



REPORT COMMISSIONED BY THE PERFORMANCE REVIEW COMMISSION

ATM Cost-Effectiveness (ACE) 2012 Benchmarking Report with 2013-2017 outlook

Prepared by the Performance Review Unit (PRU)
with the ACE Working Group

May 2014

BACKGROUND

This report has been commissioned by the Performance Review Commission (PRC).

The PRC was established in 1998 by the Permanent Commission of EUROCONTROL, in accordance with the ECAC Institutional Strategy (1997).

One objective in this Strategy is «*to introduce strong, transparent and independent performance review and target setting to facilitate more effective management of the European ATM system, encourage mutual accountability for system performance and provide a better basis for investment analyses and, with reference to existing practice, provide guidelines to States on economic regulation to assist them in carrying out their responsibilities.*»

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In September 2010, EUROCONTROL accepted the designation by the European Commission as the SES Performance Review Body (PRB) acting through its Performance Review Commission supported by the Performance Review Unit.

NOTICE

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@eurocontrol.int

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2017 outlook

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Final Report

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ATM Cost-Effectiveness (ACE) 2012 Benchmarking Report with 2013-2017 outlook

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Abstract

This report is the twelfth in a series of annual reports based on mandatory information disclosure provided by 37 Air Navigation Services Providers (ANSPs) to the EUROCONTROL Performance Review Commission (PRC). This report comprises factual data and analysis on cost-effectiveness and productivity for 37 ANSPs for the year 2012, including high level trend analysis for the years 2009-2012. The scope of the report is both en-route and terminal navigation services (i.e. gate-to-gate). The main focus is on the ATM/CNS provision costs as these costs are under the direct control and responsibility of the ANSP. Costs borne by airspace users for less than optimal quality of service are also considered. The report describes a performance framework for the analysis of cost-effectiveness. The framework highlights 3 key performance drivers contributing to cost-effectiveness (productivity, employment costs and support costs). The report also analyses forward-looking information for the years 2013-2017, inferring on future financial cost-effectiveness performance at system level, and displays information on future capital expenditures.

Keywords

EUROCONTROL Performance Review Commission - Economic information disclosure – Benchmarking – Target setting – Exogenous factors – Complexity metrics - ATM/CNS cost-effectiveness comparisons - European Air Navigation Services Providers (ANSPs) – Functional Airspace Blocks (FABs) - Gate-to-gate - En-route and Terminal ANS - Inputs and outputs metrics – Performance framework - Quality of service - 2012 data – Traffic downturn - Factual analysis – Historic trend analysis - Costs drivers - Productivity – Employment costs - Support costs – Area Control Centres (ACCs) productivity comparisons – Current and future capital expenditures – ATM systems – Five years forward-looking trend analysis (2013-2017).

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READER'S GUIDE

<p>This table indicates which chapters of the report are likely to be of most interest to particular readers and stakeholders.</p>	
Executive summary	All stakeholders with an interest in ATM who want to know what this report is about, or want an overview of the main findings.
Chapter 1: Introduction	Those wanting a short overview of the structure of the report, the list of participating ANSPs, and the process to analyse the data comprised in this report.
Part I: - Pan-European system cost-effectiveness performance in 2012 and outlook for 2013-2017	
Chapter 2: Pan-European system cost-effectiveness performance in 2012 with 2013-2017 outlook	<p>All those who are interested in a high level analysis of economic and financial cost-effectiveness performance in 2012 at Pan-European system and ANSP level. This chapter also includes a trend analysis of ATM/CNS cost-effectiveness performance over the 2009-2012 period, and an analysis focusing on its three main economic drivers (productivity, employment costs and support costs).</p> <p>Finally, this chapter comprises a forward-looking analysis of ATM/CNS performance over the 2013-2017 period, including capital investment projections.</p> <p>This chapter is particularly relevant to ANSPs' management, regulators and NSAs in order to identify best practices, areas for improvement, and to understand how cost-effectiveness performance has evolved over time.</p>
Part II: - Cost-effectiveness performance focus at ANSP level	
Chapter 3: Focus on ANSPs individual cost-effectiveness performance	<p>All those who are interested in obtaining an independent and comparable analysis of individual ANSP historic performance (2009-2012) in terms of economic and financial cost-effectiveness.</p> <p>This chapter is particularly relevant to ANSPs' management, airspace users, regulators and NSAs in order to identify how cost-effectiveness performance has evolved and which have been the sources of improvement. This chapter also includes information on ANSPs historic and planned capital investments.</p> <p>This chapter should provide useful insights and information to NSAs for the drawing up of RP2 performance plans during the first half of 2014. In particular, it includes a benchmarking analysis of financial cost-effectiveness with a set of comparators for each ANSP.</p>
Annexes:	With a view to increase transparency, this report comprises several annexes including the data used in the report.

