EUROCONTROL

High-level Summary Report on Preliminary ACE Data

December 2022 edition

Important note
Data contained in this document are preliminary and subject to changes before the publication of the final ACE 2021 benchmarking report in May 2023.

Prepared by the EUROCONTROL Performance Review Unit

EUROCONTROL

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TABLE OF CONTENTS

TABLE OF FIGURES

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 limitations of the data.

The objective of this document is to provide a first insight on the level of 2021 cost-effectiveness performance both for the Pan-European system and for individual ANSPs before the release of the ACE 2021 benchmarking report, which is planned end of May 2023. It also presents specific financial indicators that can be used to monitor potential cash and liquidity issues experienced by ANSPs as a result of the COVID-19 pandemic. An initial examination of ANSPs capital expenditures in 2020 and 2021 is also provided.

Figure 1.1 below illustrates the timeline for the production of the ACE 2021 benchmarking report.

Figure 1.1: Timeline for the production of the ACE 2021 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.

Eighteen ANSPs provided their ACE 2021 data submission on time by the 1st July 2022 and, in total, 23 data submissions were received by the 15th July 2022. For 10 ANSPs (Avinor, BULATSA, DCAC Cyprus, Fintraffic ANS, HASP, LVNL, MATS, Oro Navigacija, ROMATSA and Sakaeronavigatsia) the ACE data submissions were received more than one month after the deadline. Clearly, the timescale for the production of the ACE benchmarking report is inevitably delayed if data are not submitted on time.

[1] Due to the war in Ukraine, UkSATSE was not able to provide ACE 2021 data. UkSATSE is therefore excluded from the ACE 2021 analysis. On the other hand, BHANSA, the ANSP operating in Bosnia and Herzegovina, joined in ACE project in 2021. BHANSA data for the years 2020 and 2021 are therefore included in the ACE 2021 analysis.

It should be noted that the data presented in this document are still preliminary and not yet fully validated. These data reflect the information stored in the ACE database on the 17th November 2022. Figure 1.2 shows the status of the ACE data validation process for the data presented in this document.

Albcontrol	DCAC Cyprus ✓	HASP ✓	M-NAV	ROMATSA
ANS CR	DFS ✓	HungaroControl	MOLDATSA ✓	Sakaeronavigatsia
ARMATS ✓	DHMI ✓	IAA ✓	MUAC	skeyes
Austro Control	DSNA ✓	LFV	NATS ✓	Skyguide
Avinor	EANS ✓	LGS	NAV Portugal	Slovenia Control
BHANSA ✓	ENAIRE ✓	LPS	NAVIAIR ✓	SMATSA
BULATSA	ENAV ✓	LVNL	Oro Navigacija	
Croatia Control	Fintraffic ANS	MATS	PANSA	

Figure 1.2: Status of 2021 data validation process

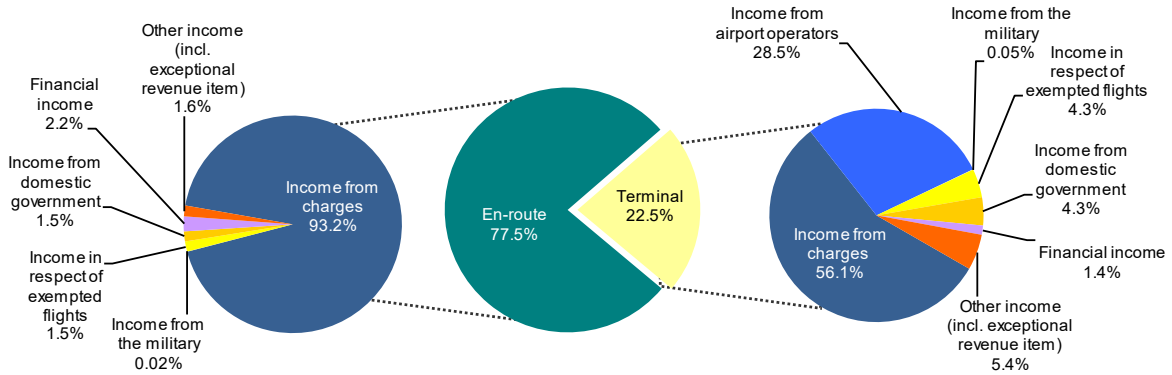
The data contained in this report is therefore subject to changes before the release of the final ACE 2021 benchmarking report in May 2023.

The remainder of this report is organised as follows:

- **Chapter 2:** provides a high-level presentation of 2021 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 trends at Pan-European and ANSP level.
- **Chapter 6:** presents a preliminary analysis of capital expenditure trends at Pan-European level.

2 High-level revenues, costs and staff data

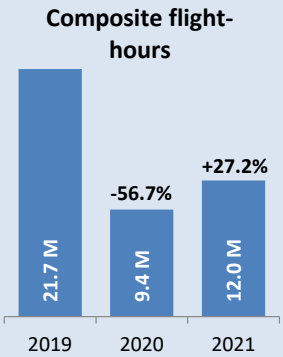
This section provides a preliminary presentation of high-level revenues, costs and staff data provided in ANSPs ACE 2021 data submissions. Total ANS revenues in 2021 amounted to €5 410M. Most en-route revenues come from the collection of en-route charges (93.2%, see left pie chart). The proportion of terminal revenues from charges is lower (56.1%, see right pie chart), as additional income may directly come from airport operators (28.5% e.g. through a contractual arrangement between the ANSP and the airport operator).



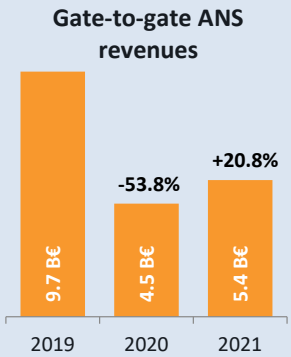
Total en-route revenue: € 4 193 M | **Gate-to-gate ANS revenue: € 5 410 M** | **Total terminal revenue: € 1 216 M**

En-route	%	Gate-to-gate revenues (€ M)	Terminal	%
3 907	93.2%	Income from charges	682	56.1%
n.a.	n.a.	Income from airport operators	346	28.5%
1.0	0.02%	Income from the military	0.6	0.05%
63	1.5%	Income in respect of exempted flights	53	4.3%
62	1.5%	Income from domestic government	52	4.3%
93	2.2%	Financial income	17	1.4%
67	1.6%	Other income (incl. exceptional revenue item)	66	5.4%
4 193	100.0%		1 216	100.0%

