

Central Route Charges Office - CRCO

Report on the Operation of
the Route Charges System in 2022



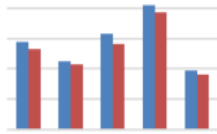
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EUROCONTROL Route Charges

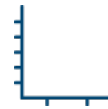
2022 Data

In 2022, 41 Member States participated in the EUROCONTROL Route Charges System



99.5%

Recovery rate



146.4 million

Total Service Units

+ 62.8% on 2021

+ 106.7% on 2020

- 12.4% on 2019



9.3 million

Flight Messages processed

+ 49.2% on 2021

+ 82.9% on 2020

- 16.3% on 2019



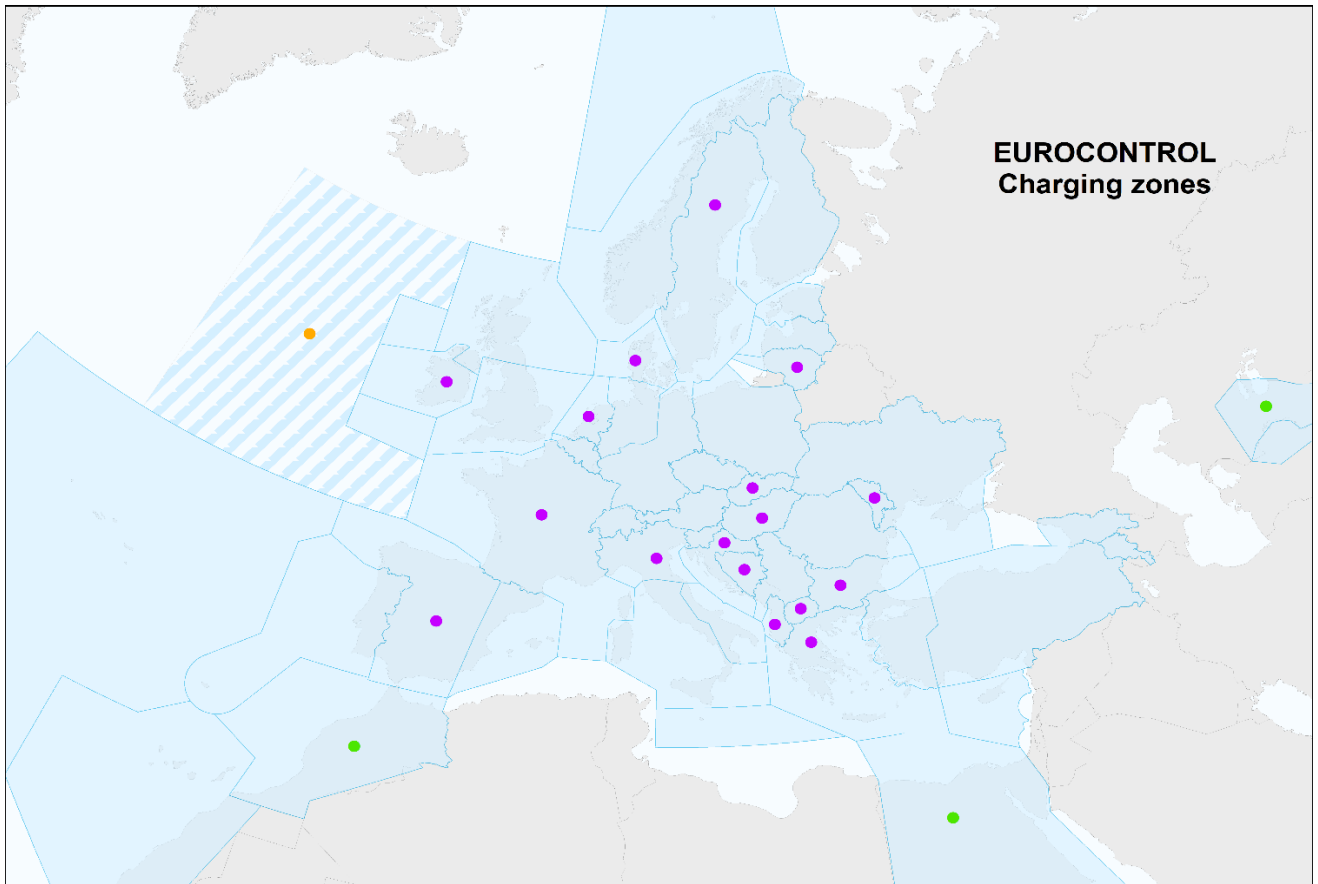
€7.6 billion

Route Charges billed

+ 83.1% on 2021

+ 134.8% on 2020

- 3.8% on 2019



Situation at 31/12/2022

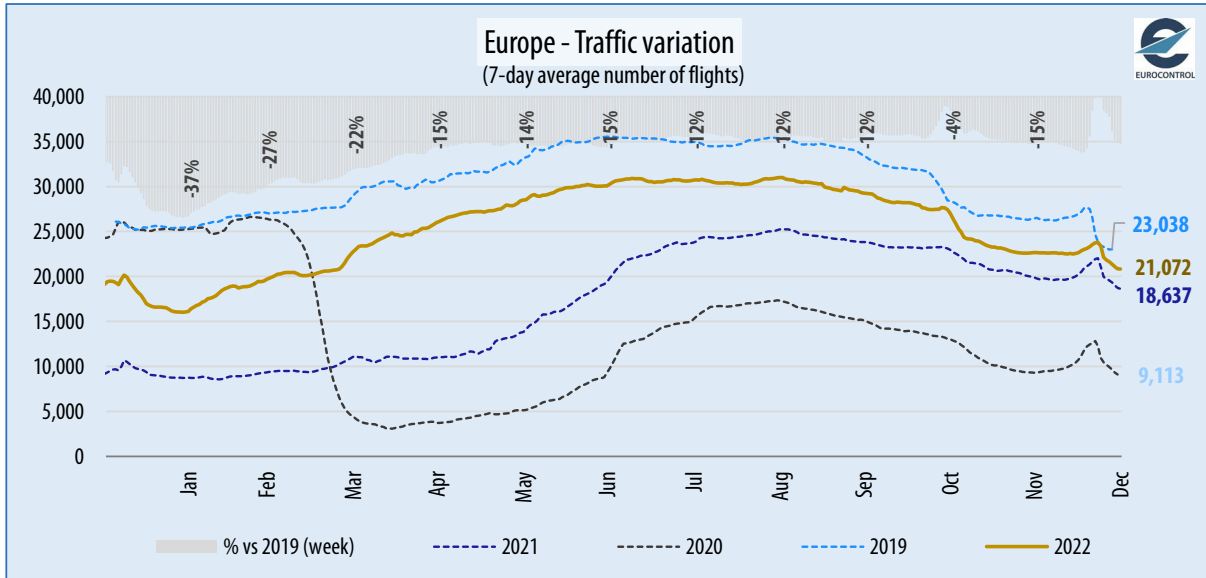
The map depicts the Charging Zones covered by the Multilateral Agreement relating to route charges and the various bilateral agreements:

- Member States with a bilateral agreement for the billing and collection of terminal navigation charges
- Non-Member States with a bilateral agreement for the billing and collection of air navigation charges or having a comprehensive agreement with EUROCONTROL
- Bilateral agreement for the billing and collection of Shanwick communication charges in respect of flights carried out in the Shanwick Oceanic Region on behalf of the Irish Aviation Authority (IAA).