EXECUTIVE SUMMARY

This ATM Cost-Effectiveness (ACE) 2012 Benchmarking Report, the twelfth in the series, presents a review and comparison of ATM cost-effectiveness for 37 Air Navigation Service Providers (ANSPs) in Europe. The ACE benchmarking work is carried out by the Performance Review Commission (PRC) supported by the Performance Review Unit (PRU) and is based on information provided by ANSPs in compliance with Decision No. 88 of the Permanent Commission of EUROCONTROL on economic information disclosure and in the context of Annex IV 2.1(a) of EC Regulation N°691/2010 (Performance Scheme) recently amended by EC Regulation N°390/2013.

The data processing, analysis and reporting were conducted with the assistance of the ACE Working Group, which comprises representatives from participating ANSPs, airspace users, regulatory authorities and the Performance Review Unit (PRU). This enabled participants to share experiences and gain an improved common understanding of underlying assumptions and limitations of the data.

ACE 2012 presents information on performance indicators relating to cost-effectiveness and productivity for the year 2012, and how they changed over time (2009-2012). It examines both individual ANSPs and the Pan-European ATM/CNS system as a whole. In addition, ACE 2012 analyses forward-looking information covering the 2013-2017 period based on information provided by ANSPs in November 2013.

The ACE factual and independent benchmarking has set the foundation for a normative analysis to quantify the potential scope of cost-efficiency improvements for ANSPs. The ACE data analysis and the gathering of “intelligence” on ANSPs cost-efficiency performance directly feed core processes of the Single European Sky (SES) performance scheme. In September 2013, after an extensive public consultation, the PRB published recommendations to the EC for the Union-wide targets covering RP2 (2015-2019). ANSP benchmarking was one of the key evidences used to assess the scope for future performance improvements at Union-wide level and to build up the proposal for the cost-efficiency targets.

Union-wide performance targets for RP2 were adopted during the Single Sky Committee ad-hoc meeting held on the 4th February 2014. These targets imply a -3.3% annual decrease in the en-route Union-wide determined unit costs over 2015-2019. These targets were based on the following assumptions: a planned decrease in en-route determined costs (-2.1% p.a.) and an expected traffic growth (in terms of service units) of +1.2% p.a. between 2014 and 2019.

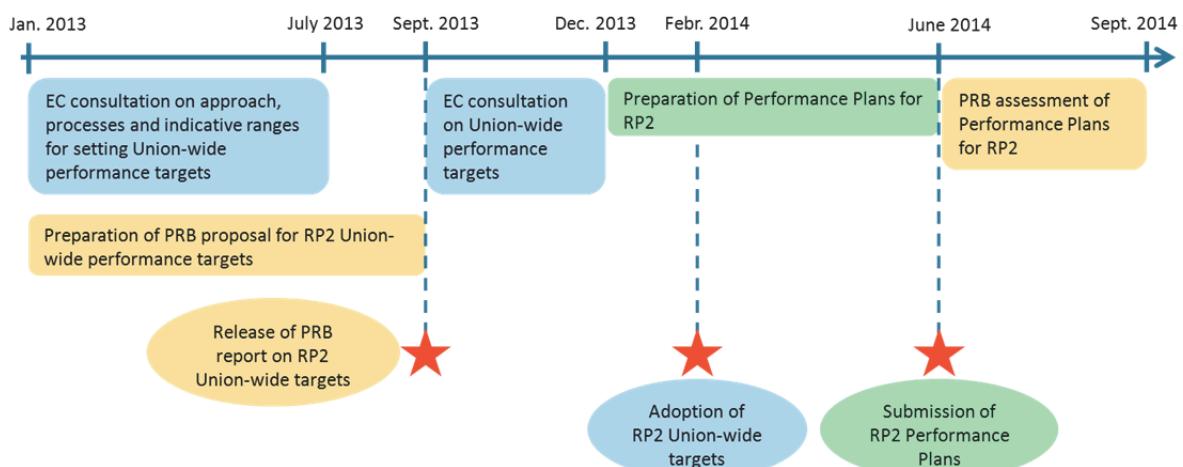


Figure 0.1: High level timeframe for RP2 Union-wide target setting process

As indicated in Figure 0.1 above, National Supervisory Authorities (NSAs) will draw up Performance Plans for RP2 during the first half of 2014. In this context, the information disclosed in Part II of the

ACE 2012 Benchmarking Report (already available in the first draft released in December 2013) provided useful insight and information to interested parties, including the consultations of the Performance Plan with airspace users which are taking place between February and June 2014.

Another important milestone in the Union-wide cost-efficiency target setting process will be the assessment of the Performance Plans for RP2 during the Summer 2014. The ACE 2012 data analysis will be an important input to be considered in this context.