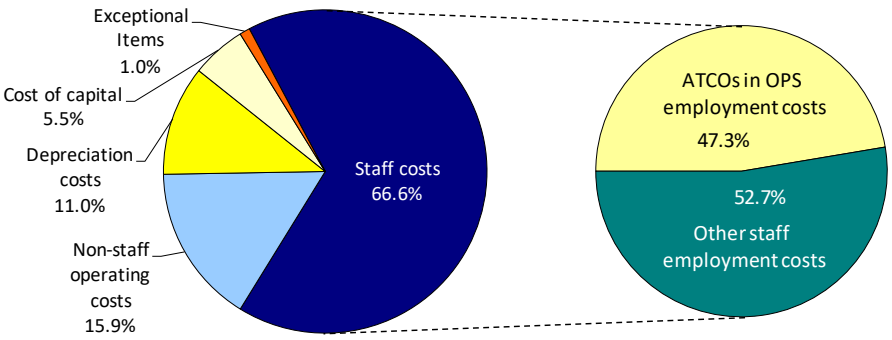
Figure 2.1: Breakdown of gate-to-gate ANS revenues, 2021



Across the Pan-European system, traffic in 2021 (measured in composite flight-hours) was + 27.2% higher than in 2020 but remained - 44.9% lower than in 2019. In the meantime, total gate-to-gate revenues increased less than traffic (+ 20.8%) and remained - 44.3% lower than in 2019.



The ACE benchmarking analysis focuses on the specific costs of providing gate-to-gate ATM/CNS services which amounted to €7 937M in 2021. 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 some 16%.



Total ATM/CNS provision costs: € 7 937 M

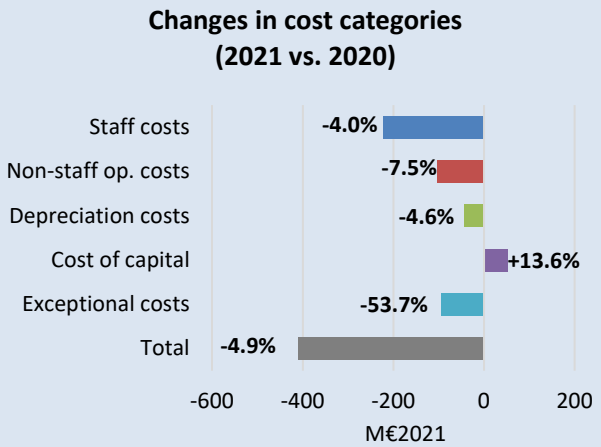
	En-route		Terminal		Gate-to-gate	
	€ M	%	€ M	%	€ M	%
Staff costs	4 102	66.2%	1 183	68.0%	5 285	66.6%
ATCOs in OPS employment costs	1 921	n/appl	581	n/appl	2 502	n/appl
Other staff employment costs	2 180	n/appl	602	n/appl	2 782	n/appl
Non-staff operating costs	972	15.7%	292	16.8%	1 264	15.9%
Depreciation costs	707	11.4%	166	9.6%	873	11.0%
Cost of capital	355	5.7%	80	4.6%	434	5.5%
Exceptional Items	63	1.0%	18	1.1%	81	1.0%
Total ATM/CNS provision costs	6 198	100.0%	1 739	100.0%	7 937	100.0%

Figure 2.2: Gate-to-gate ATM/CNS provision costs at Pan-European system level, 2021

In 2021, the five largest ANSPs (ENAIRE, ENAV, DFS, DSNA and NATS) bore some 56% of total Pan-European gate-to-gate ATM/CNS provision costs, while the five smallest ANSPs accounted for some 1% (see bottom left part of Figure 2.3 below).

Between 2020 and 2021, total ATM/CNS provision costs fell by -4.9% (-€408.9M), reflecting cost reductions from 27 out of 38 ANSPs. When considering the savings already achieved in 2020, the cumulative decrease since 2019 is -8.8% (-€765M).

Staff costs were by far the main source of savings in 2021 (-€221.7M). This reflects both the effect of temporary measures implemented in 2020 and 2021 (e.g. short time work, furlough schemes, reduced remuneration…) but also the effect of redundancy plans.



A majority of ANSPs also maintained lower level of non-staff operating costs or reduced it further in 2021 leading to a decrease of -€102.5M. Similarly, the cancellation or deferral of non-essential investments resulted in further reduction in depreciation costs (-€42.4M). Exceptional costs decreased by -€94.4M in 2021 mainly reflecting the fact that this cost item was particularly high in 2020 due to the reporting of redundancy costs.

The only cost item increasing in 2021 was the cost of capital (+€52.2M), mainly due to large increases for DHMI and NATS, reflecting increases in their asset base and weighted average cost of capital.

