High-level Summary Report on Preliminary ACE 2022 Data

Performance Review Unit

2023-12-15

Table of contents

Welcome **4**
IMPORTANT NOTICE 4

1 Introduction **5**

2 High-level revenues, costs and staff data **7**

3 Economic cost-effectiveness **12**

4 Financial cost-effectiveness **14**
4.1 Pan-European system level 14
4.2 ANSP level 16

5 Monitoring of ANSPs cash and liquidity situation **19**

Disclaimer **21**

List of Figures

1.1 Timeline to produce the next ACE benchmarking report . . . 5
1.2 Status of 2022 data validation process . . . 6

2.1 Breakdown of gate-to-gate ANS revenues, 2022 . . . 7
2.2 Changes in composite flight-hours between 2019 and 2022 . . . 8
2.3 Gate-to-gate ATM/CNS provision costs at Pan-European system level, 2022 . . . 9
2.4 Changes in ATM/CNS provision costs (real terms) . . . 10
2.5 Breakdown of total gate-to-gate ATM/CNS staff at Pan-European system level, 2022 . . . 10
2.6 Total gate-to-gate ATM/CNS staff per staff category . . . 11

3.1 Trend of unit economic costs at Pan-European system level, 2017 (real terms) . . . 12
3.2 Economic gate-to-gate cost-effectiveness, 2022 . . . 13

4.1 Changes in unit ATM/CNS provision costs, 2017 – 2022 (real terms) . . . 14
4.2 ACE performance framework, 2022 (real terms) . . . 15
4.3 Breakdown of changes in unit ATM/CNS provision costs, 2021 – 2022 (real terms) . . . 15
4.4 Breakdown of changes in unit ATM/CNS provision costs, 2019 – 2022 (real terms) . . . 16
4.5 Financial gate-to-gate cost-effectiveness, 2022 . . . 16
4.6 ATCO-hour productivity, 2022 . . . 17
4.7 Employment costs per ATCO-hour, 2022 . . . 17
4.8 Breakdown of support costs per composite flight-hour, 2022 . . . 18

5.1 Trends in ANSPs current ratio 2017 - 2022 . . . 19
5.2 2017 - 2022 trends in cash-on-hand days at Pan-European system level . . . 20

Welcome

This document provides a first insight on the level of 2022 cost-effectiveness performance both for the Pan-European system and for individual ANSPs before the official release of the next ACE benchmarking report.

This document is available for download as a PDF version.

IMPORTANT NOTICE

Data contained in this document are preliminary and subject to changes before the publication of the final ACE benchmarking report in May 2024.

1 Introduction

The ACE benchmarking work is commissioned by the Performance Review Commission (PRC) and carried out by the EUROCONTROL Performance Review Unit (PRU) using information provided by Air Navigation Services Providers (ANSPs) in compliance with Decision No. 88 of the Permanent Commission of EUROCONTROL on economic information disclosure[1].

The data processing, analysis and reporting are conducted with the assistance of the ACE Working Group, which comprises representatives from participating ANSPs, airspace users, regulatory authorities and the Performance Review Unit. This enables participants to share experiences and establish a common understanding of underlying assumptions and data limitations.

The objective of this document is to provide a first insight on the level of 2022 cost-effectiveness performance both for the Pan-European system and for individual ANSPs before the release of the final ACE benchmarking report, which is planned end of May 2024. Economic information disclosure by ANSPs takes time as it is depending on the publication of their audited financial statements, which can be a lengthy process. This document also presents specific financial indicators, extracted from the ANSPs Financial Indicators Dashboard, that can be used to monitor potential cash and liquidity issues experienced by ANSPs as a result of the COVID-19 pandemic.

The final ACE benchmarking report will provide more detailed information on observed changes for selected performance indicators both at pan-European system level and at ANSP level. This detailed analysis will particularly focus on ANSPs for which significant differences in costs are observed. The report will present the main drivers underlying these differences.

In addition, a new theme will be developed, examining the potential impact of different regulatory, institutional, and corporate governance setups on ANSPs economic performance. While acknowledging that there are many different factors influencing the conduct of organisations (see the ACE Handbook for a comprehensive overview of endogenous and exogenous factors affecting performance), the forthcoming ACE report will provide new analysis considering differences in the legal status, ownership, and decision-making arrangements among ANSPs.

Figure 1.1 illustrates the timeline to produce the next ACE benchmarking report.

Figure 1.1: Timeline to produce the next ACE benchmarking report

It is important that robust ACE benchmarking analysis is available in a timely manner since several stakeholders, most notably ANSPs' management, regulatory authorities (e.g. NSAs) and airspace users, have a keen interest in receiving the information in the ACE reports as early as possible.

Seventeen out of 38 ANSPs submitted their ACE 2022 data on time by the 1st of July 2023 and, all data submissions were received by the end of August 2023. Overall, this constitutes a major improvement

[1] Due to the on-going war in Ukraine, UkSATSE has been excluded from the ACE analysis.

compared to previous years. Clearly, the timescale to produce the ACE benchmarking report is inevitably delayed if data are not submitted on time.

It should be noted that the data presented in this document are still preliminary and not yet fully validated. Indeed, the data submission milestone is just the first step of a process which comprises a thorough verification and analysis of individual ANSP submissions. This validation exercise also includes a formal round of exchange between the PRU and each ANSP in order to ensure a common understanding of the data submitted by the ANSP.

The data used in this document reflects the information stored in the ACE database on the 5th December 2023. Figure 1.2 shows the status of the ACE data validation process for the data presented in this document.

Albcontrol (Albania)	DCAC Cyprus (Cyprus)	HASP ✔ (Greece)	M-NAV (North Macedonia)	ROMATSA (Romania)
ANS CR (Czech Republic)	DFS ✔ (Germany)	HungaroControl (Hungary)	MOLDATSA ✔ (Moldova)	Sakaeronavigatsia ✔ (Georgia)
ARMATS (Armenia)	DHMI ✔ (Türkiye)	IAA ✔ (Ireland)	MUAC (EUROCONTROL)	skeyes (Belgium)
Austro Control ✔ (Austria)	DSNA ✔ (France)	LFV (Sweden)	NATS (Continental) ✔ (United Kingdom)	Skyguide (Switzerland)
Avinor (Continental) (Norway)	EANS (Estonia)	LGS ✔ (Latvia)	NAV Portugal (Continental) (Portugal)	Slovenia Control ✔ (Slovenia)
BHANSA ✔ (Bosnia and Herzegovina)	ENAIRE ✔ (Spain)	LPS (Slovakia)	NAVIAIR (Denmark)	SMATSA (Serbia/Montenegro)
BULATSA (Bulgaria)	ENAV ✔ (Italy)	LVNL (Netherlands)	Oro Navigacija (Lithuania)	
Croatia Control (Croatia)	Fintraffic ANS (Finland)	MATS (Malta)	PANSA (Poland)	

✔ Data submission has been reviewed

Figure 1.2: Status of 2022 data validation process

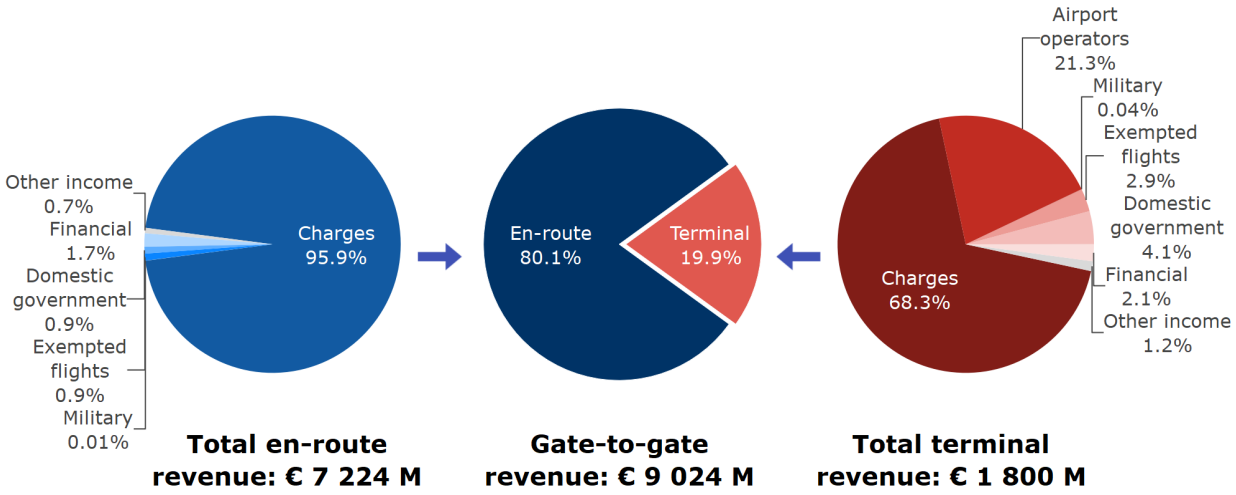
The data contained in this report is therefore subject to changes before the release of the final ACE 2022 benchmarking report in May 2024.

