in intra-Norwegian flights (8th in

2019, up to 3rd in 2020). Spanish domestic flows lost the top spot to French domestic flows, while intra-UK dropped from 3rd to 7th. The first non-domestic flow in the top ten is still UK-Spain, despite decreasing by 70%.

FIGURE 9: TOP COUNTRY PAIRS WITHIN EUROPE, 2019 vs 2020



Global flows are all massively down as Figures 10 and 11 show. Of the regions, only Southern Africa (-44%) and Asia/Pacific (-47%) were less negatively affected than intra-European flows (-54%), in both cases reflecting continuing demand to ship cargo.

International traffic to the Americas has dwindled to between -53% and -60% of 2019 values, while the most strongly negatively affected flows are to/from Russia and Belarus (-66%), and to/from North Africa (-65%), the latter reflecting massively reduced tourism to Egypt, Tunisia and especially Morocco.

FIGURE 10: TRAFFIC FLOWS TO/FROM EUROPE'S TOP REGIONS (2020 vs 2019)

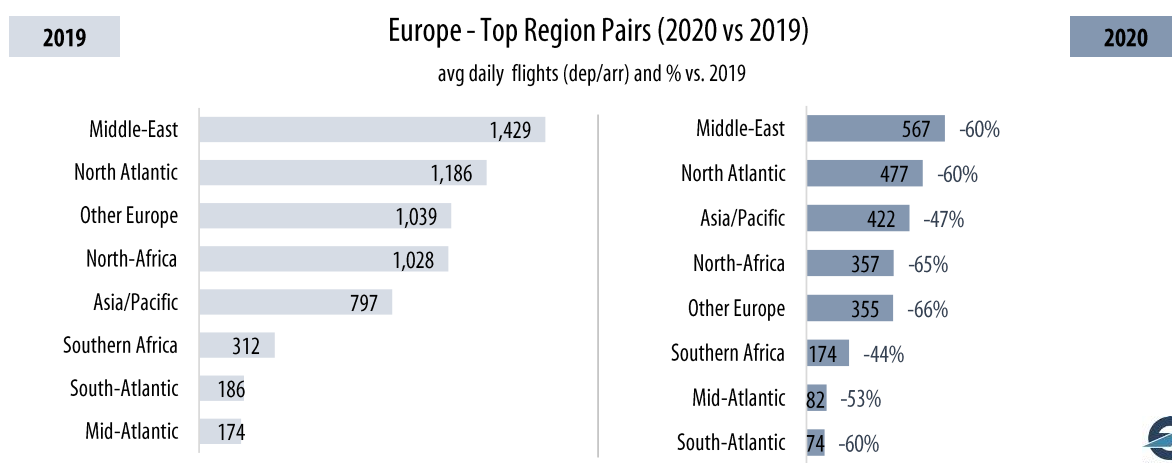
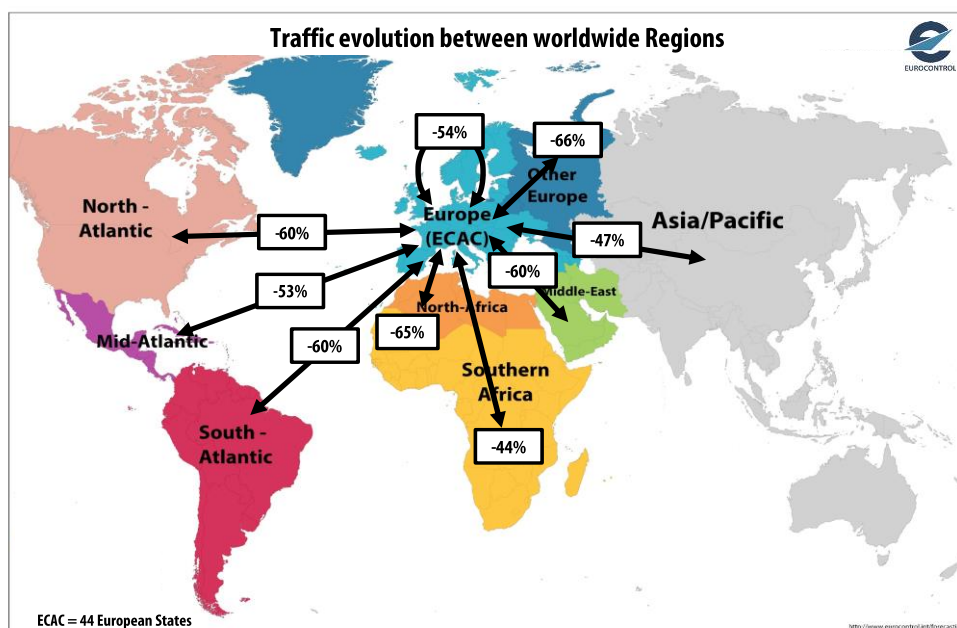