Trends in ATM/CNS provision costs at Pan-European system

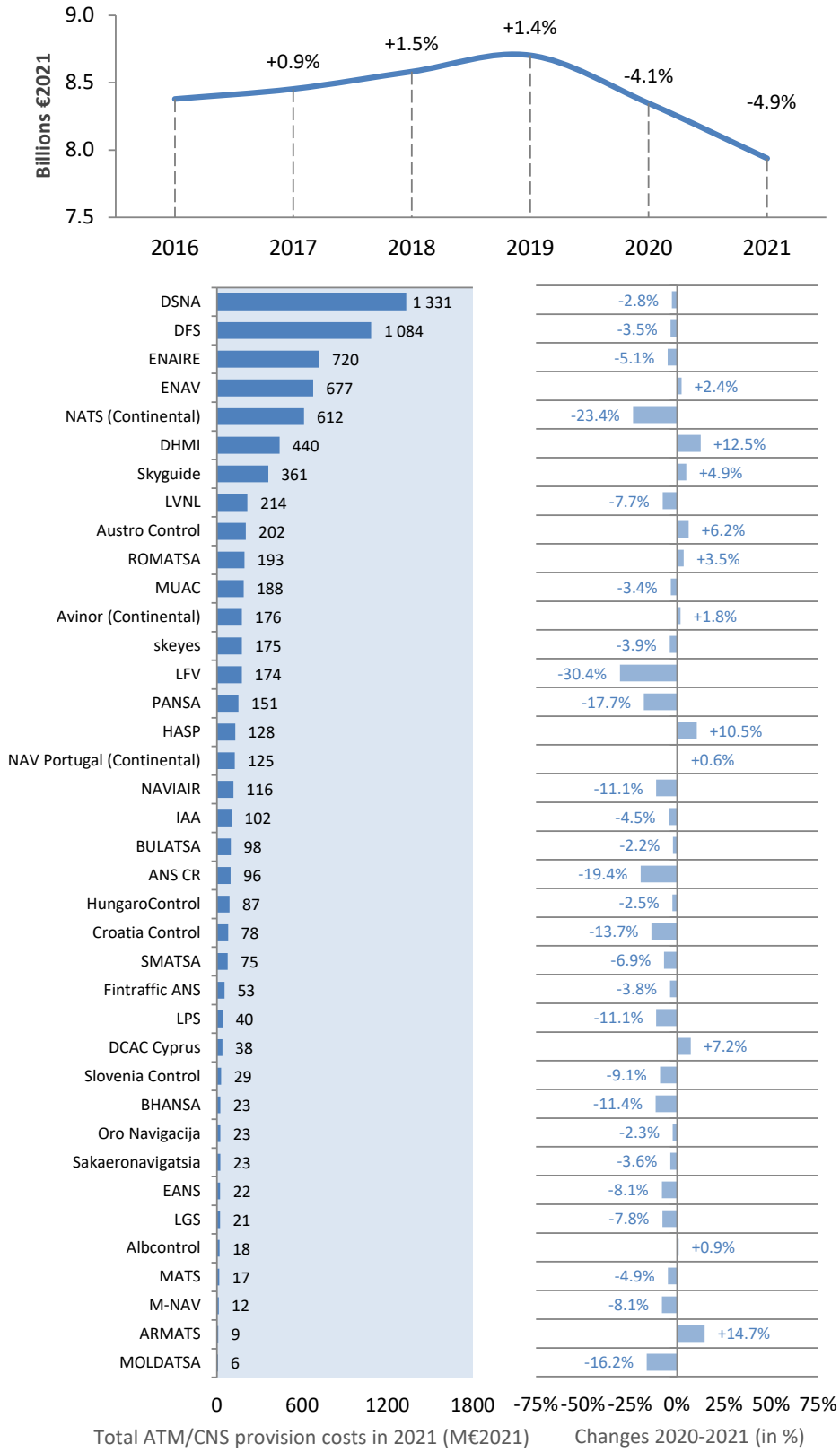


Figure 2.3: Changes in ATM/CNS provision costs (real terms)

The Pan-European ANSPs employed a total of 53 014 staff in 2021 (comprising 52 164 staff providing ATM/CNS services and 850 internal MET staff). Some 16 781 staff (32%) were ATCOs working on operational duty, split between ACCs (55%) and APP/TWR facilities (45%). On average, 2.1 additional staff are required for every ATCO in OPS in Europe.

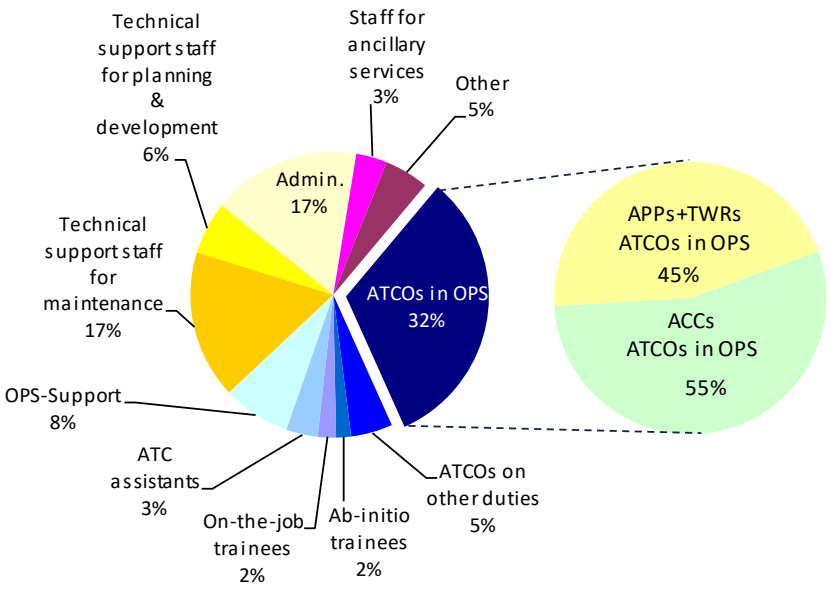


Figure 2.4: Breakdown of total gate-to-gate ATM/CNS staff at Pan-European system level, 2021

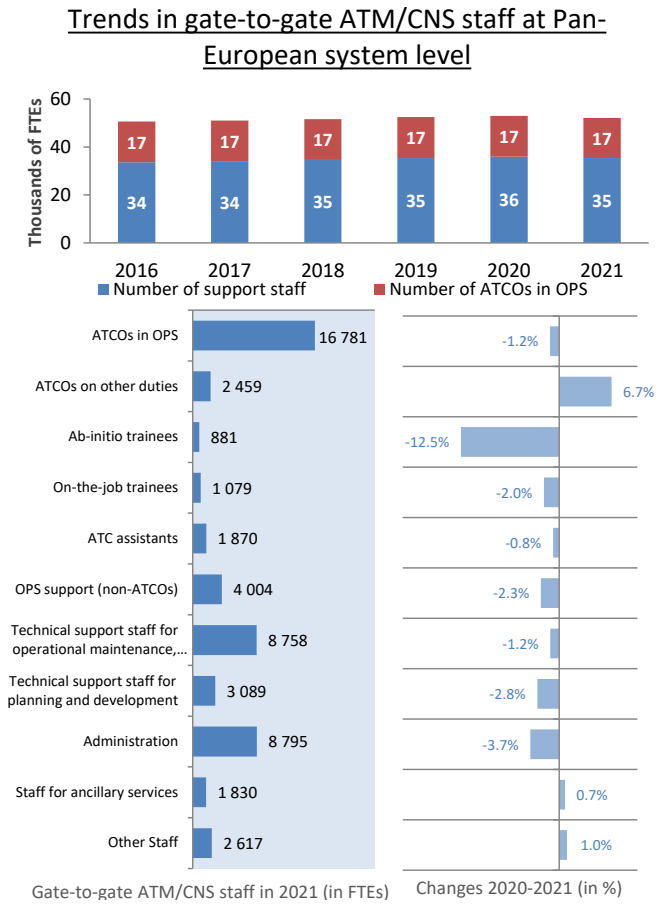


Figure 2.5: Total gate-to-gate ATM/CNS staff per staff category

In 2021, the number of ATM/CNS staff fell by -1.5% (-796 FTEs) compared to 2020.