The remainder of this report is structured as follows:

- Chapter 2: provides a high-level presentation of 2022 revenues, costs and staff data.
- Chapter 3: presents a preliminary analysis of economic cost-effectiveness at Pan-European and ANSP level.
- Chapter 4: presents a preliminary analysis of financial cost-effectiveness at Pan-European and ANSP level, and underlying components.
- Chapter 5: presents a preliminary analysis of specific financial indicators at Pan-European and ANSP level.

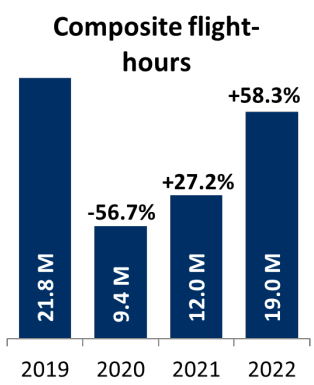
2 High-level revenues, costs and staff data

This chapter provides a preliminary overview of high-level revenues, costs and staff data provided in ANSPs ACE 2022 data submissions. Total ANS revenues in 2022 amounted to €9 024M. Most en-route revenues come from the collection of en-route charges (95.9%, see left pie chart). The proportion of terminal revenues from charges is lower (68.3%, see right pie chart), as additional income may directly come from airport operators (21.3%) through, for example, a contractual arrangement between the ANSP and the airport operator).

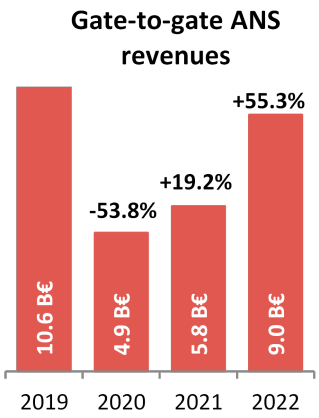


En-route	%	Gate-togate revenues (€ M)	%	Terminal
6 928	95.9%	Income from charges	68.3%	1 229
n.a.	n.a.	Income from airport operators	21.3%	383
1.0	0.01%	Income from the military	0.04%	0.7
63	0.9%	Income in respect of exempted flights	2.9%	51
62	0.9%	Income from domestic goverment	4.1%	75
122	1.7%	Financial income	2.1%	38
49	0.7%	Other income (incl. exceptional revenue item)	1.2%	22
7 224	100%		100%	1 800

Figure 2.1: Breakdown of gate-to-gate ANS revenues, 2022



Across the Pan-European system, traffic in 2022 (measured in composite flight-hours) was +58.3% higher than in 2021 but remained -13.3% lower than in 2019. In the meantime, total gate-to-gate revenues increased slightly less than traffic (+55.3%) and remained -14.9% lower than in 2019.



At ANSP level, a wide range of recovery rates is observed (from -51% to +14%, see Figure 2.2). The war in Ukraine also resulted in airspace closures and reciprocal sanctions on air carriers which impacted traffic flows in Europe. This inevitably impacts the levels and trends of ACE indicators for the ANSPs being most affected by the changes in traffic patterns.

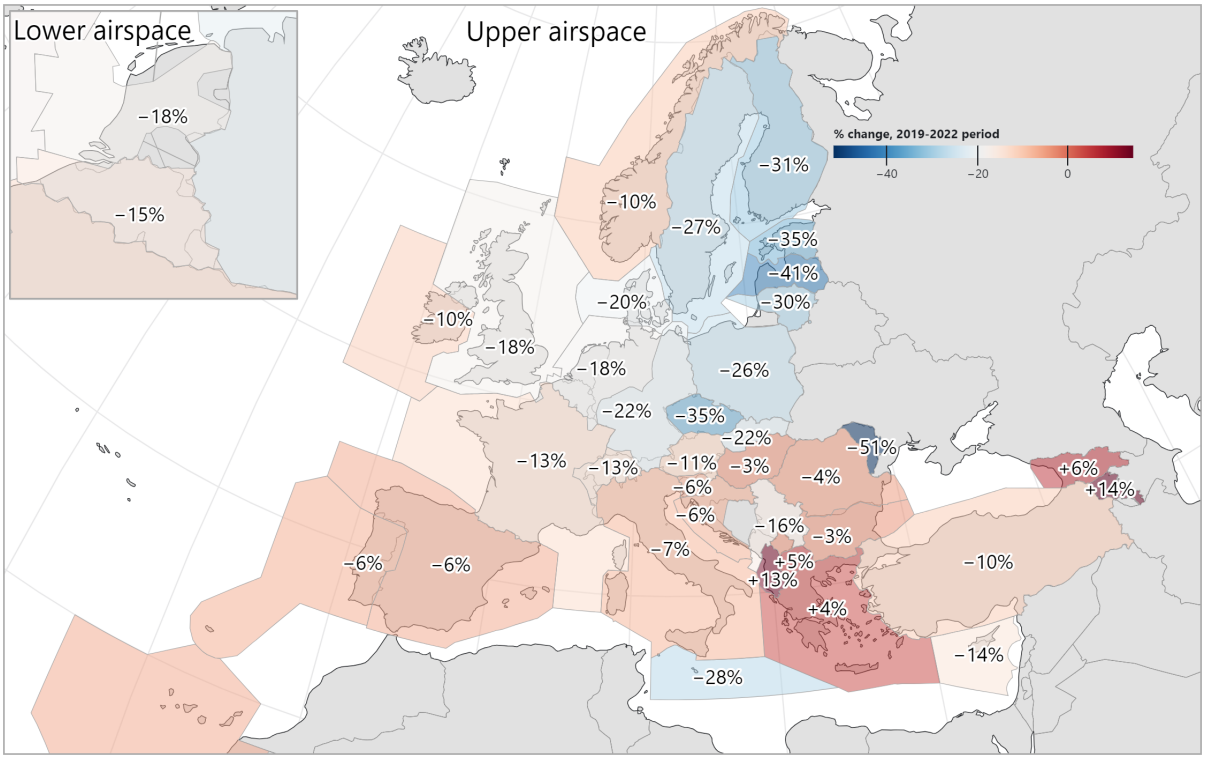
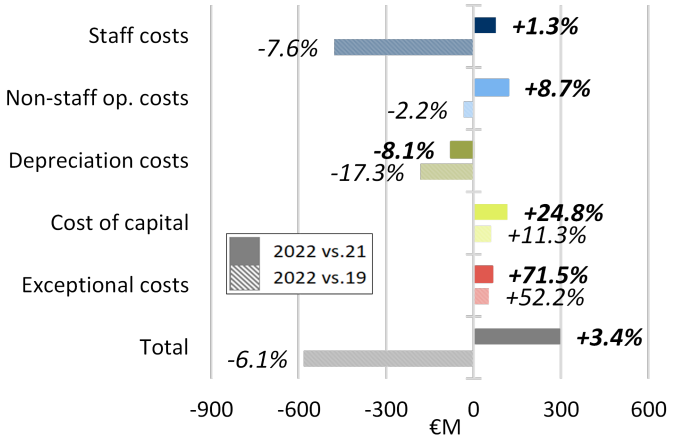
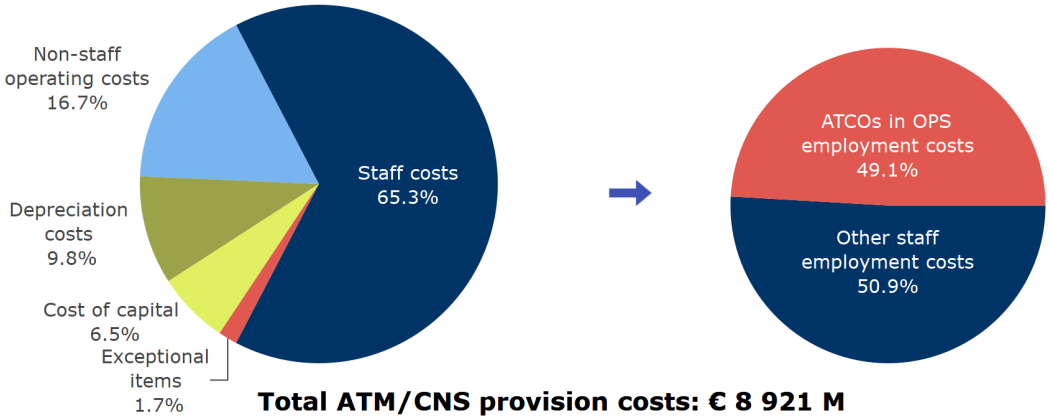