I. DEVELOPMENTS IN 2022

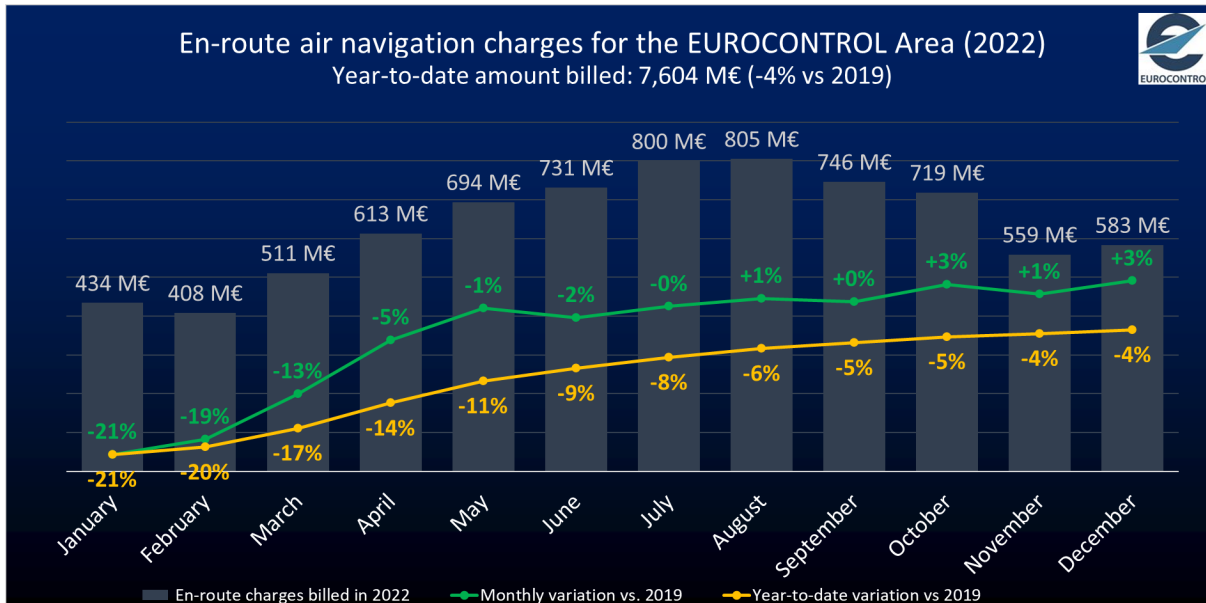
1. Impact on the Route Charges System

The impact of the COVID-19 crisis on traffic started in March 2020. Its unprecedented effect on aviation across the world and particularly in Europe continued during the first half of year 2022. The traffic in 2022 was further affected by the Russian invasion of Ukraine in February 2022 and the pressure on energy prices. Overall, the traffic continued to resume progressively in 2022 and stabilised in the second half of the year around 87% of the pre-pandemic level.



Graph 1: Daily variation of flights 2022 vs.2019

The impact on the Route Charges System and the revenues from route charges for the 41 contracting States month-to-month is depicted in the graph below. The amount billed comprises route charges and administrative charges (see table 9).



Graph 2: Revenues from en route charges 2022 vs.2019

2. Key indicators

The impact of the COVID-19 pandemic and the post-pandemic recovery as well as the invasion of Ukraine in February 2022 is visible across all the CRCO key indicators shown in table 1 below. The last column of table 1 shows the comparison to the pre-pandemic level of 2019.

| Key indicators | 2019 | 2020 | 2021 | 2022 | Variation 2022/2021 | Variation 2022/2019 |
|--|-------|-------|-------|-------|---------------------|---------------------|
| Flight messages processed in millions | 11.1 | 5.1 | 6.2 | 9.3 | 49.2% | -16.3% |
| Total service units in millions | 167.0 | 70.8 | 89.9 | 146.4 | 62.8% | -12.4% |
| Route charges billed in EUR millions | 7,873 | 3,225 | 4,136 | 7,572 | 83.1% | -3.8% |
| Total net amounts disbursed in EUR millions | 7,904 | 3,471 | 4,085 | 7,258 | 77.7% | -8.2% |
| Interest on late payment disbursed in EUR millions | 2.6 | 1.8 | 4.1 | 2.6 | -37.1% | -1.2% |
| Long-term recovery rate | 99.5% | 99.0% | 99.8% | 99.5% | -0.4% | 0.0% |

Table 1 – Key Indicators 2019-2022

3. Operations of the CRCO

The Central Route Charges Office (CRCO) of EUROCONTROL operates the Route Charges System on behalf of the Contracting States. Aircraft operators are charged a single amount per flight, irrespective of the number of States overflown. The CRCO calculates route charges using flight information made available via the EUROCONTROL Network Management Directorate (NMD) and flight messages sent by the Contracting States' Route Charges Offices (RCOs). The CRCO bills aircraft operators on a monthly basis, collects charges and disburses the amounts collected to the States every week.

| Billing | 2019 | 2020 | 2021 | 2022 |
|---|--------|--------|--------|--------|
| Number of bills issued for en route | 43,437 | 36,335 | 39,439 | 41,786 |
| Number of airspace users billed at least once during the year | 6,654 | 6,066 | 6,367 | 6,746 |

Table 2 – Operations of the CRCO –Billing

In 2022, the CRCO counted 70,182 correctly claimed flights, which amounted to 0.73% of the total number of flights processed during this period. The fact that the claim rate is above target for 2022 is mainly driven by 2 corrections gathering 57,456 flights and representing 0,62% on their own. The first one relates to a correction performed after VAT exemption was not properly applied for United Kingdom's nationals following an incorrect interpretation of the VAT applicability rules post Brexit. The second correction was performed following the judicial reorganisation of SAS and the untimely transfer of VAT characteristics to the new account. The total average claim processing time in 2022 was 27 days.