The lower staff number observed for 2021 mainly reflects decreases in the following staff categories:

- Administrative staff (-338 FTEs, or -3.7%);
- ATCOs in OPS (-201 FTEs, or -1.2%);
- Ab-initio trainees (-126 FTEs, or -12.5%); and
- Technical support staff for operational maintenance, monitoring and control (-102 FTEs, or -1.2%).

On the other hand, increase is observed for ATCOs on other duties (+154 FTEs) reflecting a reallocation of some ATCOs from operational to non-operational duties due to the relatively low traffic levels in 2021 compared to pre-crisis. Minor increases are also observed for staff for ancillary services (+14 FTEs) and other staff (+25 FTEs).

In addition to the measures on staff costs already mentioned above (redundancies, short-time work / furlough schemes), it is important to note that during the lockdown periods, some ANSPs staff had to consume accumulated holidays not used in previous years and/or made use of pre-retirement schemes.

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 ATC capacity and costs [2].

Figure 3.1 shows preliminary results on the changes in economic cost-effectiveness over 2016-2021 at Pan-European system level. The left-hand side shows the changes in unit economic costs, while the right-hand side 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 2021 (-24.8%) but their level remains substantially higher than before the COVID-19 pandemic.

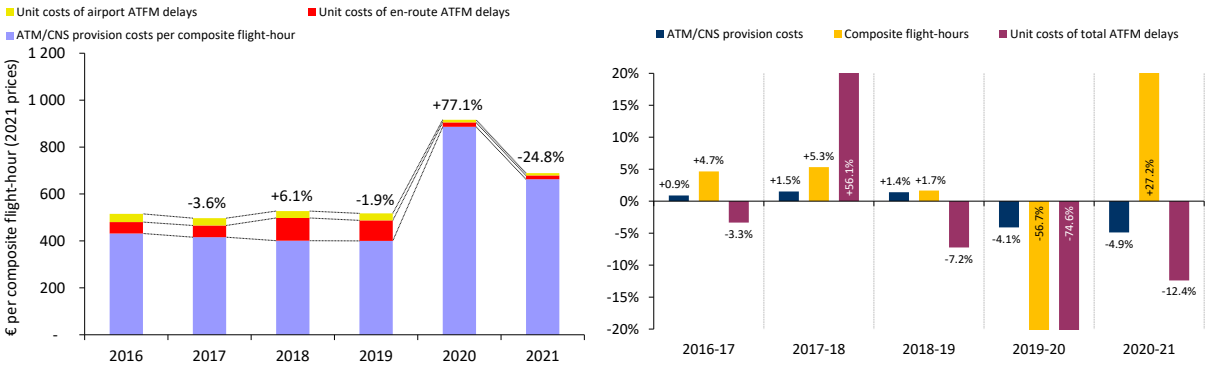


Figure 3.1: Trend of unit economic costs at Pan-European system level, 2016-2021 (real terms)

Figure 3.2 shows preliminary results at ANSP level (dotted lines represent the 1st and 3rd quartiles). On average, the share of ATFM delays in 2021 was some 4% (compared to 3% in 2020 and 22% in 2019), and only four ANSPs had ATFM delays representing 5% or more of their unit economic costs: HASP (32%), NAV Portugal (8%), DSNA (7%) and LVNL (5%).

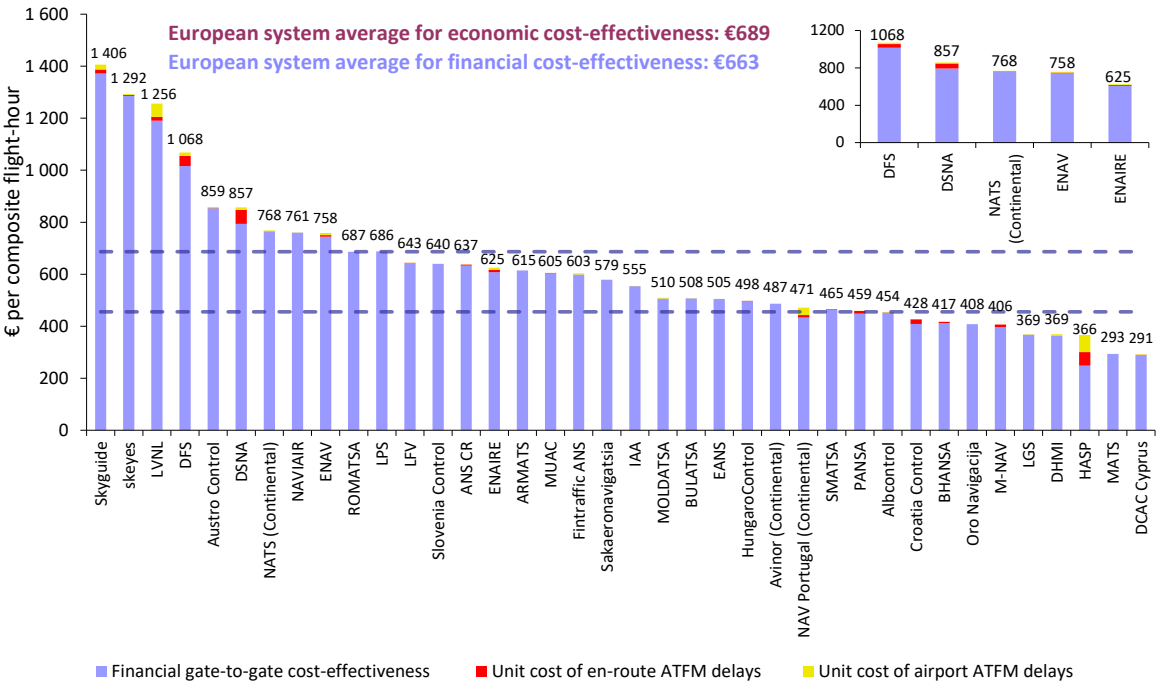


Figure 3.2: Economic gate-to-gate cost-effectiveness, 2021

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

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 2021 the unit ATM/CNS provision costs fell by -25.2% compared to 2020. This is the result of higher traffic in 2021 compared to 2020 (+27.2%) combined with lower ATM/CNS provision costs (-4.9%).

On the other hand, 2021 unit ATM/CNS provision costs remain +65.7% higher than in 2019. This mainly reflects the fact that, despite a reduced cost-base (-8.8% compared to 2019) traffic volumes in 2021 were still significantly lower than in 2019 (-44.9%).