Figure 2.2: Changes in composite flight-hours between 2019 and 2022

The ACE benchmarking analysis focuses on the specific costs of providing gate-to-gate ATM/CNS services which amounted to €8 921M in 2022. Operating costs (including staff costs, non-staff operating costs and exceptional cost items) accounted for some 84% of total ATM/CNS provision costs, while depreciation costs and the cost of capital represented around 16%.

After two years of consecutive decreases, total ATM/CNS provision costs rose by +3.4% (+€296.8M) in 2022, reflecting cost increases for 26 out of 38 ANSPs. Non-staff operating costs (+€118.8M) and the cost of capital (+€115.7M) were the main sources of increase in 2022. The observed trend in the cost of capital is heavily affected by a very large increase for DHMI.

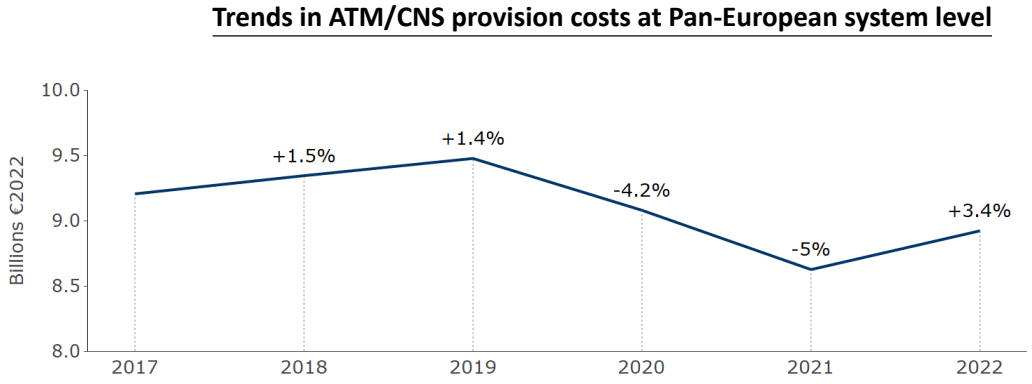




	En-route		Terminal		Gate-to-gate	
	€ M	%	€ M	%	€ M	%
Staff costs	4 550	65.2%	1 275	65.4%	5 825	65.3%
ATCOs in OPS employment costs	2 229	n.a.	631	n.a.	2 859	n.a.
Other staff employment costs	2 321	n.a.	644	n.a.	2 965	n.a.
Non-staff operating costs	1 155	16.6%	332	17.0%	1 487	16.7%
Depreciation costs	702	10.1%	172	8.9%	875	9.8%
Cost of capital	453	6.5%	129	6.6%	582	6.5%
Exceptional items	113	1.6%	40	2.0%	152	1.7%
Total ATM/CNS provision costs	6 973	100.0%	1 948	100.0%	8 921	100.0%

Figure 2.3: Gate-to-gate ATM/CNS provision costs at Pan-European system level, 2022

In 2022, the five largest ANSPs (DFS, DSNA, ENAIRE, ENAV and NATS) bore some 53% of the total Pan-European gate-to-gate ATM/CNS provision costs, while the five smallest ANSPs accounted for some 1% (see bottom left part of **?@fig-figure-2-5**).



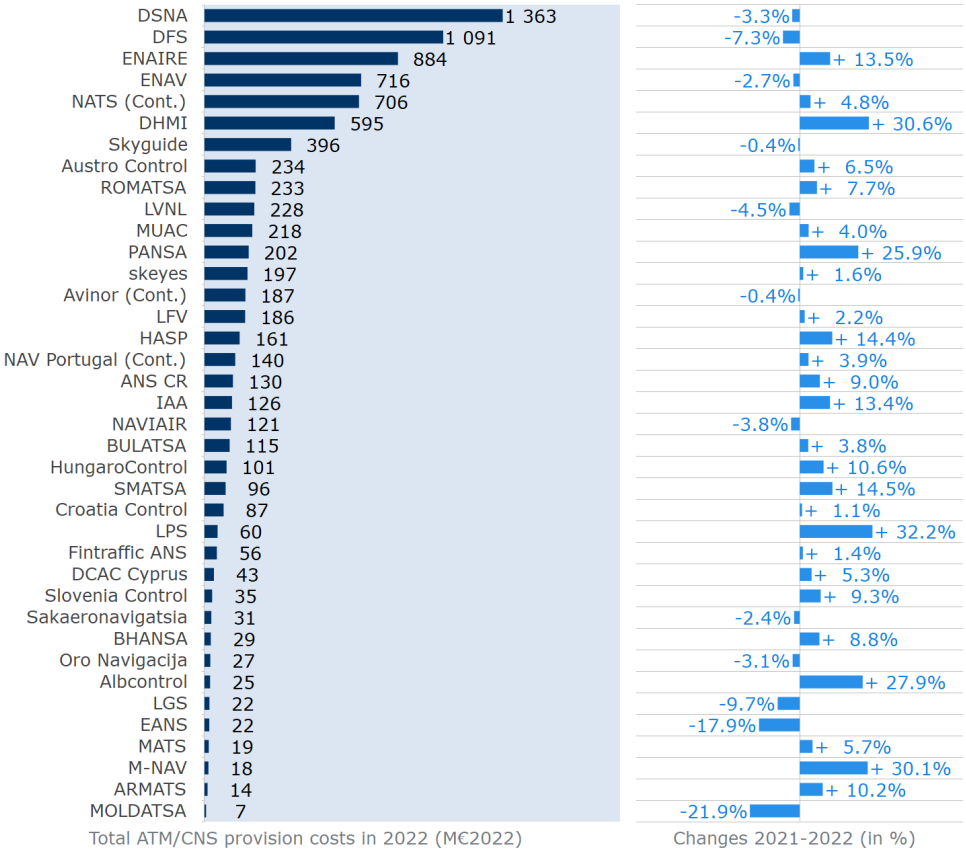


Figure 2.4: Changes in ATM/CNS provision costs (real terms)

The Pan-European ANSPs employed a total of 52 497 staff in 2022 (comprising 51 680 staff providing ATM/CNS services and 817 internal MET staff). Some 17 142 staff (33%) were ATCOs working on operational duties, split between ACCs (55%) and APP/TWR facilities (45%). On average, 2.0 additional staff are required for every ATCO in OPS in Europe.

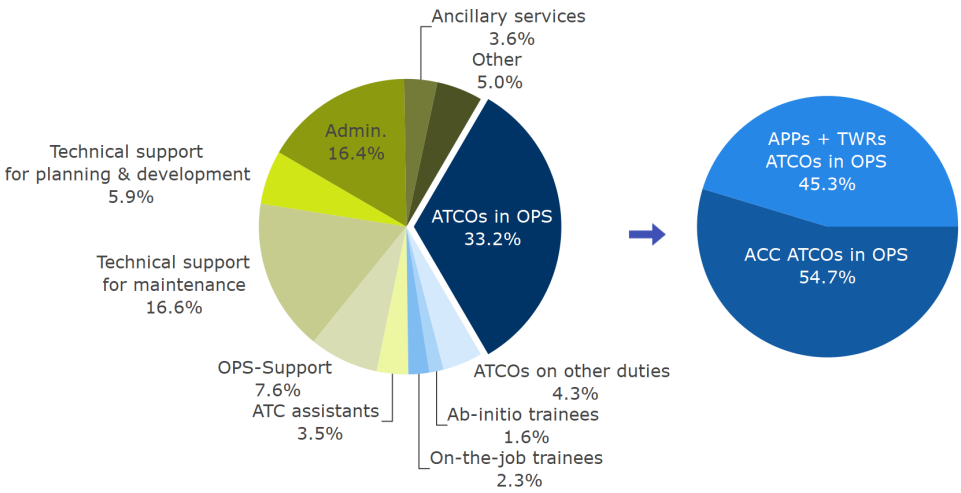


Figure 2.5: Breakdown of total gate-to-gate ATM/CNS staff at Pan-European system level, 2022

In 2022, the number of ATM/CNS staff was slightly lower than in 2021 (-0.9% or -473 FTEs).