For ANSPs operating in SES States, the year 2012 marks the start of RP1 and the end of the “full cost-recovery” mechanism for en-route ANS. Over RP1, SES States/ANSPs operate under the “determined costs” method which comprises specific risk-sharing arrangements aiming at incentivising ANSPs economic performance. The PRB released in September 2013 a report on the monitoring of SES performance targets for the first year of RP1 (2012) based on information provided in June 2013. This ACE 2012 Benchmarking Report complements the PRB monitoring activity by providing a detailed benchmarking of cost-effectiveness performance at ANSP level including a trend analysis of three main economic drivers (productivity, employment costs and support costs) over the 2009-2012 period.

The PRC introduced in its ACE Benchmarking Reports the concept of economic cost-effectiveness KPI. This indicator is defined as gate-to-gate ATM/CNS provision costs plus the costs of ground ATFM delays for both en-route and airport, all expressed per composite flight-hour (a metric combining en-route flight-hours and airport movements). This economic performance indicator is meant to capture trade-offs between ATC capacity and costs.

In 2012, ATM/CNS provision costs remained fairly constant (-0.2%) while composite flight-hours decreased by -1.9%, resulting in an increase in unit ATM/CNS provision costs (+1.7%) compared to 2011. In the meantime, for the second year in a row, the unit costs of ATFM delays significantly fell (-39.3%) contributing to the substantial decrease in unit economic costs observed in 2012 (-4.8%). As a result, unit economic costs amounted to €492 in 2012. This is lower than the level achieved before the financial crisis and subsequent economic recession (i.e. unit economic costs amounted to €544 in 2008).

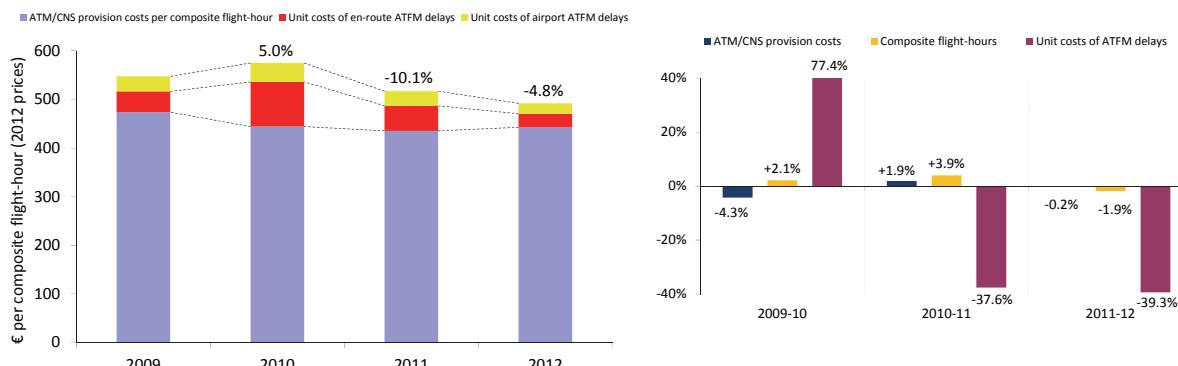


Figure 0.2: Changes in unit economic costs, 2009-2012 (real terms)

The chart on the right-hand side of Figure 0.2 shows that after a rebound in 2010 (+2.1%) and 2011 (+3.9%), traffic growth was negative in 2012 at Pan-European system level (-1.9%) mainly reflecting the uncertainties affecting the European economies and the Eurozone in particular.

In 2012, 22 out of 37 ANSPs could reduce ATM/CNS provision costs compared to 2011. For 18 of these ANSPs, the lower ATM/CNS costs were associated with a reduction in traffic volumes. In most of the cases, the reduction in ATM/CNS provision costs could compensate for the fall in traffic and therefore these ANSPs could avoid an increase in unit costs. At face value, this indicates for these ANSPs a certain degree of reactivity in adjusting costs downwards in a context of traffic decrease.

On the other hand, Figure 0.3 shows that between 2011 and 2012 ATM/CNS provision costs increased by more than +5.0% for six ANSPs including ARMATS (+8.5%), DFS (+5.6%), LFV (+12.8%), MoldATSA (+14.5%), MUAC (+6.4%) and ROMATSA (+20.5%). The main drivers for these substantial increases in ATM/CNS provision costs are provided in Part I of this report.