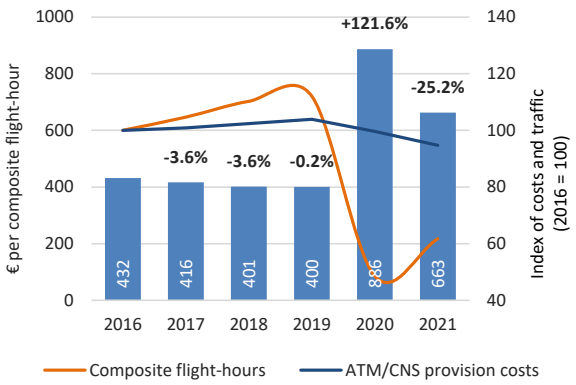


Figure 4.1: Changes in unit ATM/CNS provision costs, 2016-2021 (real terms)

The analytical framework which is 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 (0.60 composite flight-hours per ATCO-hour);

b) ATCO employment costs per ATCO-hour (€125); and,

c) support costs per unit output (€454).

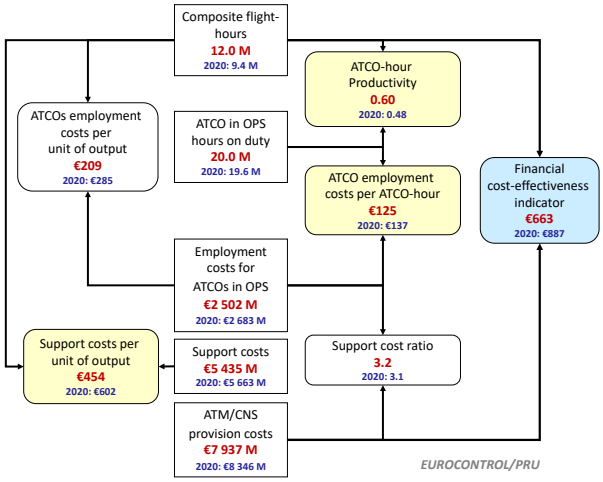


Figure 4.2: ACE performance framework, 2021 (real terms)

Figure 4.3 below shows that in 2021, ATCO employment costs per ATCO-hour fell by -8.5% while ATCO-hour productivity rose by +24.8%. As a result, ATCO employment costs per composite flight-hour decreased (-26.7%). In the meantime, unit support costs fell by -24.5% due to the combination of an increase in composite flight-hours (+27.2%) and a reduction in support costs (-4.0%). As a result, in 2021, unit ATM/CNS provision costs fell by -25.2% at Pan-European system level.

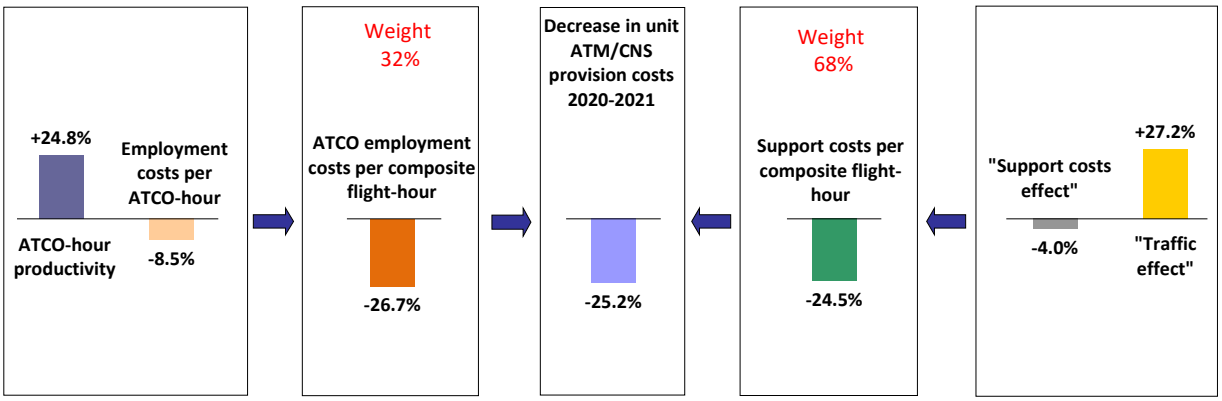


Figure 4.3: Breakdown of changes in unit ATM/CNS provision costs, 2020-2021 (real terms)

4.2 ANSP level

Figure 4.4 to Figure 4.7 present the main ACE key performance indicators at ANSP level for the year 2021. In all these figures, the dotted lines represent the 1st and 3rd quartiles.

There are three main elements to be considered when interpreting the level of the indicators as well as ANSPs rankings in the figures below: a) the traffic level in 2021 was still significantly lower than before COVID-19 crisis (although being lower for all ANSPs, the gap is not completely homogeneous), b) there were different responses in cost adjustments in 2020 and 2021, and c) there were also different levels of flexibility in adjusting the workforce, and in particular ATCO in OPS hours on duty, which has an enormous impact on the ATCO productivity and employment costs indicators measured in the ACE report.