Trends in gate-to-gate ATM/CNS staff at Pan-European system level

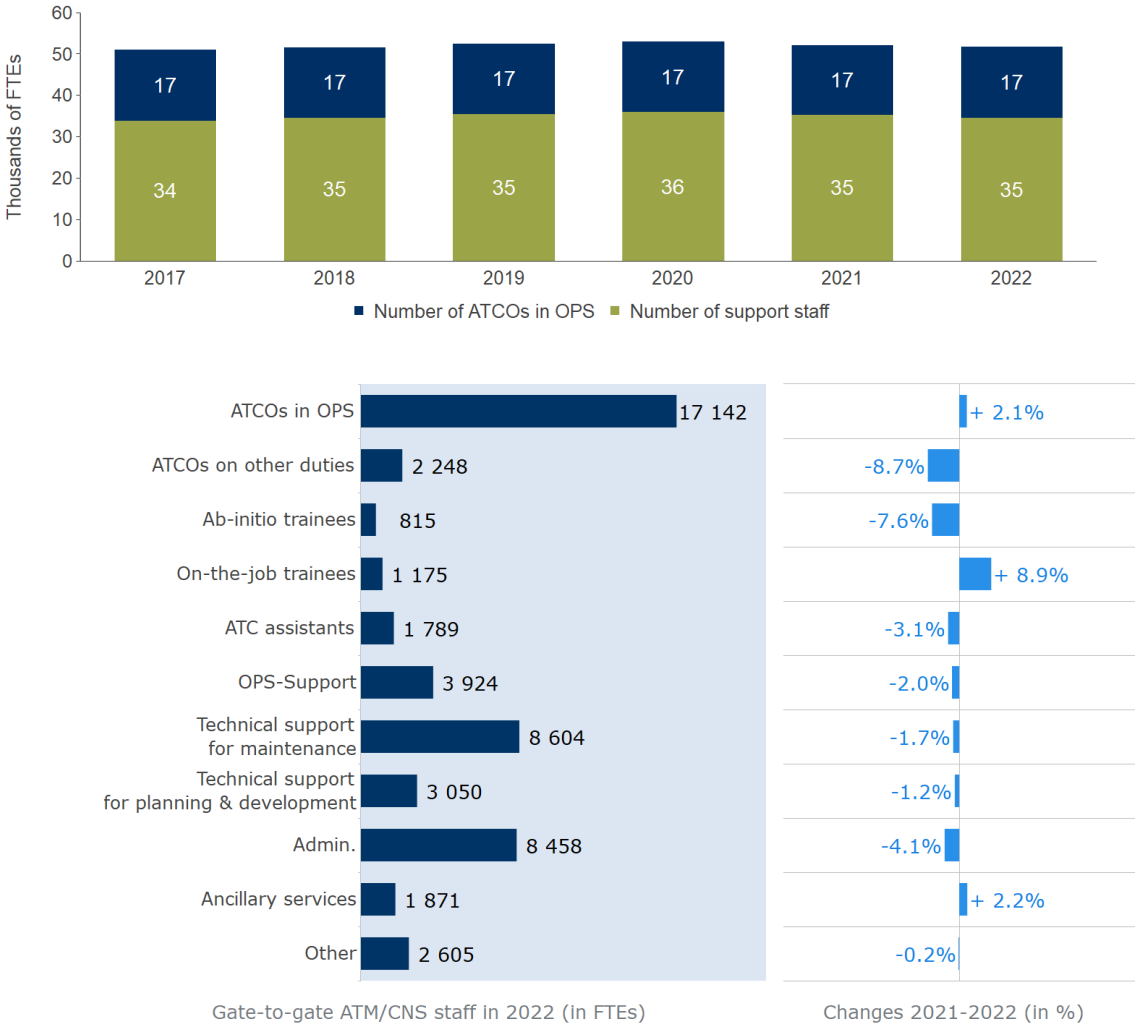


Figure 2.6: Total gate-to-gate ATM/CNS staff per staff category

The overall change in staff numbers observed for 2022 mainly reflects changes in the following staff categories:

- Administrative staff (-357 FTEs, or -4.1%);
- ATCOs in OPS (+356 FTEs, or +2.1%); and,
- ATCOs on other duties (-215 FTEs or -8.7%).

To some extent, the changes observed for the ATCOs categories may reflect the fact that some ATCOs previously reported as "on other duties" following the traffic decrease in 2020 and the COVID-19 pandemic, are now re-allocated to OPS duties.

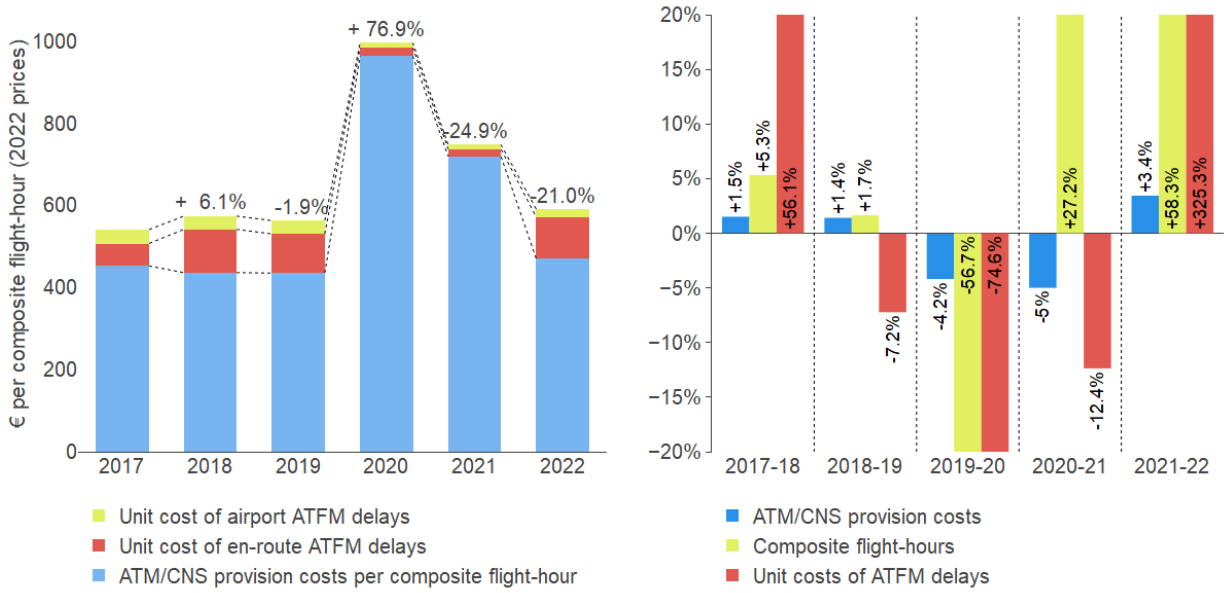
Decreases are also observed for technical support staff for operational maintenance (-1.7%), OPS support staff (-2.0%), ab-initio trainees (-7.6%), ATC assistants (-3.1%), technical support staff for planning and development (-1.2%) and other staff (-0.2%). Conversely, the number of on-the job trainees (+8.9%) and staff for ancillary services (+2.2%) rose in 2022.

3 Economic cost-effectiveness

The concept of economic cost-effectiveness, developed by the PRC, is defined as the sum of gate-to-gate ATM/CNS provision costs and the costs of ground ATFM delays for both en-route and airport, all expressed per composite flight-hour. This economic performance indicator is meant to capture trade-offs between quality of service provided and costs[1].