FIGURE 11: TRAFFIC EVOLUTION BETWEEN REGIONS

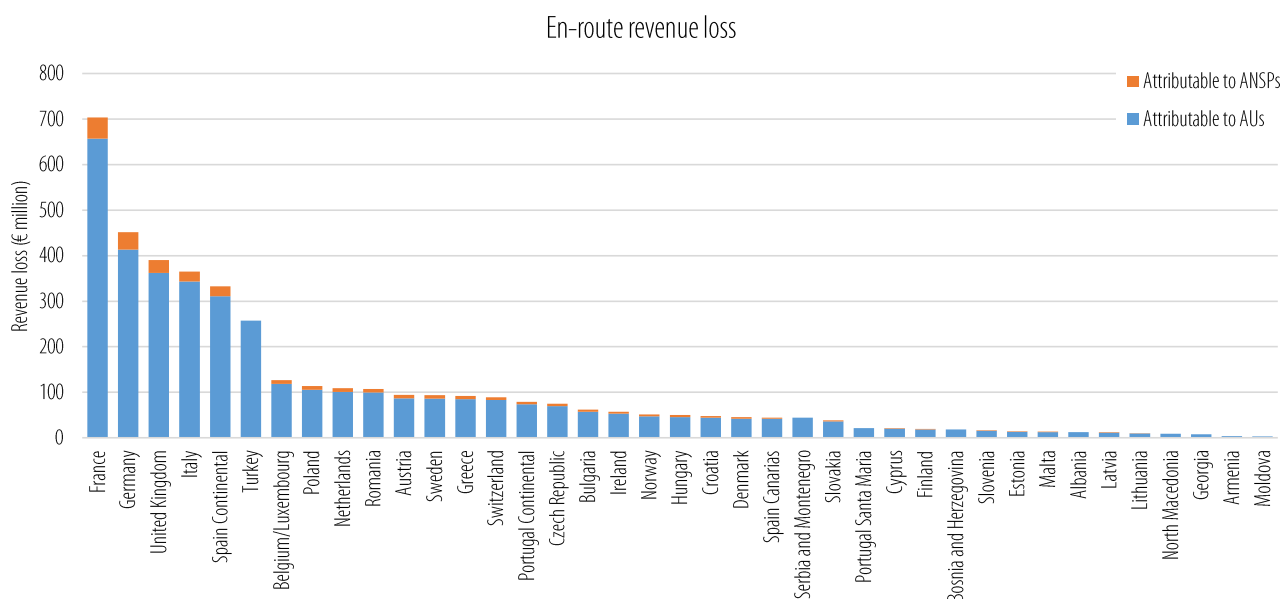


COVID impact on ANSPs

The COVID crisis has dramatically affected in social and economic terms all actors in the European aviation value chain. Pan-European ANSP losses are estimated at **€4.9 billion** – of which they can expect to recover **€4.5 billion** from airspace users over the next decade, resulting in an

overall net loss of **€0.4 billion**. Figure 12 shows how one element, en-route revenue losses in 2020 (up to end-November), breaks down between ANSPs and airspace users.

FIGURE 12: ESTIMATED EN-ROUTE REVENUE LOSSES PER CHARGING ZONE



Fewer flights meant there was little to no congestion throughout Europe over 2020, permitting more direct flight profiles. The EUROCONTROL Network Manager also seized the opportunity to improve flight efficiency, relaxing more than **1,200** airspace restrictions since the start of the crisis and saving airlines up to **26,000** nautical miles a day.