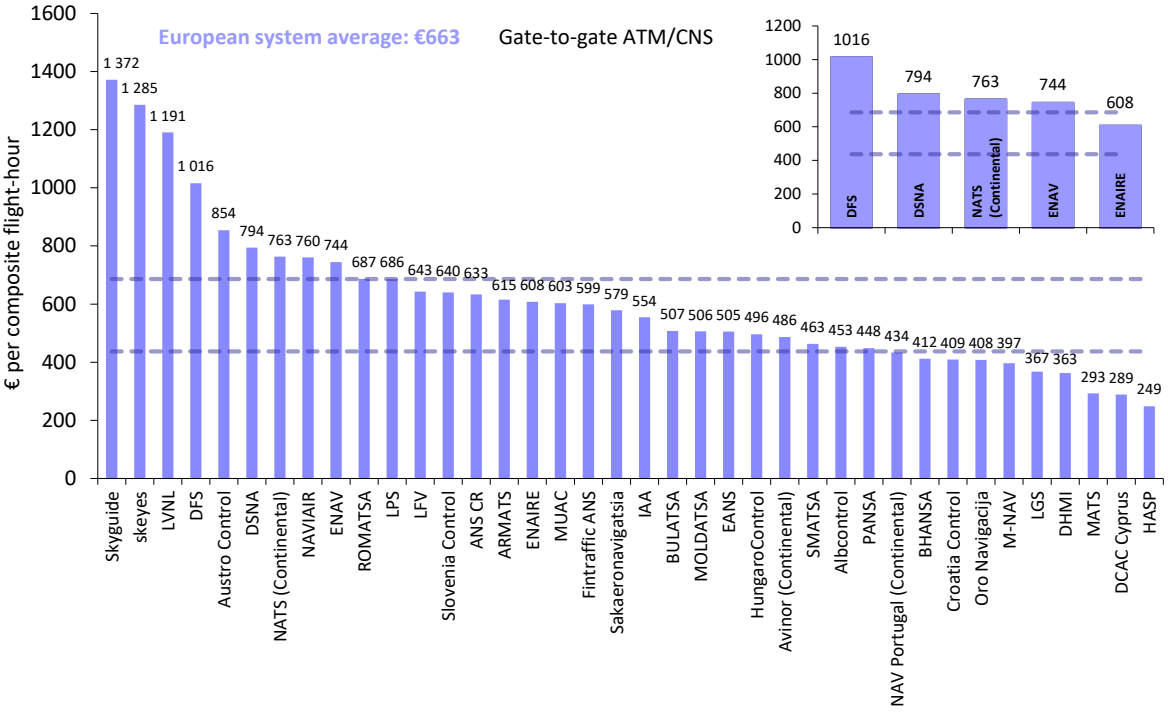


Figure 4.4: Financial gate-to-gate cost-effectiveness, 2021

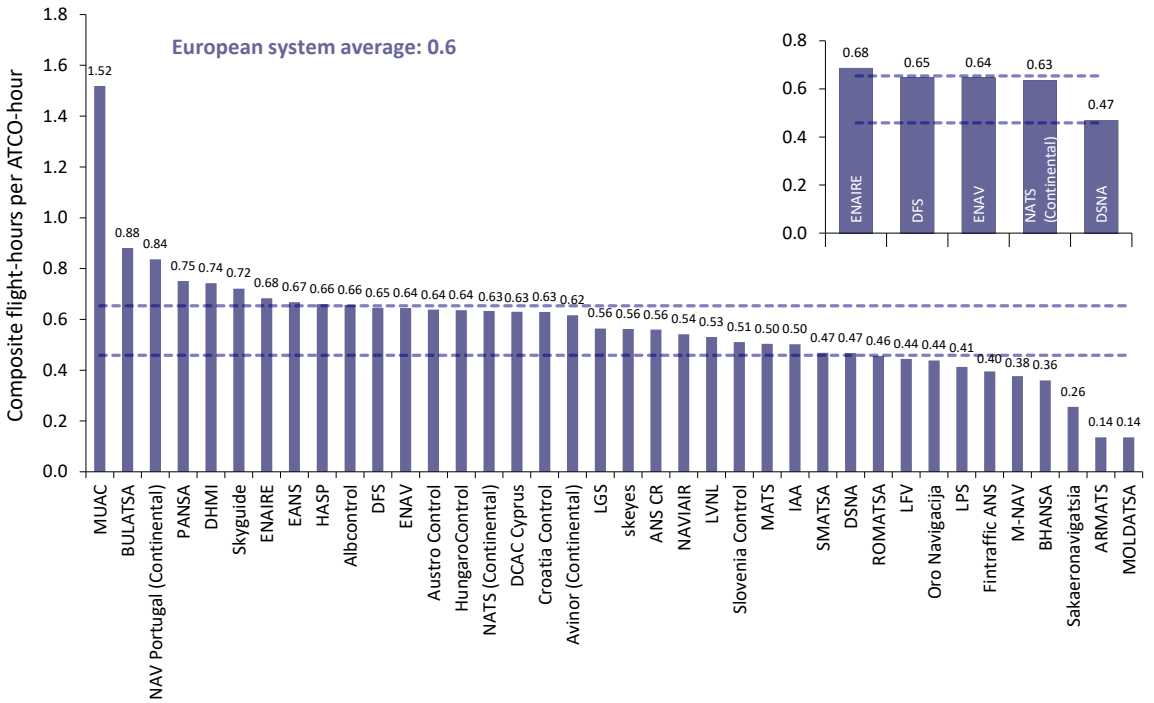


Figure 4.5: ATCO-hour productivity, 2021

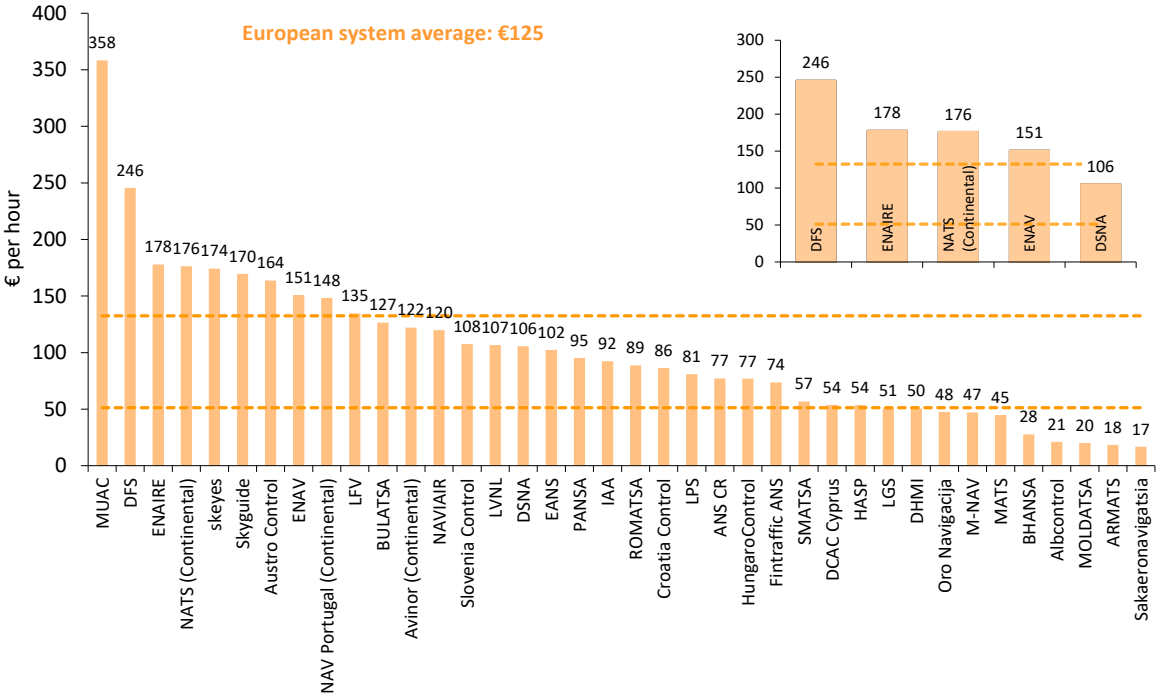


Figure 4.6: Employment costs per ATCO-hour, 2021

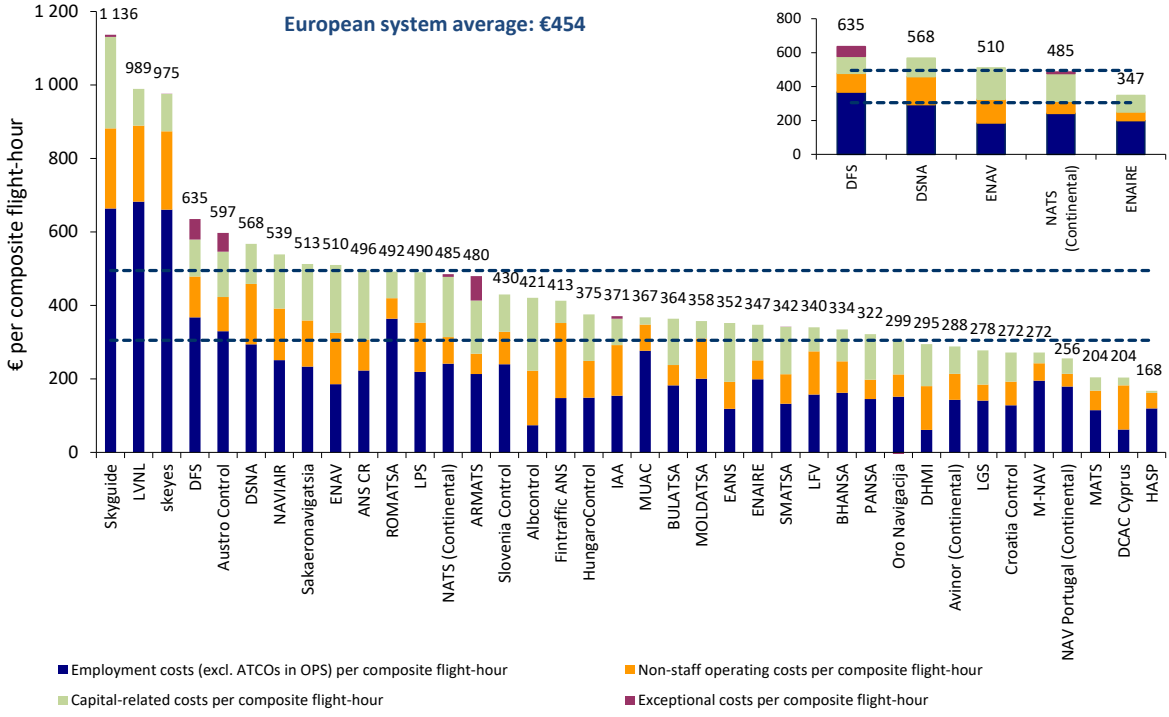


Figure 4.7: Breakdown of support costs per composite flight-hour, 2021

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 2021 benchmarking report.

5 ANSPs cash and liquidity issues as a result of the COVID-19 pandemic

This chapter provides a preliminary analysis of specific indicators that can be used to monitor potential cash and liquidity issues experienced by ANSPs as a result of the COVID-19 pandemic in 2020 and 2021. Due to specific organisational and financial set up in HASP, LVNL and MUAC, these three ANSPs are excluded from the analysis presented in this chapter.