Figure 3.1 shows preliminary results on the changes in economic cost-effectiveness over 2017 - 2022 at Pan-European system level. Figure 3.1a shows the changes in unit economic costs, while Figure 3.1b provides complementary information on the year-on-year changes in ATM/CNS provision costs, composite flight-hours and unit costs of ATFM delays. Unit economic costs significantly reduced in 2022 (-21.0%). This reduction results from the combination of a decrease in ATM/CNS provision costs per composite flight-hour (-34.7%) and a large increase in the unit cost of ATFM delays (+325.3%). Despite this large increase, 2022 unit costs remain +5.0% higher than in 2019.

In 2022, ATFM delays increased almost six-fold to some 19.3M minutes. As a result, the share of ATFM delays in the 2022 unit economic costs amounts to 20%. This is close to the level reached in 2019, which was a year marked by significant capacity issues for several ANSPs.



(a) (b)

Figure 3.1: Trend of unit economic costs at Pan-European system level, 2017 (real terms)

Figure 3.2 shows preliminary results at ANSP level (dotted lines represent the 1st and 3rd quartiles, €411 and €635, respectively).

[1] See https://ansperformance.eu/economics/ace/ace-handbook/ for more information on the methodology used to compute composite flight-hours and economic costs.

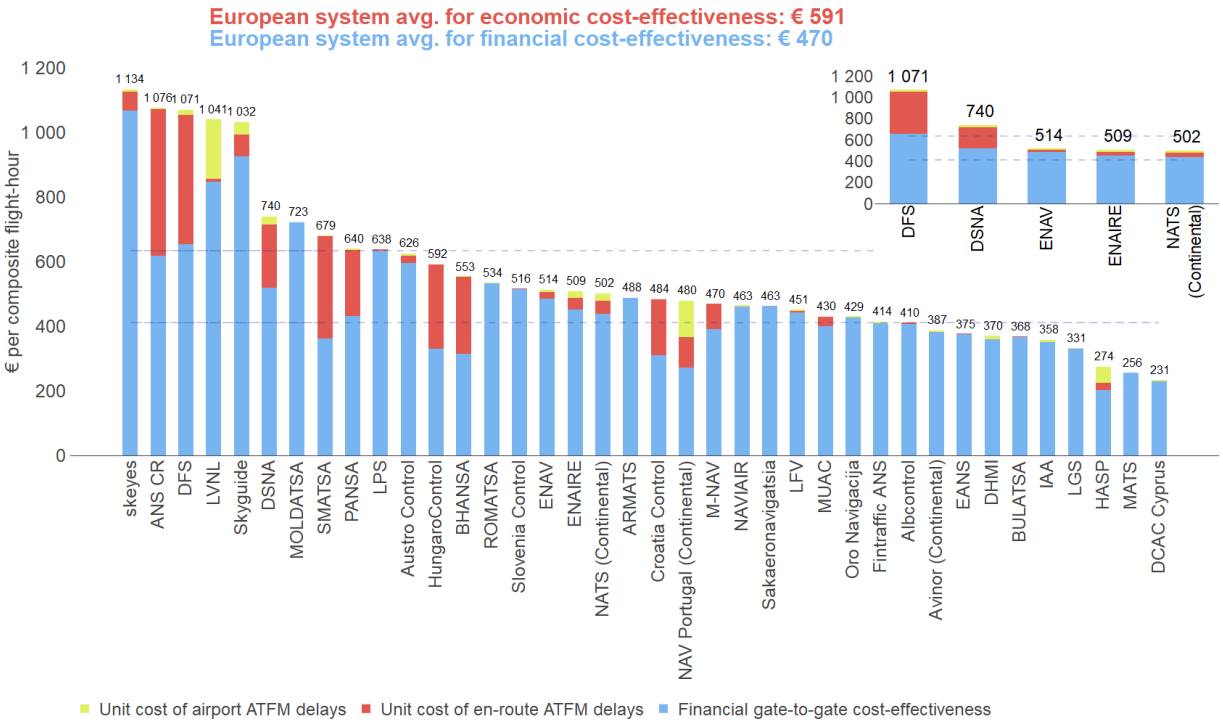


Figure 3.2: Economic gate-to-gate cost-effectiveness, 2022

For ten ANSPs ATFM delays represented more than 20% of their unit economic costs (see ANSPs with the largest red and lime portions, e.g. ANS CR, DFS, SMATSA, HungaroControl, etc.). In absolute terms (cumulative ATFM delays in minutes), DFS, DSNA, ENAIRE, NAV Portugal and NATS were the ANSPs generating the highest levels of ATFM delays in 2022 (70% of the pan-European system total ATFM delays). For some of these ANSPs, work associated with the implementation of new ATM systems caused a temporary reduction of the available capacity and as a consequence contributed to increase ATFM delays (this was for example the case for DSNA and NAV Portugal). Other ANSPs, for example PANSA, were affected by airspace closure due to extended monitoring activities performed by the military at the border with Ukraine, due to the ongoing war therein.

Further analysis of the relationship between changes in ANSPs costs, traffic and unit costs will be analysed in detail in the forthcoming ACE report.

4 Financial cost-effectiveness

This chapter provides a preliminary analysis of financial cost-effectiveness.

4.1 Pan-European system level

Figure 4.1 shows that in 2022 the unit ATM/CNS provision costs fell by -34.7% compared to 2021, reaching an amount of €470. This is the result of traffic increase (+58.3%) coupled with the growth of ATM/CNS provision costs (+3.4%).

However, Comparing with pre-pandemic levels, in 2022 unit ATM/CNS provision costs still remain +8.2% higher than in 2019. This mainly reflects the fact that, despite a lower cost-base (-6.1% compared to 2019) traffic volumes in 2022 still did not reach the 2019 level (-13.3%).

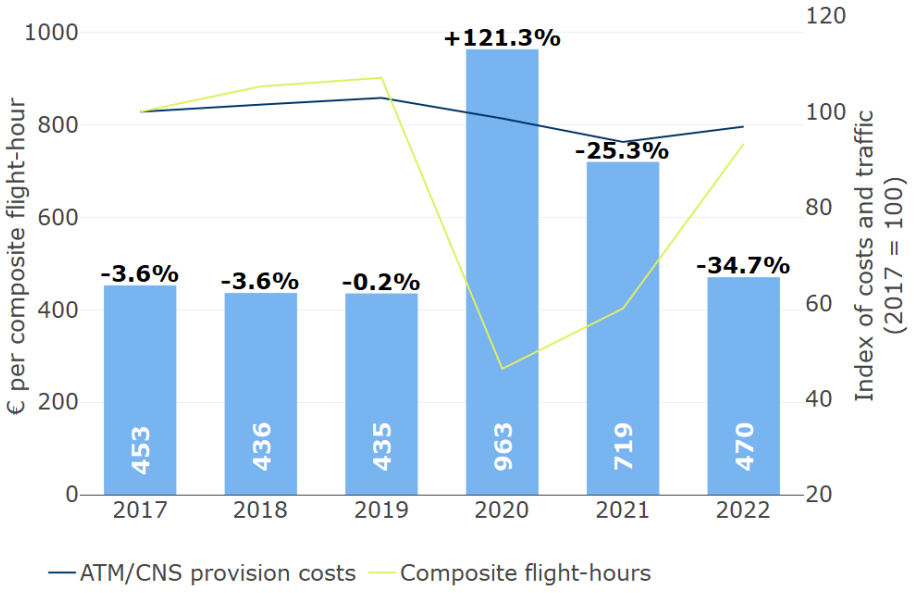


Figure 4.1: Changes in unit ATM/CNS provision costs, 2017 – 2022 (real terms)

The analytical framework used in the ACE analysis to break down the financial cost-effectiveness indicator into relevant economic drivers is presented in Figure 4.2. These key drivers include:

a) ATCO-hour productivity (0.88 composite flight-hours per ATCO-hour);

b) ATCO employment costs per ATCO-hour (€133); and,

c) support costs per unit output (€319).