Distance Category	Departures (2019)	CO2 emissions (2019)
> 1500 km	29.8%	74.6%
500 - 1500 km	46.2%	21.6%
< 500 km	24.1%	3.6%

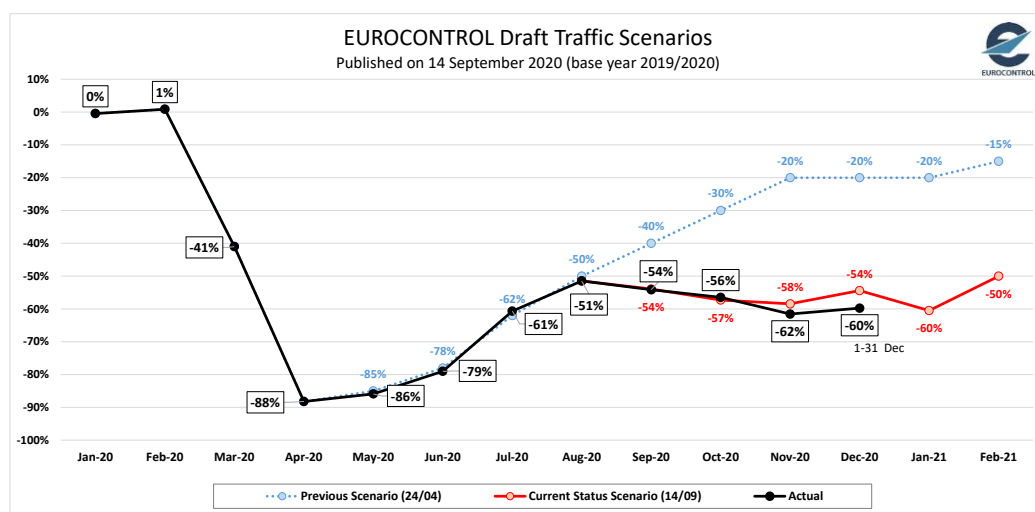
2021 outlook

The first months of 2021 look set to continue between **50% and 60% down**, close to the EUROCONTROL short-term draft traffic scenario revision of 14 September (Figure 15).

2020 ended with total traffic **-55%** of 2019, closing the year with a 7-day daily average that stood at **62.4% lower** than the same period in 2019.

However, this is far worse than the first traffic outlook produced in April, which had predicted that traffic would recover by year-end to -20% of 2019 levels. This had been based on the pandemic coming under control, and not anticipating the uncoordinated responses by States as they restored restrictions after the summer, as well as further waves of the virus.

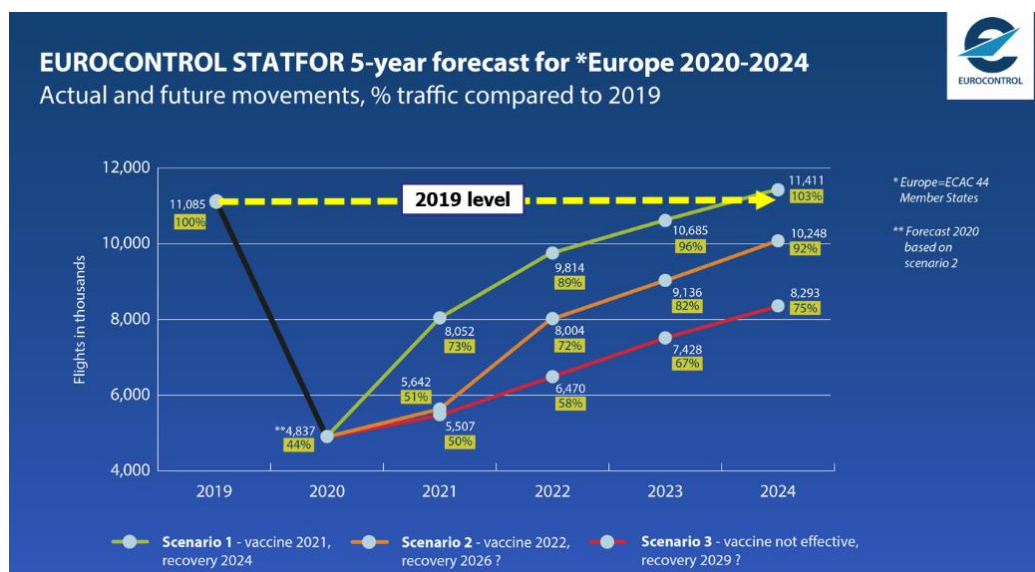
FIGURE 15: DRAFT TRAFFIC SCENARIOS



In the medium term, on 4 November EUROCONTROL produced a 5-year forecast covering the 2020-2024 period, and factoring in the volatile COVID-19 situation to produce **three scenarios**, as per Figure 16. We are currently on