Figure 5.1 presents the changes in ANSPs balance sheet structure as reported in their ACE data submissions at "Total ANS" level (i.e. en-route, terminal and other ANS). The scope is therefore wider than gate-to-gate ATM/CNS which is used to calculate the other ACE key performance indicators, but depending on what ANSPs include under "Other ANS", it might not necessarily match with the whole activities of the ANSP.

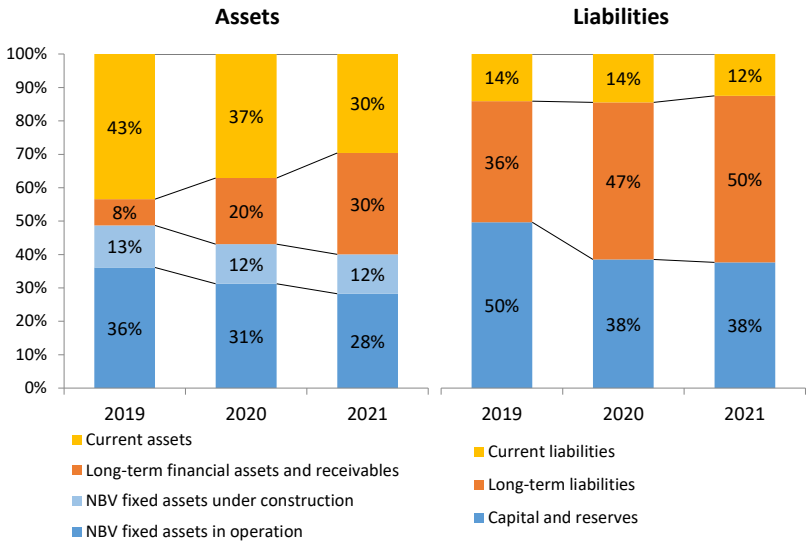
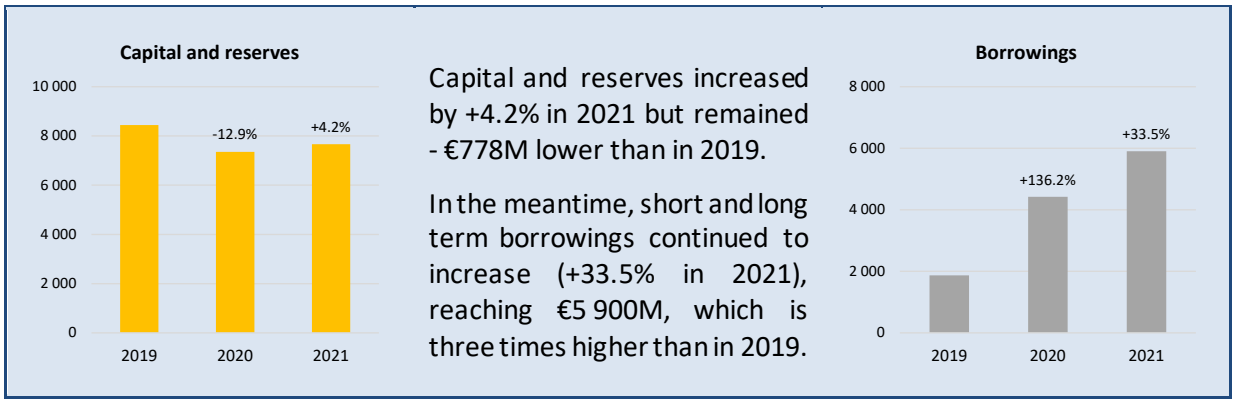


Figure 5.1: Changes in ANSPs balance sheet structure (2019-2021)



In order to assess the impact of the COVID-19 on the ANS industry, the PRC uses indicators aiming at monitoring ANSPs financial situation. For more details on how these indicators have been defined for the purposes of this analysis, along with their limitations, please refer to Section 4.2 of the ACE 2020 report.