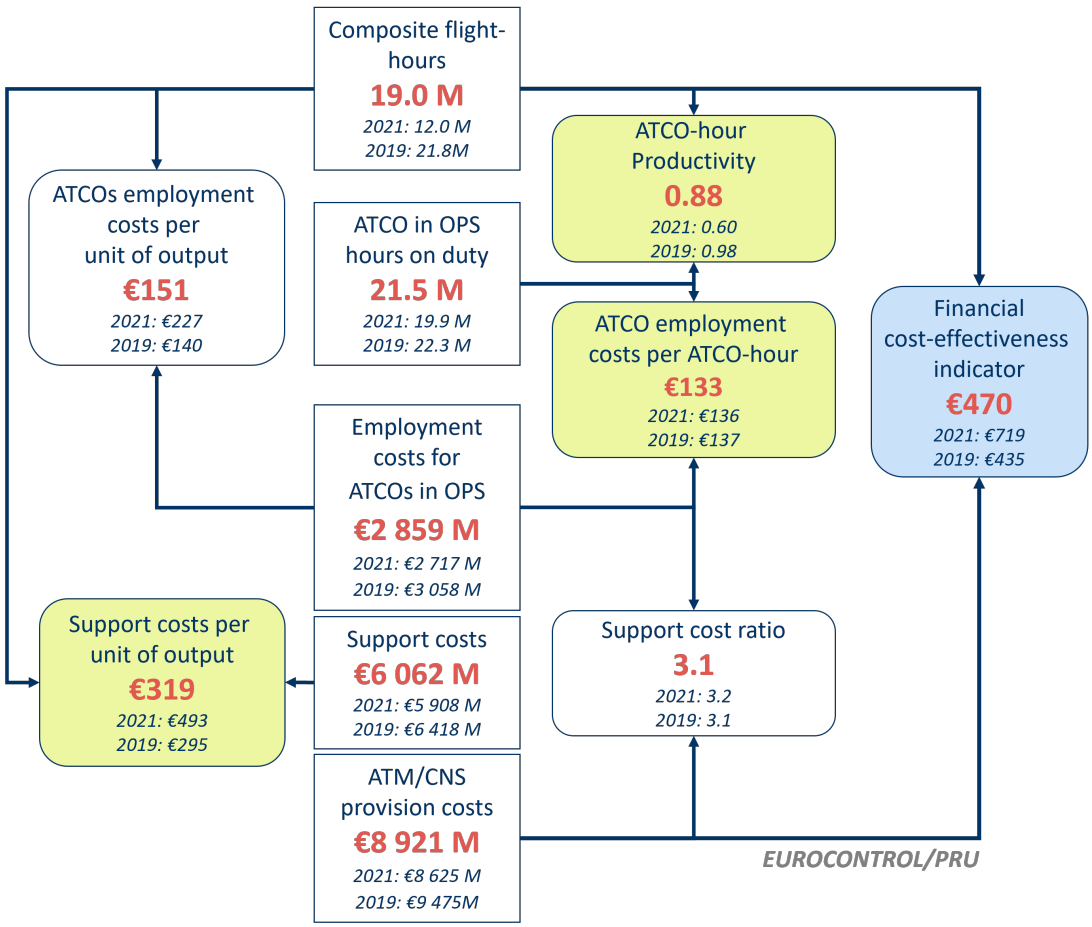


Figure 4.2: ACE performance framework, 2022 (real terms)

Figure 4.3 shows that in 2022, ATCO employment costs per ATCO-hour fell by -2.3% while ATCO-hour productivity rose by +46.9%. As a result, ATCO employment costs per composite flight-hour decreased (-33.5%). In the meantime, unit support costs fell by -35.2% due to the combination of an increase in composite flight-hours (+58.3%) and an increase in support costs (+2.6%). As a result, in 2022, unit ATM/CNS provision costs fell by -34.7% at Pan-European system level.

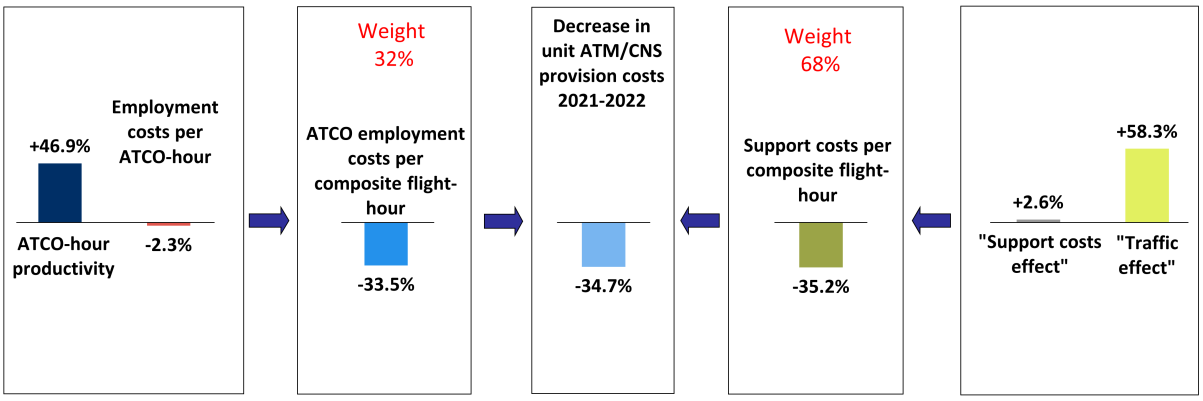


Figure 4.3: Breakdown of changes in unit ATM/CNS provision costs, 2021 – 2022 (real terms)

As the values of the 2021 indicators were significantly affected by the consequences of the COVID-19 crisis, Figure 4.4 below provides an additional analysis using 2019 as a reference year. It shows that in 2022 the traffic was still well below its 2019 level and, despite a reduction in total support costs, the unit support costs were higher than in 2019. A similar situation is observed on the ATCO employment costs side where the reduction in employment costs per ATCO-hour was not sufficient to compensate for the decrease in ATCO-hour productivity. Overall, the unit cost in 2022 was then +8.2% higher than in 2019.

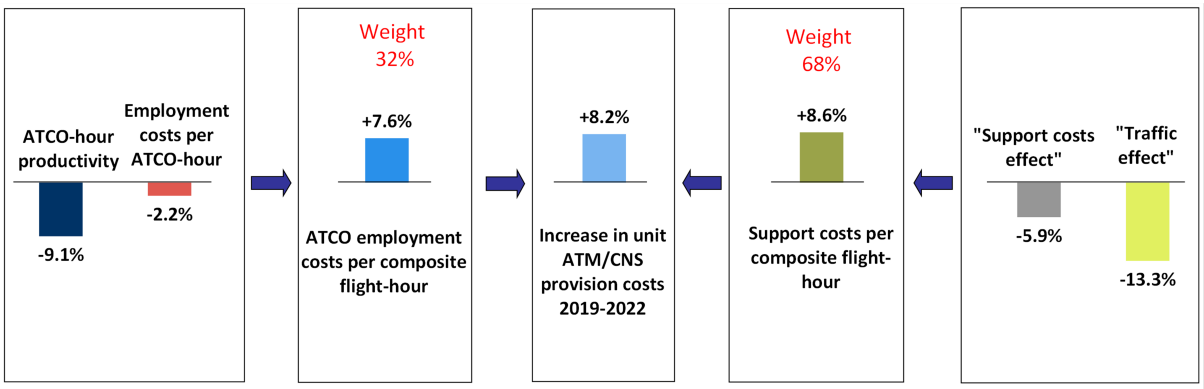


Figure 4.4: Breakdown of changes in unit ATM/CNS provision costs, 2019 – 2022 (real terms)

4.2 ANSP level

All figures presented in this section present the preliminary benchmarking results for the 38 ANSPs. Because of their weight in the Pan-European system and their relatively similar operational and economic characteristics, the five largest ANSPs (DFS, DSNA, ENAIRE, ENAV and NATS) are also shown in a miniature replica of the chart (top right corner of the figures). The 1st and 3rd quartiles for each indicator are also shown in all figures. The gap between these two quartiles provides additional insight on the dispersion of the values.

Figure 4.5 presents the financial gate-to-gate cost-effectiveness indicator at ANSP level for the year 2022. The dotted lines represent the 1st and 3rd quartiles (€360 and €518, respectively).