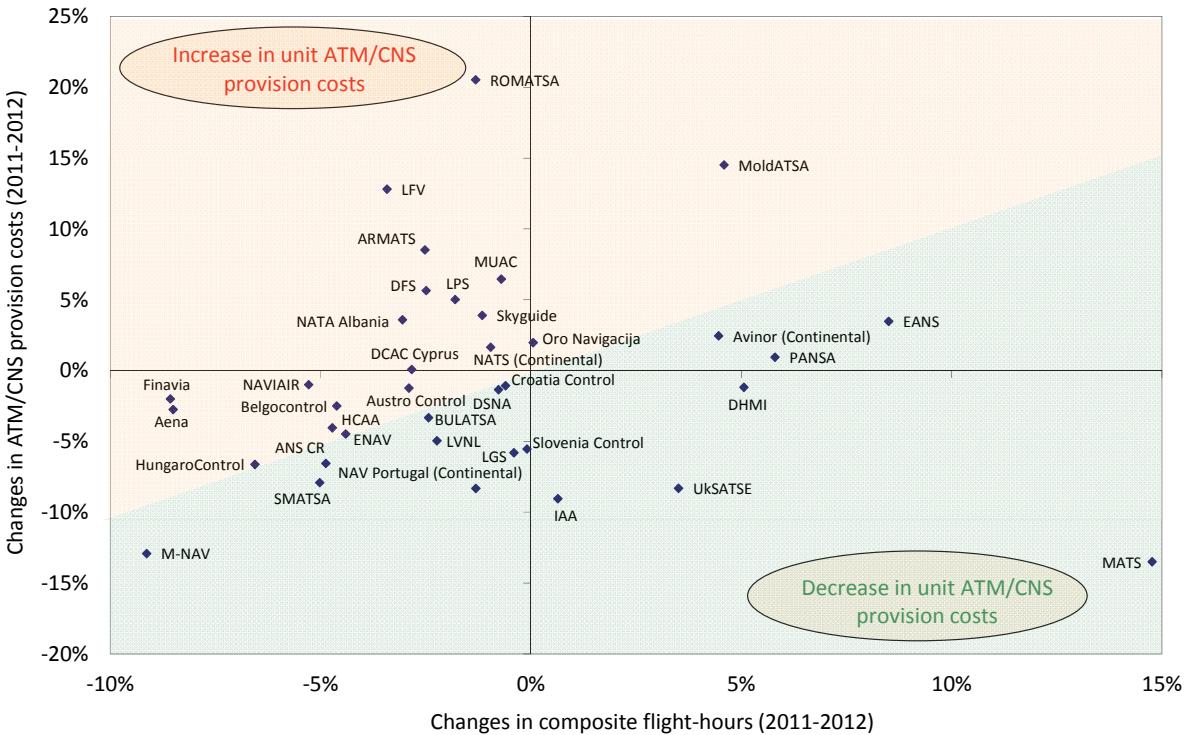


Figure 0.3: Changes in ATM/CNS provision costs and traffic volumes, 2011-2012 (real terms)

Figure 0.4 shows that the increase in unit ATM/CNS provision costs observed at Pan-European system level in 2012 (+1.7%) is partly due to the fact that employment costs per ATCO-hour rose by +1.3% while ATCO-hour productivity remained fairly constant (+0.3%). Overall, in 2012 Pan-European ANSPs could limit the impact of the traffic decrease on productivity through a more effective use of available ATC capacity and existing resources. In the meantime, unit support costs rose by +2.0% mainly reflecting the fact that at Pan-European system level support costs were not adjusted downwards compared to 2011 (+0.1%) while the number of composite flight-hours reduced by -1.9%.

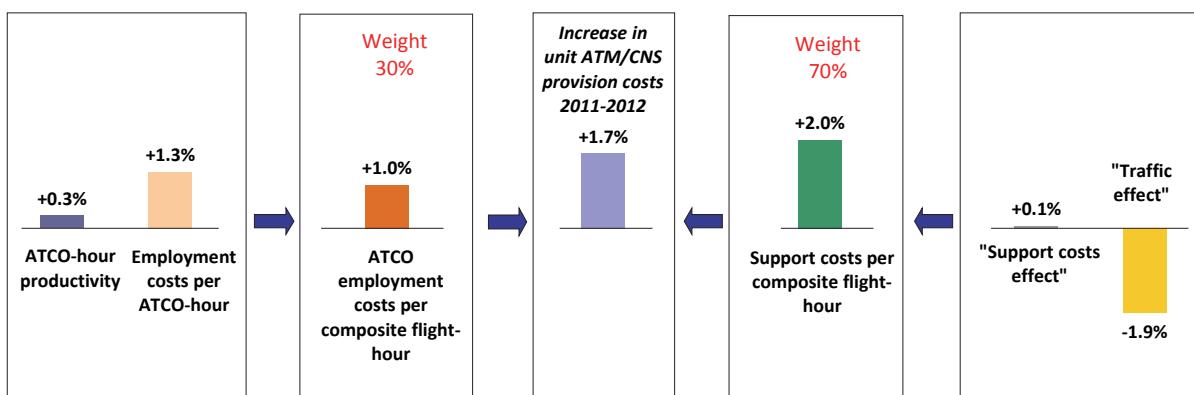


Figure 0.4: Changes in the financial cost-effectiveness indicator, 2011-2012 (real terms)

At European system level, after the +1.7% increase in 2012, gate-to-gate unit ATM/CNS provision costs are planned to further rise by +2.8% in 2013 and then to decrease by -2.9% in 2014. Overall, gate-to-gate unit ATM/CNS provision costs are expected to remain fairly constant between 2012 and 2014.