course for **Scenario 2** (Vaccine widely, not partially, available for travellers, or pandemic end, by summer 2022), which predicts **a return in 2021 to 51% of 2019 traffic volumes or 5.64 million flights**.

FIGURE 16: 5-YEAR TRAFFIC SCENARIOS



Under this scenario, traffic returns to **92%** of 2019 volumes by 2024, or **10.24** million flights, with 2019 levels only reached fully by 2026. This factors in likely progressive vaccine deployment across Europe over the year, but not yet reaching full coverage/disappearance of COVID-19.

Scenario 1, the most optimistic (Vaccine widely, not partially, available for travellers, or pandemic end, by summer 2021), predicts that traffic will only return to 2019 levels by 2024. However, despite multiple vaccines on or close to market, this looks less realistic: some vaccines remain in the regulatory approval stage, and vaccine

rollout is unlikely to be complete across all population sectors and countries for quite some time.

Least likely, based on current developments, is Scenario 3 (Vaccine not effective: lingering infection and low passenger confidence), which envisages a much slower recovery with traffic only returning to 2019 levels by 2029.

However, even in the most optimistic of these scenarios, traffic will only return to close to 2019 levels in 2024 (92% of 2019), which highlights the importance of concentrating efforts, as traffic slowly recovers, on how the entire system can be 'built back better'.

Conclusions & Outlook

2020 is behind us now and the rollout of vaccines has already started. It will take time, but we expect **steady progress by summer 2021, which will have a positive impact on European aviation.**

This positive impact can be enhanced **if we start to take action to tackle a number of core issues** that need to be addressed if European aviation is to build back better.

Our analysis leads us to make a number of predictions for 2021, and reach some key conclusions that should be acted upon in order to maximise the **window of opportunity offered by this crisis** to rethink what does not work well:

KEY CONCLUSIONS & OUTLOOK 2021

- Vaccines are here now but will take considerable time to roll out. As per the most likely Scenario (no. 2) of EUROCONTROL's STATFOR Forecast, **European traffic in 2021 will still only be at 51% of 2019 levels**, which will continue to have a devastating impact on the entire industry, where direct European job losses for 2020 are estimated at 191,000.
- As a result, **substantial failures will occur in 2021**, highlighting the **need for financial support to the entire industry**. In 2020, the vast majority of State support was allocated to airlines, typically legacy/scheduled carriers; State support is needed to support the wider aviation value chain, especially the airport community.
- Airlines and airports need **clarity on slot exemptions to plan accordingly**.

- **Decarbonisation of the aviation sector is now a cornerstone for the industry**, with the EU Green Deal a driving force for real change. However, **regional connectivity** must continue to be maintained and increased taxation on aviation will not necessarily deliver reduced demand. Any future national aviation taxation should be used to fund decarbonisation measures, such as support **for increased uptake of Sustainable Aviation Fuels** (see [EUROCONTROL Think Paper 7](#) on how best to support decarbonisation).
- With regard to air traffic services, past mistakes need to be addressed head-on, and the status quo can no longer be maintained with regard to economic regulation and airspace management. Reform is essential, and the new Single European Sky proposals currently under consideration by EU bodies presents possible options to help drive down costs and ensure that there is scalable capacity in the years ahead. Decisions must be achieved collaboratively between operational stakeholders (airlines, airports and ANSPs) guided by the EUROCONTROL Network Manager.
- We need to **continue to innovate and invest in future technological solutions** in all aviation domains: the Digital European Sky through SESAR, implementation of Big Data (blockchain, AI), and sustainable aircraft technology (hydrogen, hybrid-electrification).

In short, 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.

Any queries on the data in this report should be sent to our Aviation Intelligence Unit at aviation.intelligence@eurocontrol.int.



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