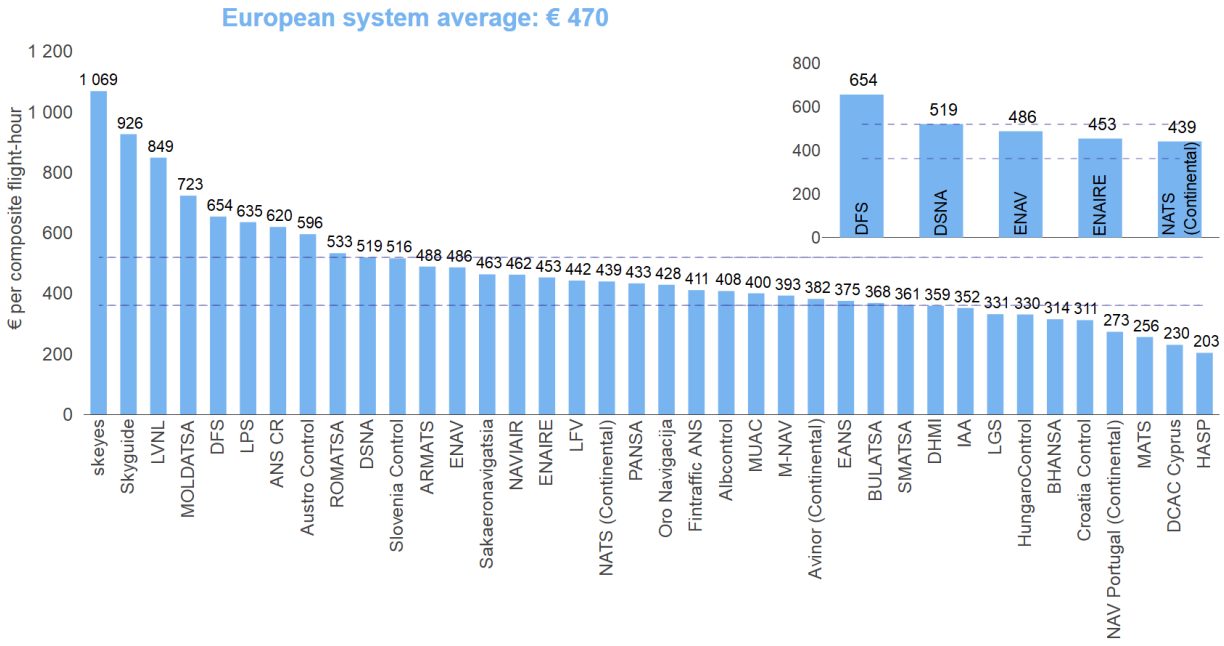


Figure 4.5: Financial gate-to-gate cost-effectiveness, 2022

Figure 4.6 presents the ATCO-hour productivity indicator at ANSP level for the year 2022. The dotted lines represent the 1st and 3rd quartiles (0.61 and 0.93, respectively).

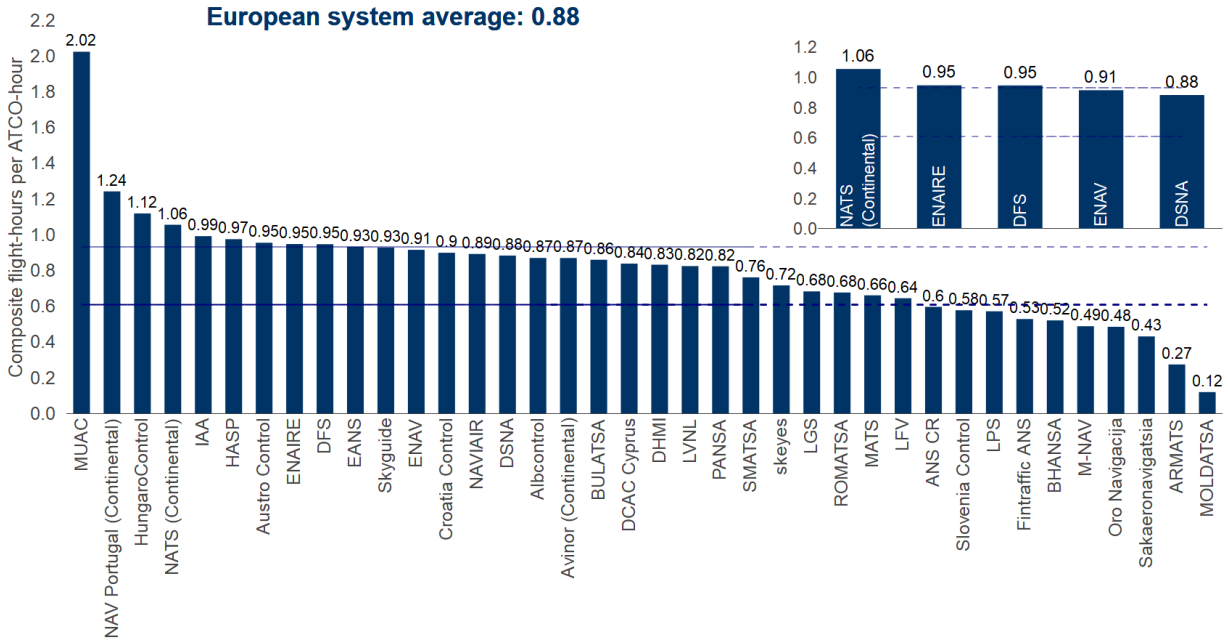


Figure 4.6: ATCO-hour productivity, 2022

Figure 4.7 presents the employment costs per ATCO in OPS indicator at ANSP level for the year 2022. The dotted lines represent the 1st and 3rd quartiles (€58 and €141, respectively).

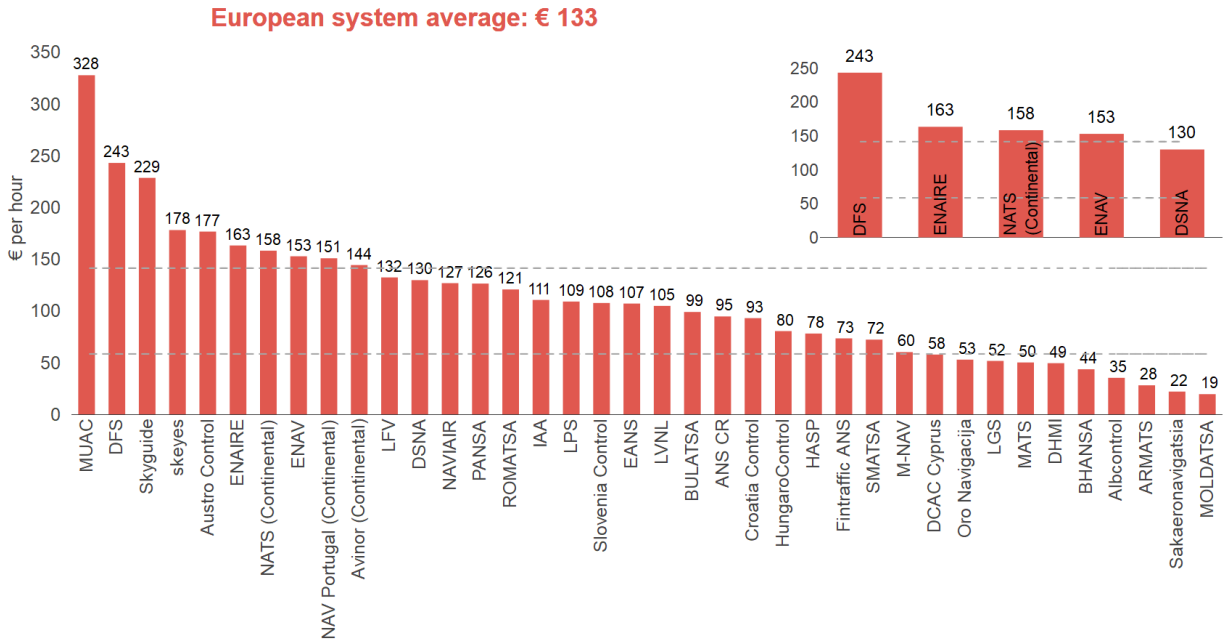


Figure 4.7: Employment costs per ATCO-hour, 2022

Figure 4.8 presents the support costs per composite flight-hour indicator at ANSP level for the year 2022. The dotted lines represent the 1st and 3rd quartiles (€243 and €382, respectively).