CEFA (CRCO Portal for airspace users)

As part of its digital transformation journey, the CRCO launched in 2022 a brand new version of its CEFA portal with a fully redesigned user interface and enhanced functionalities to significantly improve airspace users' experience. The portal aims at becoming the main interface to download billing documents, consult statements of account, update user data, declare fleets and submit claims.

CEFA makes exchanging air navigation billing information between airspace users and the CRCO simple, secure and efficient and is a critical plank of the CRCO and the Agency's digitalisation strategy.

By end of 2022, airspace users using CEFA represented more than 99% of the charges billed. In 2022 alone, 648 airspace users created a new CEFA account.

ETNA (CRCO Portal for national administrations and ANSPs)

The ETNA portal offers States and their Air Navigation Service Providers with a protected access to billing and financial reports as well as information on users’ fleets, addresses and VAT characteristics. It also allows to consult the airspace users’ financial situation.

In pursuance of its digital strategy, the CRCO has launched a project to further improving the ETNA portal and make it its main channel of communication with the States and their Air Navigation Service Providers. The delivery of the new version of the portal is planned in the last quarter of 2023 and is part of the EUROCONTROL 2030 - Raising the Bar objectives of fostering technology and digital transformation.

Fraud

The CRCO continues to monitor and raise the awareness of airspace users of the risks relating to fraud attempts against them. CEFA has proven to be a reliable tool for preventing potential fraud, allowing airspace users to cross-check their billing documents on a secured internet site. In addition, airspace users are invited to send the fraudulent email they have received to the EUROCONTROL Computer Emergency Response Team (CERT) for analysis and investigation.



II. UNIT RATES

1. 2022 cost-bases and national unit rates

Contracting States calculate their unit rates in accordance with the “Principles for establishing the cost-base for en route charges and the calculation of the unit rates”. Table 3 sets out the cost-bases and national unit rates for 2022.

The national unit rates in Table 3 do not include the administrative unit rate of EUR 0.22 reflecting the planned costs in 2022 by the CRCO for billing and collecting route charges. The service units are the forecast service units of the States used in the calculation of the 2022 unit rates in November 2021. The costs chargeable to users are the national costs including the adjustments applied according to the Principles. For Contracting States outside the euro zone, the euro value of the national unit rate is calculated at the average exchange rate of September 2021.

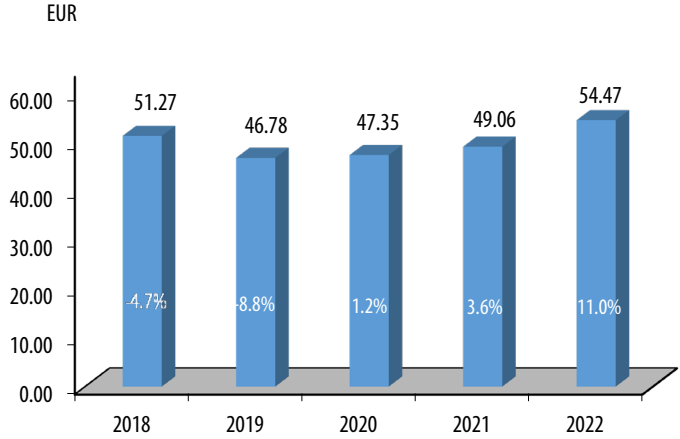
| Charging zones | National Costs ('000) | Costs chargeable to users ('000) | Service units ('000) | National unit rates |
|----------------------------|-----------------------|----------------------------------|----------------------|---------------------|
| Belgium-Luxembourg | 249,904 | 248,557 | 2,066 | 120.30 |
| Germany | 977,378 | 850,607 | 13,644 | 62.35 |
| France | 1,356,571 | 1,240,565 | 16,990 | 73.02 |
| United Kingdom | 923,064 | 896,742 | 13,183 | 68.03 |
| Netherlands | 246,424 | 212,930 | 2,593 | 82.12 |
| Ireland | 123,929 | 116,317 | 3,991 | 29.15 |
| Switzerland | 170,450 | 138,547 | 1,594 | 86.92 |
| Portugal Lisboa | 139,106 | 140,308 | 3,316 | 42.32 |
| Austria | 201,741 | 202,258 | 3,004 | 67.33 |
| Spain-Continental | 622,143 | 550,699 | 11,190 | 49.21 |
| Spain-Canarias | 98,205 | 60,098 | 1,415 | 42.48 |
| Portugal Santa Maria | 48,374 | 50,218 | 3,749 | 13.39 |
| Greece | 180,945 | 156,458 | 5,445 | 28.73 |
| Türkiye | 425,827 | 454,141 | 14,864 | 30.55 |
| Malta | 23,814 | 23,505 | 714 | 32.92 |
| Italy | 650,766 | 641,572 | 8,507 | 75.42 |
| Cyprus | 62,111 | 51,384 | 1,789 | 28.72 |
| Hungary | 109,197 | 109,438 | 2,419 | 45.23 |
| Norway | 119,176 | 109,803 | 2,048 | 53.61 |
| Denmark | 96,532 | 92,757 | 1,455 | 63.74 |
| Slovenia | 34,865 | 32,753 | 536 | 61.11 |
| Romania | 191,311 | 210,483 | 4,360 | 48.27 |
| Czech Republic | 121,903 | 113,764 | 1,841 | 61.80 |
| Sweden | 223,252 | 218,809 | 3,173 | 68.96 |
| Slovak Republic | 59,384 | 54,687 | 798 | 68.53 |
| Croatia | 86,877 | 79,990 | 1,582 | 50.56 |
| Bulgaria | 114,816 | 110,916 | 3,109 | 35.68 |
| North Macedonia | 17,212 | 17,315 | 322 | 53.81 |
| Moldova | 5,341 | 5,341 | 72 | 74.18 |
| Finland | 45,493 | 39,273 | 894 | 43.93 |
| Albania | 24,901 | 25,728 | 461 | 55.81 |
| Ukraine | 72,616 | 77,858 | 1,304 | 59.71 |
| Bosnia and Herzegovina | 37,700 | 40,208 | 1,006 | 39.97 |
| Serbia / Montenegro / KFOR | 90,777 | 92,836 | 2,199 | 42.21 |
| Lithuania | 24,495 | 22,243 | 506 | 43.96 |
| Poland | 195,075 | 187,031 | 3,991 | 46.86 |
| Armenia | 4,351 | 4,754 | 101 | 47.12 |
| Latvia | 24,731 | 23,333 | 736 | 31.70 |
| Georgia | 20,200 | 22,138 | 479 | 46.24 |
| Estonia | 26,786 | 23,818 | 727 | 32.77 |
| Ukraine South | 3,775 | 4,043 | 173 | 23.41 |
| Total | 8,251,517 | 7,754,225 | 142,346 | 54.47 |

Table 3 – Cost-bases and national unit rates for 2022

Source: WP CER-117-2021

2. Weighted national unit rate

The weighted average national unit rate for the Contracting States is calculated by dividing the sum of the costs chargeable to users by the sum of the service units for the same year. The weighted average national unit rate for 2022 was EUR 54.47, see Table 3.