Gate-to-gate unit ATM/CNS provision costs are then expected to increase in 2015 (+0.8%) and to decrease in 2016 (-1.9%) and 2017 (-2.6%). Overall, unit costs are planned to decrease by -0.8% p.a. over the 2012-2017 period.

For most of the ANSPs, the planned en-route costs data reported in their ACE 2012 data submission are based on the information provided in June 2013 in the context of the Enlarged Committee for Route Charges. The en-route determined costs provided in the RP2 Performance Plans which will be submitted end of June 2014 are likely to be based on different planning assumptions.

In 2012, ANSPs capital expenditures amounted to some €1 075M. The right hand-side of Figure 0.6 compares the capex planned in ACE 2011 with the plans provided in ACE 2012. Figure 0.6 shows that 2012 actual capital expenditures are some -16% lower than planned in ACE 2011 for 2012. This mainly reflects the postponement of non-crucial investment projects to future years, in particular 2015 and 2016.

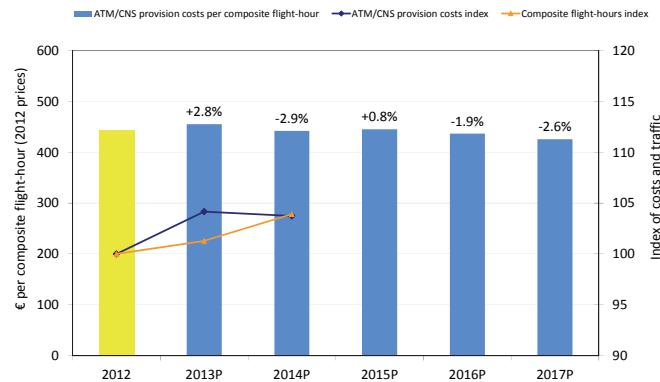


Figure 0.5: Forward-looking cost-effectiveness at European system level (2012-2017, real terms)

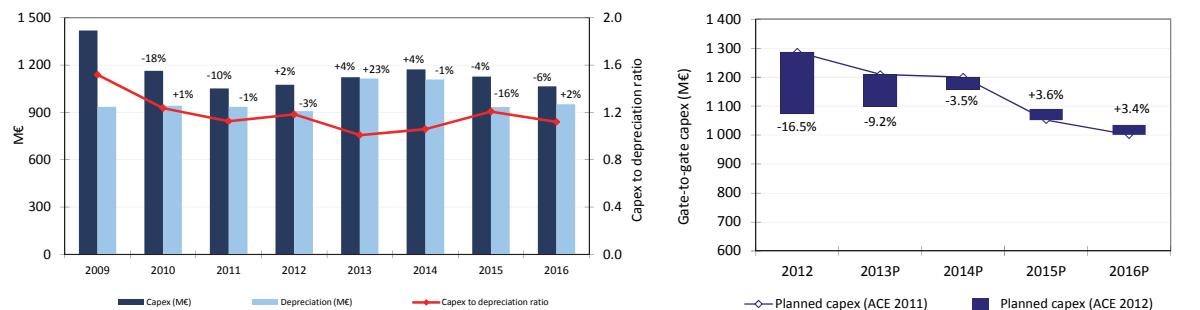


Figure 0.6: Forward-looking capital expenditures at Pan-European system level (2009-2016, real terms)

Overall, the cumulative capex planned for the period 2013-2016 amounts to some €4 488M and represents 50% of the 2012 total ANS revenues. A significant proportion of these investments relate to major upgrades or to the replacement of existing ATM systems.

1 INTRODUCTION

The Air Traffic Management Cost-Effectiveness (ACE) 2012 Benchmarking Report commissioned by EUROCONTROL's independent Performance Review Commission (PRC) is the twelfth in a series of reports comparing the ATM cost-effectiveness of EUROCONTROL Member States' Air Navigation Service Providers (ANSPs)¹.

In September 2010, the PRC, supported by the EUROCONTROL Performance Review Unit (PRU), was designated Performance Review Body (PRB) of the European Commission (EC).

The ACE benchmarking work is carried out by the PRC in the context of Articles 3.3(i), 3.6(b)(c), and 3.8 of EC regulation N°691/2010 (Performance Scheme) recently amended by EC Regulation N°390/2013.

The report is based on information provided by ANSPs in compliance with Decision No. 88 of the Permanent Commission of EUROCONTROL, which makes annual disclosure of ANS information mandatory, according to the Specification for Economic Information Disclosure² (SEID), in all EUROCONTROL Member States.

Since these services are outside the PRC's terms of reference, this report does not address performance relating to:

- oceanic ANS;
- services provided to military operational air traffic (OAT); or,
- airport (landside) management operations.