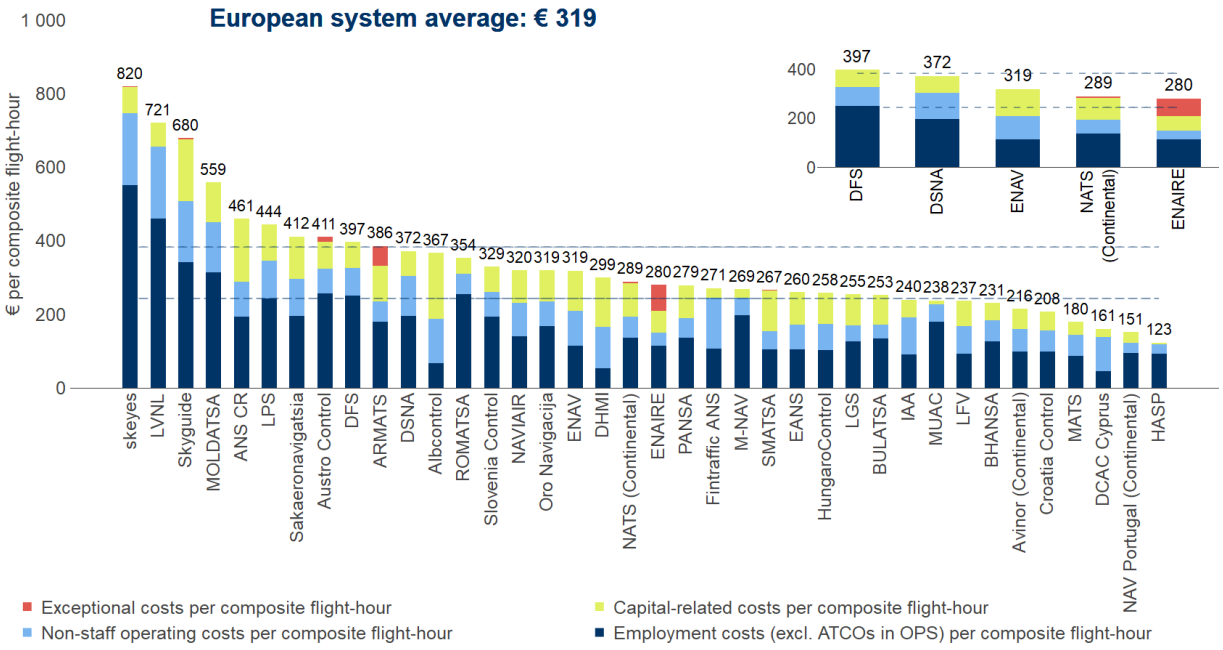


Figure 4.8: Breakdown of support costs per composite flight-hour, 2022

A more detailed analysis of the changes in cost-effectiveness, ATCO-hour productivity, ATCO employment costs per ATCO-hour and unit support costs will be available in the final ACE benchmarking report.

5 Monitoring of ANSPs cash and liquidity situation

This chapter provides an overview of ANSPs' financial situation over the 2017 - 2022 period, using two indicators: the current ratio and the cash-on-hand days. These indicators have been calculated at pan-European system level using the information provided in the ANSPs' Financial Statements which were available at the time of publishing this report (34 for the 2017-2021 period and 23 in 2022). The indicators are therefore consistent with those published at individual ANSP level in the EUROCONTROL Aviation Intelligence Unit ANSPs Financial Dashboard.

Depending on the organisational set up of different ANSPs, the information reported in their financial statements covers a different scope of activities (e.g. it may include airport management operations, commercial activities, etc.) which does not always correspond with the ACE gate-to-gate scope. Additionally, due to specific organisational and financial set up, DCAC Cyprus, HASP, LVNL and MUAC, are excluded from the analysis presented in this chapter.

Figure 5.1 presents the changes in the average current ratio between 2017 and 2022 as well as the 1st and 3rd quartiles. The current ratio (current assets divided by current liabilities) measures the ability of a company to pay its short-term debt obligations with its current assets. On average, the situation slightly improved in 2022 following four years of continuous deterioration. However, for 25% of the sample, the current ratio has shown only small improvement since reaching its lowest level in 2020.

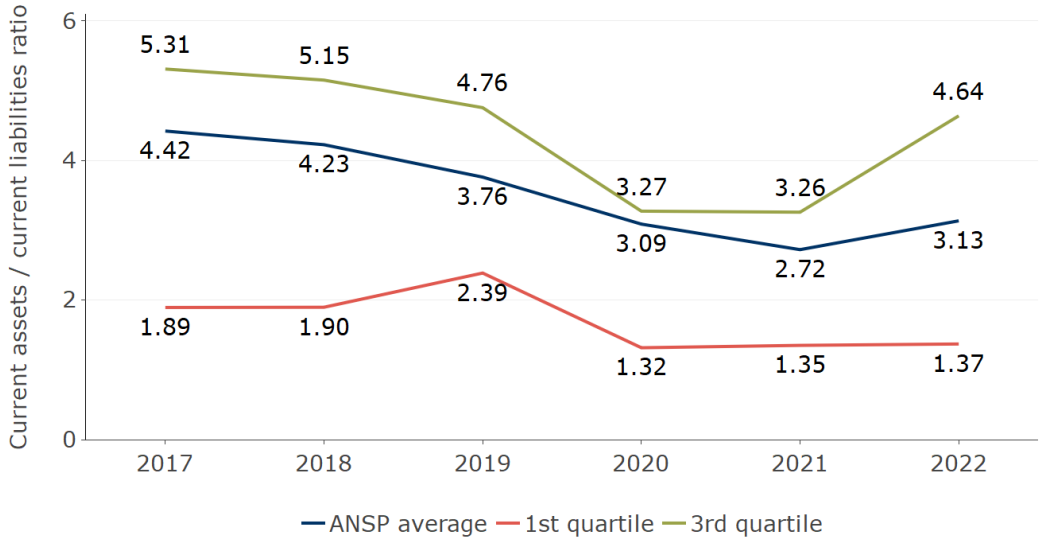


Figure 5.1: Trends in ANSPs current ratio 2017 - 2022

Figure 5.2 shows the changes in cash-on-hand days at Pan-European system level over the 2017 - 2022 period as well as the 1st quartile and the 3rd quartile of these indicators. The cash-on-hand days indicator (cash & cash equivalents divided by operating costs x 365) measures the length of time a company can pay its operating costs from its cash reserves.

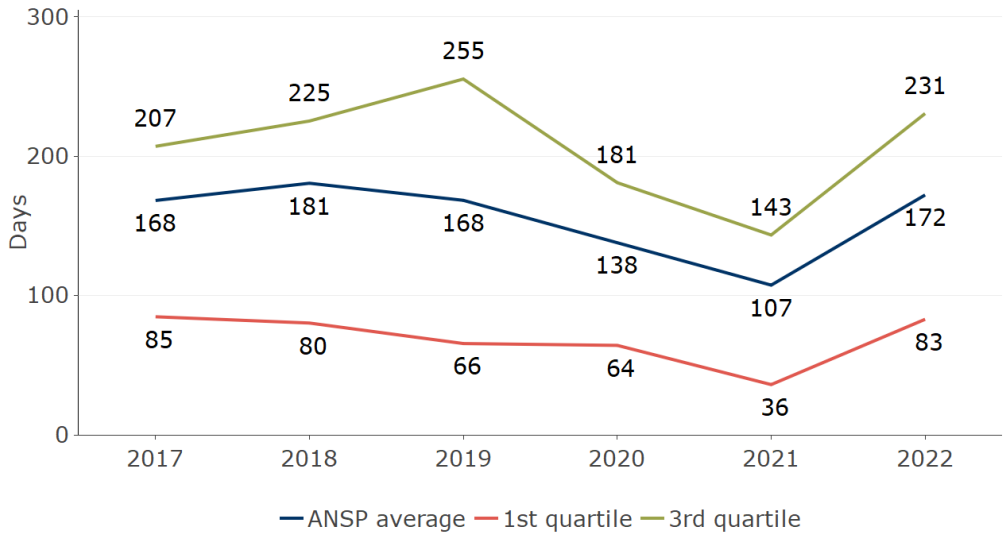


Figure 5.2: 2017 - 2022 trends in cash-on-hand days at Pan-European system level

In 2022, the average cash-on-hand days amounted to 172 days, which is +65 days higher than in 2021 and +34 days higher than in 2020. The 2022 figure reached the pre-pandemic levels. More detailed analysis on these financial indicators will be available in the forthcoming ACE report.

Disclaimer

The Performance Review Unit (PRU) has made every effort to ensure that the information and analysis contained in this document are as accurate and complete as possible. Should you find any errors or inconsistencies we would be grateful if you could please bring them to the PRU's attention. The PRU's e-mail address is pru-support@eurocontrol.int