Graph 3 – Weighted average national unit rate



III. CHANGES IN ACTUAL COSTS OF EN ROUTE SERVICES

Table 4 shows the actual costs incurred by the Contracting States, including their share of the EUROCONTROL costs, in the provision of en route services in 2019, 2020 and 2021. For States outside the euro zones, actual costs incurred in national currency have been converted into euro using average exchange rates.

| Charging zones | 2019 ('000) | 2020 ('000) | 2021 ('000) | Variation 2020/2019 | Variation 2021/2020 |
|----------------------------|------------------|------------------|------------------|------------------------|------------------------|
| Belgium-Luxembourg | 199,495 | 214,796 | 216,987 | 7.7% | 1.0% |
| Germany | 889,362 | 956,694 | 920,108 | 7.6% | -3.8% |
| France (1) | 1,340,088 | 1,338,311 | 1,325,999 | -0.1% | -0.9% |
| United Kingdom | 809,042 | 868,645 | 749,458 | 7.4% | -13.7% |
| Netherlands | 237,731 | 243,627 | 231,078 | 2.5% | -5.2% |
| Ireland | 114,498 | 104,189 | 100,885 | -9.0% | -3.2% |
| Switzerland (2) | 153,494 | 179,738 | 168,737 | 17.1% | -6.1% |
| Portugal Lisboa | 143,628 | 115,523 | 118,446 | -19.6% | 2.5% |
| Austria | 217,897 | 175,731 | 190,396 | -19.4% | 8.3% |
| Spain-Continental | 616,669 | 598,351 | 581,226 | -3.0% | -2.9% |
| Spain-Canarias | 99,878 | 94,072 | 91,801 | -5.8% | -2.4% |
| Portugal Santa Maria | 50,120 | 44,752 | 44,976 | -10.7% | 0.5% |
| Greece | 141,459 | 122,919 | 134,898 | -13.1% | 9.7% |
| Türkiye | 417,448 | 376,298 | 393,339 | -9.9% | 4.5% |
| Malta | 23,444 | 20,127 | 20,431 | -14.1% | 1.5% |
| Italy | 645,281 | 582,129 | 605,975 | -9.8% | 4.1% |
| Cyprus | 54,757 | 50,194 | 52,159 | -8.3% | 3.9% |
| Hungary | 96,983 | 83,209 | 83,466 | -14.2% | 0.3% |
| Norway | 117,716 | 99,242 | 112,769 | -15.7% | 13.6% |
| Denmark | 96,452 | 96,733 | 97,917 | 0.3% | 1.2% |
| Slovenia | 34,416 | 31,717 | 29,459 | -7.8% | -7.1% |
| Romania | 179,110 | 171,480 | 177,634 | -4.3% | 3.6% |
| Czech Republic | 129,807 | 106,616 | 92,878 | -17.9% | -12.9% |
| Sweden | 205,964 | 256,772 | 206,043 | 24.7% | -19.8% |
| Slovak Republic | 63,781 | 44,988 | 40,486 | -29.5% | -10.0% |
| Croatia | 90,511 | 85,987 | 76,522 | -5.0% | -11.0% |
| Bulgaria | 114,485 | 99,457 | 100,165 | -13.1% | 0.7% |
| North Macedonia | 17,698 | 14,475 | 13,987 | -18.2% | -3.4% |
| Moldova | 5,260 | 4,812 | 3,553 | -8.5% | -99.9% |
| Finland | 42,775 | 38,216 | 36,961 | -10.7% | -3.3% |
| Albania | 26,125 | 15,524 | 17,718 | -40.6% | 14.1% |
| Bosnia and Herzegovina | 44,987 | 31,172 | 28,852 | -30.7% | -7.4% |
| Serbia / Montenegro / KFOR | 91,105 | 79,829 | 77,982 | -12.4% | -2.3% |
| Lithuania | 23,929 | 19,504 | 21,441 | -18.5% | 9.9% |
| Poland | 195,816 | 183,021 | 139,498 | -6.5% | -23.8% |
| Armenia | 6,198 | 4,640 | 4,481 | -25.1% | -3.4% |
| Latvia | 23,498 | 19,805 | 18,663 | -15.7% | -5.8% |
| Georgia | 18,660 | 16,996 | 17,324 | -8.9% | 1.9% |
| Estonia | 29,779 | 26,963 | 26,509 | -9.5% | -1.7% |
| Total | 7,809,346 | 7,617,253 | 7,367,658 | -2.5% | -3.3% |

Table 4 – En route services – actual costs

Source: 2021 actual figures WP CER-119-2022

(1) Including Jersey and Geneva

(2) Excluding Geneva (France)

IV. TRAFFIC STATISTICS

1. Total service units – variation

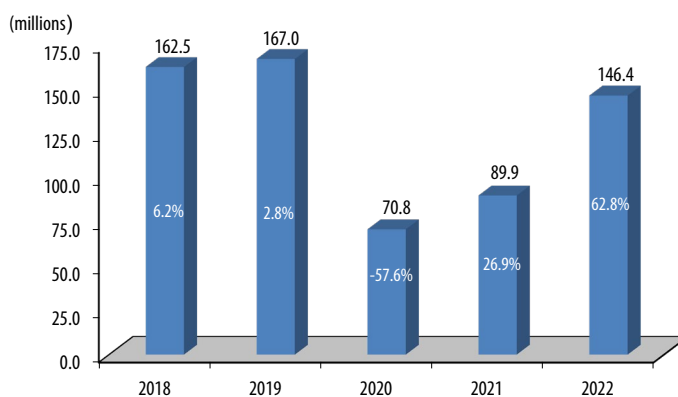
For a given flight and a given charging zone, the route charge is equal to the number of service units multiplied by the unit rate. The number of service units is equal to the weight factor (i.e. the square root of the MTOW divided by 50) multiplied by the distance factor (i.e. the number of kilometres in the great circle distance between the entry and exit points at which the actual route flown as recorded by the Network Manager crosses the charging zone boundary, divided by one hundred).