The focus of this report is primarily on a cross-sectional analysis of ANSPs for the year 2012. However, the aviation community is also interested in measuring how cost-effectiveness and productivity at the European and ANSP levels varies over time, and in understanding the reasons why variations occur. Hence, this report makes use of previous years' data from 2009 onwards to examine changes over time, where relevant and valid. It is particularly relevant to have a medium-term perspective given the characteristics of the ANS industry which requires a long lead time to develop ATC capacity and infrastructure. In 2009, the economic recession affected the aviation industry with an unprecedented -7% traffic decrease at system level, basically cancelling three years of traffic growth. It is therefore interesting to look at the changes in performance over the 2009-2012 period to understand how the ATM industry reacted to this sharp decrease in traffic demand.

1.1 Organisation of the report

This report follows a different structure than the ACE 2011 report. This year, it was decided to streamline the Report and to focus on ANSPs individual cost-effectiveness performance. It is expected that this piece of analysis will be particularly informative for the ATM stakeholders involved in the setting up of performance plans for the second Reference Period (RP2) of the Single European Sky (SES) Performance Scheme.

The structure of the present ACE 2012 Benchmarking Report is made of two parts and three chapters:

¹ Previous reports in the series from ACE 2001 (Sept. 2003) to ACE 2011 (April 2013) can be found on the PRC web site at <http://www.eurocontrol.int/articles/prc-and-prb-publications>.

² PRC Specification for Economic Information Disclosure - Version 2.6, December 2008, can be found on the PRC web site.

Chapter 1 provides an overview of the participating ANSPs and outlines the processes involved in the production of this report.

Part I and Chapter 2 provide a high level analysis of economic and financial cost-effectiveness performance in 2012 at Pan-European system and ANSP level. This chapter also analyses changes in ATM/CNS cost-effectiveness performance between 2009 and 2012. A particular focus is put on the three main economic drivers of cost-effectiveness (productivity, employment costs and support costs). It should be noted that this year a special emphasis is made on specific productivity analysis at ACC level. Finally, Chapter 2 comprises a forward-looking analysis of ATM/CNS performance over the 2013-2017 period, including capital investment projections.

Part II and Chapter 3 provide a two-page summary for each ANSP. This summary includes an individual trend analysis of ANSPs' cost-effectiveness performance between 2009 and 2012, and comprises a benchmarking analysis of each ANSP's financial cost-effectiveness with a set of comparators. It also examines the capital expenditure planned by each ANSP for the period 2013-2017. This chapter should provide useful insights and information to NSAs for the drawing up of RP2 performance plans during the first half of 2014. This information could also be used to support the consultation process of the RP2 Performance Plans with airspace users.

Finally, this report also comprises several annexes which include statistical data used in the report, and individual ANSP Fact Sheets comprising a factual description of the governance and institutional arrangements in which the ANSP operates.

1.2 Overview of participating ANSPs

In total, 37 ANSPs reported 2012 data in compliance with the requirement from Decision No. 88 of the Permanent Commission of EUROCONTROL (see Table 1.1). In addition to the EUROCONTROL Member States, the en-route ANSP of Estonia provided data in compliance with the Performance Scheme Regulation. All the reported information relates to the calendar year 2012. Table 1.1 shows the list of participating ANSPs, describing both their organisational and corporate arrangements, and the scope of ANS services provided.

Table 1.1 below indicates (coloured yellow) which ANSPs were at 1 January 2012 part of the SES, and hence subject to relevant SES regulations and obligations³. In addition to SES members, a number of States (coloured blue) are committed, following the signing of an agreement relating to the establishment of a European Common Aviation Area (ECAA)⁴, to cooperate in the field of ATM, with a view to extending the SES regulations⁵ to the ECAA States. Hence, in principle all the en-route ANSPs of EUROCONTROL States and other States disclosing information to the PRC are covered by the SES regulations, except Armenia, Moldova, Turkey and Ukraine.

³ It should be noted that Croatia joined the European Union in July 2013.

⁴ Decision 2006/682/EC published on 16 October 2006 in the Official Journal of the European Union. States which have signed this Agreement but are not yet EU members comprise the Republic of Albania, Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, the Republic of Iceland, the Republic of Montenegro, the Kingdom of Norway, and the Republic of Serbia.

⁵ This includes the second package of SES regulations (EC No 1070/2009), the amended Performance Scheme Regulation (EC No 390/2013) and amended Charging Scheme Regulation (EC No 391/2013).