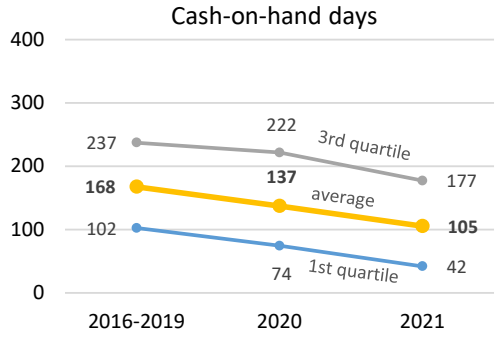


Figure 5.2: 2016-2021 trends in cash-on-hand days at Pan-European system level

Figure 5.2 shows the changes in cash-on-hand days at Pan-European system level over the 2016-2021 period as well as the 1st quartile and the 3rd quartile of these indicators. Cash-on-hand days measures the length of time a company can pay its operating costs from its cash reserves.

In 2021, the average cash-on-hand days amounted to 105 days, which is -32 days (or -23%) lower than in 2020 and -62 days (or -37%) lower than over the 2016-2019 period.

6 Capital expenditure in 2020-2021 compared to their historical average

This chapter provides a preliminary analysis of capital expenditures in 2020 and 2021 compared with their historical levels and looks at contextual elements such as traffic, ATFM delays and staffing. Although the relationship between these elements is not straightforward, with many factors affecting the quality of service provided by ANSPs, it is important to consider the situation in which ANSPs were operating at the time of making investment decisions.

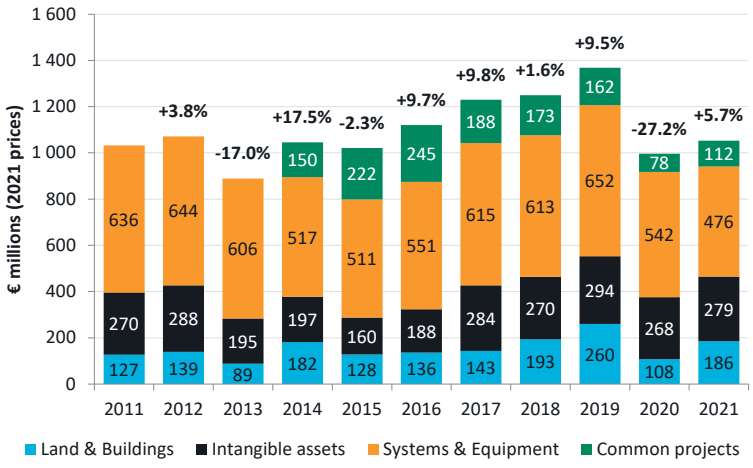


Figure 6.1 shows that, on average, capex across the 2011-2019 period was €1.1 billion per year, with less spent in the first part of the period (€1.0 billion 2011-2014) and more in the second part (€1.2 billion 2015-2019).

After a -27.2% drop in 2020 compared to 2019, capex rose by +5.7% in 2021, but, overall, remained -5.5% below the 2011-2019 average.

Figure 6.1: Capital expenditures (2011-2021)

Several factors could explain this overall reduction, including local sanitary measures, liquidity issues, availability of internal resources, availability of suppliers, etc. However, the situation at individual ANSP level is contrasted, and some ANSPs invested significantly more in 2020 and 2021 than in the preceding decade (on average per annum). More details will be provided in the forthcoming ACE report.

Figure 6.2 and Figure 6.3 below provide an overview of the context in which the capital expenditures were made. Traffic grew consistently from 2013, so that by 2019 ANSPs were handling + 19% more composite flight-hours than at the start of the period, leading to a marked deterioration in the quality of service, especially in 2018 and 2019.

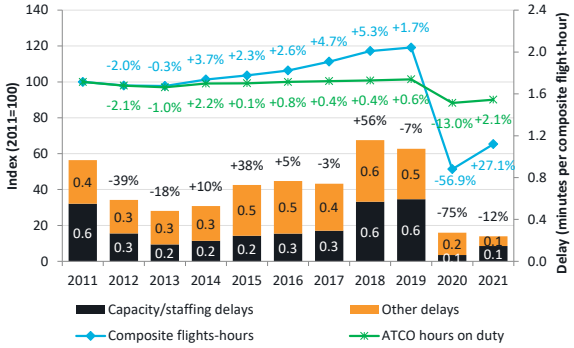


Figure 6.2: Evolution of traffic, ATCO hours on duty and ATFM delays (2011-2021)

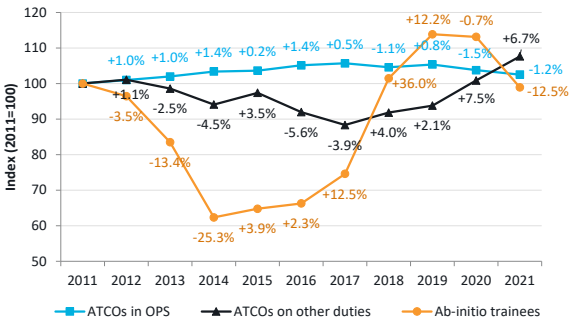


Figure 6.3: Evolution of ATCOs in OPS, ATCOs on other duty and ab-initio trainees (2011-2021)

In the meantime, the number of ATCO-hours on duty remained largely stable between 2011 and 2019, despite a slight increase in the number of ATCOs in OPS. The combined acceleration of capital expenditures and recruitment of ab-initio trainees over the 2016-2019 period shows that overall, some decisions were made to adapt to the rising traffic demand. However, there is a time lag which can extend to several years between the decision to invest or recruit ab-initio trainees and the actual commissioning of capex projects or staff intake.

The forthcoming ACE 2021 benchmarking report will include a more detailed analysis of capex cycles at individual ANSP level.

Important note

Data contained in this document are preliminary and subject to changes before the publication of the final ACE 2021 benchmarking report in May 2023.

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