Over the past five years, the variation in the total number of service units (chargeable and exempted) was as follows:

| Year | Service units | Variation |
|------|---------------|-----------|
| 2018 | 162,511,953 | 6.2% |
| 2019 | 167,039,969 | 2.8% |
| 2020 | 70,825,321 | -57.6% |
| 2021 | 89,906,784 | 26.9% |
| 2022 | 146,396,599 | 62.8% |

Table 5 – Total service units

The total number of service units (chargeable and exempted) in 2022 totalling about EUR 146.4 million shows an increase of 62.8 % compared to 2021 and a decrease of 12.4% compared to the pre-pandemic level of 2019.



Graph 4 – Total service units 2018-2022

2. Total actual service units – totals per charging zone

Table 6 gives, for each charging zone, the total number of service units (chargeable and exempted) generated from 2018 to 2022. The last column of table 6 shows the comparison to the pre-pandemic level of 2019.

| Charging zones | 2018 ('000) | 2019 (3) ('000) | 2020 (3) ('000) | 2021 (3) ('000) | 2022 (3) ('000) | Variation 2022/2021 | Variation 2022/2019 |
|---------------------------|----------------|-----------------|-----------------|-----------------|-----------------|---------------------|---------------------|
| Belgium-Luxembourg | 2,644 | 2,621 | 1,081 | 1,167 | 2,096 | 79.6% | -20.0% |
| Germany (1) | 14,989 | 15,190 | 6,887 | 7,777 | 12,647 | 62.6% | -16.7% |
| France | 21,450 | 21,786 | 8,546 | 11,181 | 18,898 | 69.0% | -13.3% |
| United Kingdom | 12,194 | 12,596 | 5,097 | 5,531 | 10,782 | 94.9% | -14.4% |
| Netherlands | 3,392 | 3,382 | 1,480 | 1,565 | 2,586 | 65.2% | -23.5% |
| Ireland | 4,550 | 4,642 | 1,986 | 2,419 | 4,233 | 75.0% | -8.8% |
| Switzerland | 1,741 | 1,769 | 651 | 897 | 1,545 | 72.2% | -12.7% |
| Portugal Lisboa | 3,856 | 4,061 | 1,556 | 1,988 | 3,695 | 85.8% | -9.0% |
| Austria | 3,198 | 3,340 | 1,509 | 1,799 | 3,248 | 80.5% | -2.7% |
| Spain-Continental | 11,059 | 11,490 | 4,437 | 6,383 | 11,079 | 73.6% | -3.6% |
| Spain-Canarias | 1,788 | 1,952 | 803 | 1,008 | 1,790 | 77.6% | -8.3% |
| Portugal Santa Maria | 5,504 | 5,518 | 2,457 | 2,975 | 5,096 | 71.3% | -7.6% |
| Greece | 5,600 | 6,006 | 2,755 | 4,048 | 6,416 | 58.5% | 6.8% |
| Türkiye | 17,460 | 17,918 | 7,990 | 10,719 | 16,030 | 49.6% | -10.5% |
| Malta | 935 | 1,020 | 396 | 504 | 667 | 32.4% | -34.6% |
| Italy | 9,434 | 10,047 | 3,990 | 5,783 | 9,562 | 65.3% | -4.8% |
| Cyprus | 1,897 | 2,068 | 852 | 1,266 | 1,788 | 41.2% | -13.5% |
| Hungary | 3,236 | 3,162 | 1,423 | 1,727 | 3,184 | 84.4% | 0.7% |
| Norway | 2,522 | 2,437 | 1,230 | 1,445 | 2,071 | 43.3% | -15.0% |
| Denmark | 1,709 | 1,781 | 717 | 785 | 1,282 | 63.4% | -28.0% |
| Slovenia | 572 | 628 | 264 | 370 | 595 | 60.9% | -5.1% |
| Romania | 5,101 | 5,118 | 2,246 | 2,870 | 4,770 | 66.2% | -6.8% |
| Czech Republic | 3,041 | 2,937 | 1,139 | 1,280 | 1,814 | 41.7% | -38.2% |
| Sweden | 3,813 | 3,821 | 1,677 | 1,795 | 2,472 | 37.7% | -35.3% |
| Slovak Republic | 1,296 | 1,292 | 475 | 612 | 973 | 58.9% | -24.7% |
| Croatia | 1,994 | 2,194 | 929 | 1,519 | 2,229 | 46.8% | 1.6% |
| Bulgaria | 3,938 | 4,032 | 1,767 | 2,270 | 3,871 | 70.5% | -4.0% |
| North Macedonia | 336 | 395 | 174 | 275 | 419 | 52.2% | 6.1% |
| Moldova | 83 | 87 | 35 | 47 | 18 | -60.8% | -79.0% |
| Finland | 940 | 1,011 | 462 | 495 | 598 | 20.8% | -40.8% |
| Albania | 481 | 508 | 240 | 333 | 531 | 59.8% | 4.7% |
| Bosnia and Herzegovina | 1,083 | 1,228 | 586 | 762 | 1,236 | 62.3% | 0.6% |
| Armenia | 224 | 206 | 57 | 75 | 164 | 118.4% | -20.3% |
| Serbia / Montenegro/ KFOR | 2,518 | 2,676 | 1,170 | 1,558 | 2,660 | 70.7% | -0.6% |
| Poland | 4,666 | 4,972 | 2,146 | 2,586 | 3,129 | 21.0% | -37.1% |
| Lithuania | 603 | 619 | 333 | 443 | 376 | -15.2% | -39.2% |
| Latvia | 938 | 958 | 439 | 542 | 466 | -14.1% | -51.4% |
| Georgia | 806 | 674 | 424 | 414 | 775 | 87.4% | 15.0% |
| Estonia | 920 | 901 | 419 | 467 | 429 | -8.2% | -52.4% |
| Subtotal | 162,512 | 167,040 | 70,825 | 89,680 | 146,221 | 63.0% | -12.5% |
| Ukraine (2) | | | | 186 | 145 | | |
| Ukraine South (2) | | | | 42 | 30 | | |
| Total | 162,512 | 167,040 | 70,825 | 89,907 | 146,397 | 62.8% | -12.4% |

Table 6 – Total number of service units generated

(1) Includes 128,538 service units for flight segments performed in 2022 as Operational Air Traffic.

(2) No comparison between figures recorded for 2019, 2021 and 2022; Ukraine integrated as of 1 November 2021.

(3) As from 2019, figures correspond to service units recorded for the 12 monthly billings.