	ANSP	Code	Country	Organisational & Corporate Arrangements	OAT Services	Oceanic	MUAC	Delegated ATM	Internal MET	Ownership and management of airports
1	Aena	ES	Spain	State enterprise					x	
2	ANS CR	CZ	Czech Republic	State enterprise						
3	ARMATS	AM	Armenia	Joint-stock company (State-owned)						
4	Austro Control	AT	Austria	Joint-stock company (State-owned)				x		
5	Avinor	NO	Norway	Joint-stock company (State-owned)	x	x			x	
6	Belgocontrol	BE	Belgium	State enterprise		x	x			
7	BULATSA	BG	Bulgaria	State enterprise			x			
8	Croatia Control	HR	Croatia	Joint-stock company (State-owned)	x		x	x		
9	DCAC Cyprus	CY	Cyprus	State body						
10	DFS	DE	Germany	Limited liability company (State-owned)	x	x				
11	DHMI	TR	Turkey	State body (autonomous budget)					x	
12	DSNA	FR	France	State body (autonomous budget)			x			
13	EANS	EE	Estonia	Joint-stock company (State-owned)						
14	ENAV	IT	Italy	Joint-stock company (State-owned)				x		
15	Finavia	FI	Finland	State enterprise	x		x	x	x	
16	HCAA	GR	Greece	State body					x	
17	HungaroControl	HU	Hungary	State enterprise				x		
18	IAA	IE	Ireland	Joint-stock company (State-owned)		x				
19	LFV	SE	Sweden	State enterprise	x		x	x		
20	LGS	LV	Latvia	Joint-stock company (State-owned)				x		
21	LPS	SK	Slovak Republic	State enterprise	x					
22	LVNL	NL	Netherlands	Independent administrative body			x			
23	MATS	MT	Malta	Joint-stock company (State-owned)			x			
24	M-NAV	MK	F.Y.R. Macedonia	Joint-stock company (State-owned)	x		x			
25	MoldATSA	MD	Moldova	State enterprise	x			x		
26	MUAC			International organisation						
27	NATA Albania	AL	Albania	Joint-stock company (State-owned)	x		x			
28	NATS	UK	United Kingdom	Joint-stock company (part-private)		x				
29	NAV Portugal	PT	Portugal	State enterprise		x				
30	NAVIAIR	DK	Denmark	State enterprise				x		
31	Oro Navigacija	LT	Lithuania	State enterprise						
32	PANSA	PL	Poland	State body (acting as a legal entity with an autonomous budget)						
33	ROMATSA	RO	Romania	State enterprise				x		
34	Skyguide	CH	Switzerland	Joint-stock company (part-private)	x		x			
35	Slovenia Control	SI	Slovenia	State enterprise	x					
36	SMATSA	RS	Serbia	Limited liability company	x		x	x		
36	SMATSA	ME	Montenegro	Limited liability company						
37	UKSATSE	UA	Ukraine	State enterprise				x		

 States covered by the SES Regulations

 States part of the ECAA

 States not covered by the SES Regulations

Table 1.1: States and ANSPs participating in ACE 2012

Table 1.1 also shows the extent to which the ANSPs incur costs relating to services that are not provided by all ANSPs. In order to enhance cost-effectiveness comparison across ANSPs, such costs, relating to oceanic ANS, military operational air traffic⁶ (OAT), airport management operations and payment for delegation of ATM services⁷ were excluded to the maximum possible extent.

1.3 Data submission

The SEID (see footnote 2) requires that participating ANSPs submit their information to the PRC/PRU by 15 July in the year following the year to which it relates. The SEID became also mandatory as part of the SES II legislation. The ACE 2012 data have been submitted in the SEID Version 2.6 which has been used since ACE 2008.

⁶ Note that since the 10 February 2014, LPS is not responsible to provide OAT services to military flights.

⁷ The column 'Delegated ATM' in Table 1.1 relates to the delegation of ATM services to or from other ANSPs, based on financial agreements.

A Version 3.0 of this Specification has been prepared following the formal EUROCONTROL Regulatory and Advisory Framework (ERAf), after consultation and full involvement of the ad-hoc ACE Working Group using lessons learnt from the use of the SEID V2.6 over a trial period. The SEID V3.0 also reflects recent developments arising from the second package of the SES regulations in 2009, the Performance Scheme Regulation and the amended Charging Scheme Regulation.

The SEID V3.0 shall be used to report 2014 data in July 2015. This will allow ANSPs to have the required time during 2014 to smoothly introduce the changes into their reporting systems. This transition period should ease the administrative burden on the ANSPs and ensure effective and complete implementation of all the new aspects of the SEID V3.0 by 2015.

Figure 1.1 indicates that 28 out of 37 ANSPs provided ACE 2012 data on time (compared to 25 for ACE 2011). It is important that this timely submission of ACE data is sustained and improved. The ACE benchmarking analysis must be seen as timely 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. Clearly, the timescale for the production of the ACE Benchmarking Report is inevitably delayed if data are not submitted on time.