3. Total, exempted and chargeable service units

Table 7 details the number of service units generated in each charging zone in 2022. For any given charging zone, the number of chargeable service units (column 8) is the difference between the total service units (column 1) and the service units generated in respect of exempted flights (column 7). Total exemptions represent 1.0% of total service units, out of which 0.9% for military flights and 0.1% for all the other categories of flight.

| Charging zones | Total service units | Military | Heads of state | <2 T | Circular | Other | Total exemptions (2) to (6) | Chargeable service units (1) - (7) |
|--------------------------|---------------------|------------------|----------------|---------------|---------------|---------------|-----------------------------|------------------------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Belgium-Luxembourg | 2,096,176 | 11,545 | 2,127 | 1,176 | 530 | 208 | 15,585 | 2,080,590 |
| Germany (1) | 12,647,284 | 174,988 | 10,776 | 15,786 | 736 | 692 | 202,977 | 12,444,306 |
| France | 18,897,985 | 124,762 | 8,400 | 14,891 | 7,533 | 6,847 | 162,432 | 18,735,553 |
| United Kingdom | 10,782,061 | 138,492 | 2,327 | 3,651 | 5,060 | 989 | 150,518 | 10,631,543 |
| Netherlands | 2,585,835 | 38,456 | 970 | 1,856 | 1,591 | 106 | 42,980 | 2,542,854 |
| Ireland | 4,233,452 | 37,542 | 513 | 158 | 759 | 66 | 39,037 | 4,194,415 |
| Switzerland | 1,544,718 | 1,162 | 1,237 | 1,384 | 7 | 407 | 4,197 | 1,540,521 |
| Portugal Lisboa | 3,695,099 | 25,284 | 821 | 522 | 2,192 | 199 | 29,018 | 3,666,081 |
| Austria | 3,247,862 | 7,352 | 1,877 | 2,540 | 42 | 330 | 12,140 | 3,235,722 |
| Spain-Continental | 11,078,709 | 61,589 | 5,544 | 3,543 | 4,960 | 2,210 | 77,846 | 11,000,863 |
| Spain-Canarias | 1,789,655 | 9,316 | 865 | 70 | 651 | 613 | 11,515 | 1,778,140 |
| Portugal Santa Maria | 5,096,322 | 66,046 | 1,413 | 14 | 566 | 202 | 68,242 | 5,028,080 |
| Greece | 6,416,384 | 63,011 | 3,711 | 834 | 1,244 | 280 | 69,081 | 6,347,303 |
| Türkiye | 16,030,028 | 64,252 | 9,426 | 132 | 1,701 | 1,264 | 76,776 | 15,953,252 |
| Malta | 666,812 | 27,221 | 725 | 100 | 160 | 523 | 28,729 | 638,083 |
| Italy | 9,561,778 | 121,797 | 7,048 | 3,079 | 3,600 | 1,949 | 137,474 | 9,424,304 |
| Cyprus | 1,788,097 | 21,284 | 635 | 169 | 1,078 | 4 | 23,170 | 1,764,927 |
| Hungary | 3,184,085 | 29,239 | 1,989 | 483 | 921 | 57 | 32,689 | 3,151,396 |
| Norway | 2,071,287 | 20,297 | 375 | 297 | 2,575 | 3,647 | 27,192 | 2,044,095 |
| Denmark | 1,282,410 | 13,624 | 527 | 1,209 | 988 | 205 | 16,552 | 1,265,857 |
| Slovenia | 595,456 | 3,256 | 235 | 575 | 105 | 80 | 4,251 | 591,205 |
| Romania | 4,770,304 | 41,928 | 2,741 | 516 | 98 | 517 | 45,799 | 4,724,504 |
| Czech Republic | 1,814,184 | 36,414 | 2,018 | 1,997 | 377 | 220 | 41,027 | 1,773,157 |
| Sweden | 2,471,898 | 15,793 | 1,623 | 1,884 | 1,624 | 387 | 21,311 | 2,450,588 |
| Slovak Republic | 972,528 | 11,609 | 901 | 427 | 12 | 79 | 13,028 | 959,500 |
| Croatia | 2,228,835 | 4,487 | 831 | 745 | 549 | 254 | 6,866 | 2,221,969 |
| Bulgaria | 3,870,654 | 27,682 | 1,922 | 68 | 540 | 279 | 30,491 | 3,840,163 |
| North Macedonia | 419,094 | 0 | 178 | 16 | 242 | 9 | 446 | 418,648 |
| Moldova | 18,262 | 35 | 27 | 20 | 14 | 21 | 117 | 18,145 |
| Finland | 597,862 | 1,154 | 219 | 657 | 476 | 230 | 2,737 | 595,125 |
| Albania | 531,478 | 1,740 | 270 | 32 | 197 | 17 | 2,256 | 529,222 |
| Ukraine | 145,041 | 1,499 | 348 | 78 | 782 | 17 | 2,723 | 142,318 |
| Bosnia and Herzegovina | 1,236,217 | 418 | 657 | 113 | 199 | 27 | 1,414 | 1,234,804 |
| Armenia | 164,419 | 0 | 215 | 1 | 0 | 0 | 216 | 164,203 |
| Serbia / Montenegro/KFOR | 2,659,885 | 542 | 1,140 | 397 | 401 | 217 | 2,697 | 2,657,188 |
| Poland | 3,128,964 | 65,480 | 3,849 | 2,500 | 333 | 117 | 72,279 | 3,056,685 |
| Lithuania | 375,999 | 5,159 | 394 | 144 | 40 | 0 | 5,737 | 370,262 |
| Latvia | 465,601 | 7,680 | 243 | 135 | 44 | 12 | 8,114 | 457,488 |
| Georgia | 775,141 | 438 | 1,000 | 6 | 0 | 2 | 1,446 | 773,695 |
| Estonia | 428,511 | 1,661 | 165 | 148 | 41 | 8 | 2,022 | 426,488 |
| Ukraine South | 30,229 | 194 | 0 | 0 | 297 | 3 | 494 | 29,735 |
| Total | 146,396,599 | 1,284,428 | 80,281 | 62,353 | 43,267 | 23,292 | 1,493,621 | 144,902,978 |

Table 7 – Service units generated in respect of exempted flights

(1) Includes 128,538 service units for flight segments performed in 2022 as Operational Air Traffic.

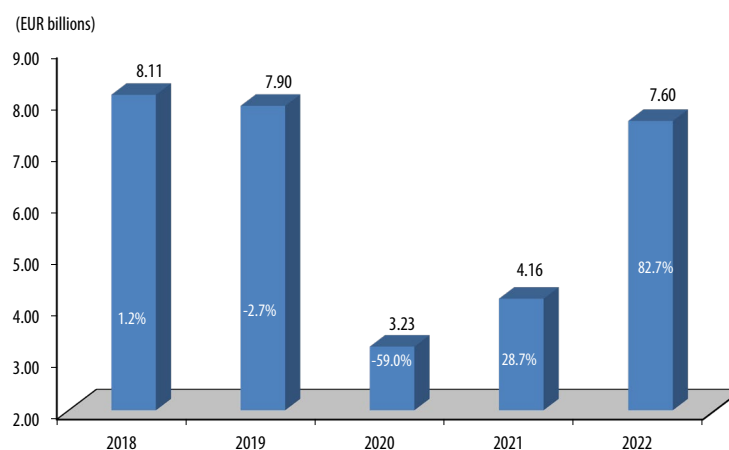
V. AMOUNTS BILLED, COLLECTED AND DISBURSED

1. Amounts billed in 2022

The amounts billed to airspace users in 2022 totalled EUR 7.6 billion (see Tables 8 and 9). This represents an increase of 82.7 % compared to 2021 and a decrease of 3.7% compared to the pre-pandemic level of 2019. Amounts billed exclude value added tax (VAT), amounting to EUR 20.1 million, billed on behalf of twenty-three VAT-taxable air navigation service providers in the Contracting States (see table 10).

| Year | Amounts billed (EUR) | Variation rate |
|------|----------------------|----------------|
| 2018 | 8,111,213,017 | 1.2% |
| 2019 | 7,896,243,666 | -2.7% |
| 2020 | 3,233,677,022 | -59.0% |
| 2021 | 4,162,133,733 | 28.7% |
| 2022 | 7,604,095,457 | 82.7% |

Table 8 – Amounts billed in 2018-2022



Graph 5 – Amounts billed for flights carried out in 2018-2022

2. Amounts billed and disbursed

Table 9 shows the total amounts billed and disbursed in euro in 2022.

| Charging zones | Amounts billed (1) | Amount disbursed (2) |
|----------------------------|----------------------|----------------------|
| Belgium-Luxembourg | 250,753,254 | 235,876,285 |
| Germany | 778,640,517 | 763,558,236 |
| France | 1,372,195,378 | 1,301,195,268 |
| United Kingdom | 730,510,601 | 691,504,654 |
| Netherlands | 209,378,525 | 199,120,289 |
| Ireland | 123,190,223 | 118,269,093 |
| Switzerland | 144,852,479 | 142,014,041 |
| Portugal Lisboa | 155,954,997 | 149,320,986 |
| Austria | 218,572,954 | 203,842,024 |
| Spain-Continental | 543,773,110 | 516,392,444 |
| Spain-Canarias | 75,926,420 | 71,699,667 |
| Portugal Santa Maria | 68,432,397 | 67,063,375 |
| Greece | 183,754,458 | 176,547,806 |
| Türkiye | 291,098,735 | 284,653,402 |
| Malta | 21,146,169 | 19,557,039 |
| Italy | 712,855,574 | 684,467,738 |
| Cyprus | 51,076,497 | 45,932,185 |
| Hungary | 129,562,897 | 117,051,457 |
| Norway | 111,401,919 | 110,837,345 |
| Denmark | 80,935,149 | 77,916,974 |
| Slovenia | 36,258,729 | 34,025,180 |
| Romania | 229,845,603 | 207,049,458 |
| Czech Republic | 113,405,063 | 106,161,331 |
| Sweden | 163,182,123 | 159,900,633 |
| Slovak Republic | 65,965,715 | 60,732,123 |
| Croatia | 112,250,922 | 106,125,363 |
| Bulgaria | 137,779,243 | 125,096,510 |
| North Macedonia | 22,570,979 | 21,826,571 |
| Moldova | 1,411,317 | 1,604,648 |
| Finland | 26,274,833 | 26,216,823 |
| Albania | 30,294,682 | 29,363,477 |
| Ukraine | 8,631,448 | 15,110,351 |
| Bosnia and Herzegovina | 49,632,200 | 47,228,199 |
| Serbia / Montenegro / KFOR | 112,827,823 | 106,825,034 |
| Poland | 140,475,681 | 140,184,541 |
| Lithuania | 16,358,218 | 17,406,140 |
| Armenia | 9,842,631 | 8,549,466 |
| Latvia | 14,602,925 | 15,977,342 |
| Georgia | 43,689,924 | 35,352,278 |
| Estonia | 14,069,869 | 15,384,279 |
| Ukraine South | 713,275 | 1,378,875 |
| Total | 7,604,095,457 | 7,258,318,928 |

Table 9 – Amounts billed and disbursed in 2022

(1) Out of which EUR 7,572,216,611 for route charges (all States) and EUR 31,878,846 for administrative charges (all States).

Source: 2022 ETNA report "Route Charges – Billing Summary - Annual Situation".

(2) Source: Financial statements for the year ended 31 December 2022.

3. VAT billed and disbursed to the States

Table 10 shows the total amounts of VAT billed and disbursed in euro in 2022 to the 23 VAT-taxable air navigation service providers of the Contracting States, which apply VAT to route charges.

| Charging zones | VAT billed (1) | VAT disbursed (2) |
|-------------------|-------------------|-------------------|
| Germany | 1,608,148 | 1,627,656 |
| United Kingdom | 3,574,347 | 3,486,113 |
| Ireland | 408,806 | 365,004 |
| Switzerland | 39,686 | 39,086 |
| Austria | 372,359 | 343,200 |
| Spain-Continental | 1,300,787 | 1,327,026 |
| Spain - Canaries | 212,947 | 207,620 |
| Norway | 10,138,681 | 10,205,525 |
| Denmark | 376,896 | 347,320 |
| Slovenia | 50,679 | 45,663 |
| Romania | 508,729 | 411,103 |
| Czech Republic | 207,027 | 190,551 |
| Slovak Republic | 159,071 | 143,911 |
| Croatia | 185,851 | 174,177 |
| Bulgaria | 267,586 | 235,681 |
| Moldova | 101 | 87 |
| Finland | 201,325 | 155,016 |
| Armenia | 227 | 0 |
| Poland | 318,798 | 310,040 |
| Lithuania | 34,335 | 39,581 |
| Latvia | 43,877 | 59,762 |
| Georgia | 6,654 | 1,763 |
| Estonia | 77,790 | 104,331 |
| Total | 20,094,708 | 19,820,214 |

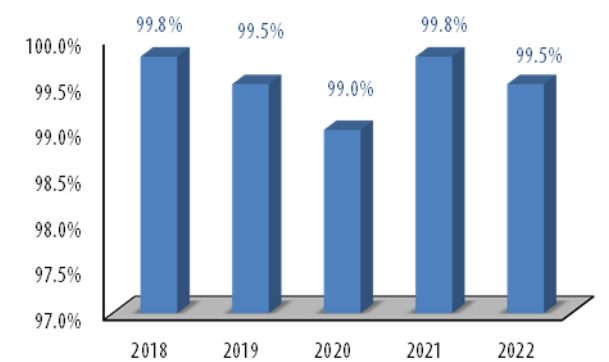
Table 10 – VAT billed and disbursed to the Contracting States in 2022

(1) Source: 2022 ETNA report "Route Charges – Billing Summary - Annual Situation".

(2) Source: Financial statements for the year ended 31 December 2022

4. Recovery rates

The recovery rate reflects the performance of the CRCO. The graph below also shows the annual recovery rates for the period 2018-2022. The recovery rate target is of 99.5%, one year after billing. Over the **last 10 years** the CRCO achieved an average recovery rate of **99.7%**.



Graph 6 – Long-term recovery rate
(Situation of 31/03/2023)

In case of non-payment of route charges, the interest rate applicable on late payment was 9.48% per annum in 2022.

VI. THE COSTS OF THE ROUTE CHARGES SYSTEM

The table below shows the ratios between the CRCO's actual net costs (route charge collection costs under the Multilateral System net of receipts from bilateral agreements and excluding carry overs) and service units/amounts billed. In 2020, the cost per service unit has increased due to a drastic reduction in the number of service units. In 2021, the cost has decreased by 28% compared to 2020, however, remaining at a high level due to the continued impact of the crisis on traffic levels. Even though the total number of service units for year 2022 is by 12.4% below the pre-pandemic level of 2019, the CRCO costs per service unit have returned to the pre-pandemic level. This has been achieved by the decrease of the CRCO costs by 8.2% compared to 2021 and 16.8% compared to 2019.

| Year | CRCO costs (EUR millions) | Service units (millions) | Cost per service unit (2) / (3) | Amounts billed (EUR millions) | Ratio % (2)/ (5) |
|------|---------------------------|--------------------------|---------------------------------|-------------------------------|------------------|
| 1 | 2 | 3 | 3 | 5 | 6 |
| 2018 | 19.3 | 162.51 | 0.12 | 8,111 | 0.24% |
| 2019 | 21.3 | 167.04 | 0.13 | 7,896 | 0.27% |
| 2020 | 20.2 | 70.83 | 0.29 | 3,234 | 0.63% |
| 2021 | 19.3 | 89.91 | 0.21 | 4,162 | 0.46% |
| 2022 | 17.7 | 146.40 | 0.12 | 7,604 | 0.23% |

Table 11 – Ratios between the CRCO's actual net costs and service units/amounts billed

VII. ORIGIN OF TRAFFIC AND RECEIPTS

Table 12 shows the percentage of chargeable service units and route charges recorded for all the Contracting States in 2022, by user state of registration. Contracting States' national users accounted for 74% of the total number of chargeable service units and for 77% of the total route charges billed.

| User state of registration | Chargeable service units | Route charges billed |
|-----------------------------------|--------------------------|----------------------|
| Ireland | 9.7% | 11.5% |
| United Kingdom | 10.3% | 11.4% |
| Germany | 8.3% | 9.2% |
| Türkiye | 10.3% | 7.6% |
| France | 4.6% | 5.1% |
| Spain | 5.1% | 4.9% |
| Netherlands | 3.2% | 3.6% |
| Austria | 2.6% | 3.1% |
| Hungary | 2.6% | 2.8% |
| Sweden | 2.0% | 2.3% |
| Switzerland | 1.9% | 2.2% |
| Belgium | 1.4% | 1.6% |
| Portugal Lisboa | 1.7% | 1.6% |
| Italy | 1.1% | 1.3% |
| Norway | 1.1% | 1.3% |
| Poland | 1.3% | 1.2% |
| Finland | 1.1% | 1.0% |
| Malta | 0.8% | 0.9% |
| Greece | 0.9% | 0.8% |
| Luxembourg | 0.7% | 0.7% |
| Denmark | 0.5% | 0.6% |
| Czech Republic | 0.5% | 0.5% |
| Latvia | 0.4% | 0.4% |
| Romania | 0.4% | 0.4% |
| Serbia | 0.3% | 0.2% |
| Bulgaria | 0.2% | 0.2% |
| Croatia | 0.2% | 0.2% |
| Moldova | 0.2% | 0.2% |
| Ukraine | 0.2% | 0.1% |
| Lithuania | 0.1% | 0.1% |
| Albania | 0.1% | 0.1% |
| Georgia | 0.1% | 0.1% |
| Estonia | 0.1% | 0.1% |
| Slovak Republic | 0.0% | 0.0% |
| Cyprus | 0.0% | 0.0% |
| Armenia | 0.0% | 0.0% |
| Montenegro | 0.0% | 0.0% |
| Slovenia | 0.0% | 0.0% |
| Bosnia and Herzegovina | 0.0% | 0.0% |
| North Macedonia | 0.0% | 0.0% |
| Total Participating States | 73.9% | 77.4% |
| Others | 26.1% | 22.6% |
| Total all nationalities | 100.0% | 100.0% |
| Total European Union | 49.7% | 54.2% |

Table 12 – Total percentage of chargeable service units and route charges billed in 2022 by user state of registration

Annex 1: Bilateral agreements

1. Bilateral agreements with EUROCONTROL Member States

Billing and collection of terminal charges

In 2022, EUROCONTROL operated seventeen bilateral agreements relating to terminal charges with France, the Netherlands, Ireland, Denmark, Italy, Moldova, Hungary, Croatia, Slovenia, Lithuania, Sweden, Greece, Bulgaria, Spain, Malta, Albania and North Macedonia. In total, EUR 670 million was billed in 2022 for the seventeen agreements.

Any EUROCONTROL Member State may avail of terminal charge billing and collection services. By using the same data and tools for en route and terminal charges, the CRCO can offer billing and collection services for terminal charges at a very low cost to States and air navigation service providers, thereby reducing the administrative cost to airspace users.

Billing and collection of Shanwick communication charges

EUROCONTROL bills and collects Shanwick communication charges (EUR 20 million in 2022) in respect of flights carried out in the Shanwick Oceanic Region on behalf of the Irish Aviation Authority (IAA).

2. Bilateral agreements relating to air navigation charges

In 2022, EUROCONTROL billed and collected air navigation charges on behalf of Uzbekistan and Egypt (bilateral agreements for billing and collection) and with Morocco (comprehensive agreement).

These agreements comprise route charges and, optionally, terminal charges. It is the case of Egypt that has entrusted EUROCONTROL with the billing of terminal charges.

In total, EUR 258 million was billed in 2022 on behalf of non-Member States.



2022
SYSTEM REPORT



SUPPORTING EUROPEAN AVIATION



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