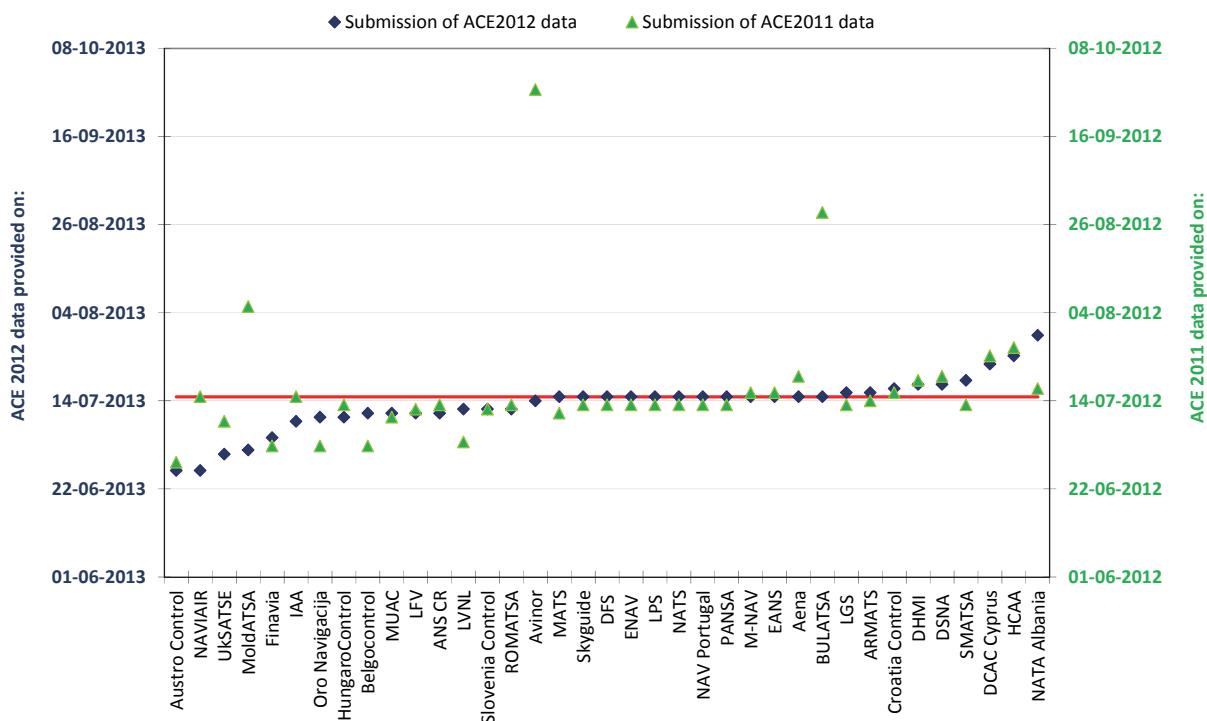


Figure 1.1: Progress with submission of 2012 data

The general and gradual improvement in the quality and the timing of the ACE data submission is marred by some problems relating to few individual ANSPs. For instance, even though the quality of HCAA data submissions has recently improved, there are still issues to be addressed. HCAA is still not in a position to provide complete balance-sheet data, although capital-related costs are charged to airspace users. Similarly, the quality of the operational data provided by HCAA (in particular staff numbers and working hours) is not satisfactory.

1.4 Data analysis, processing and reporting

The PRU is supported by an ACE Working Group (WG), including ANSPs, regulatory authorities and airspace users' representatives. The process leading to the production of the ACE report, which comprises data analysis and consultation, is summarised in Figure 1.2 below.

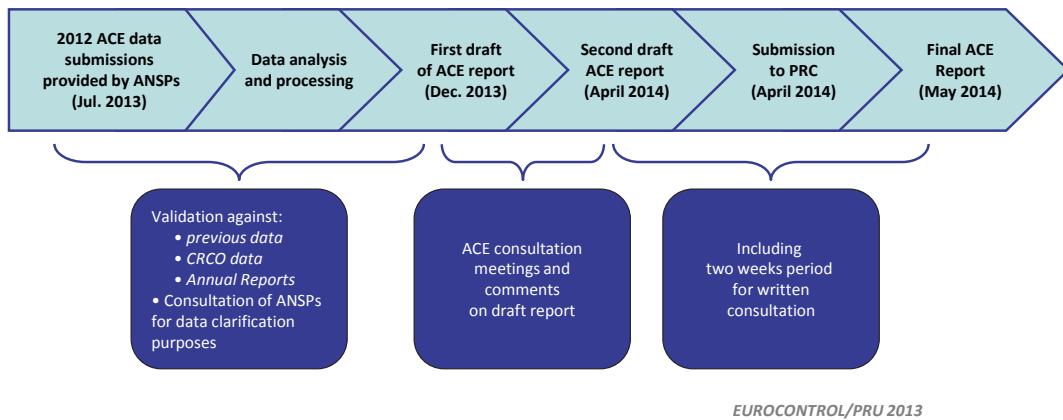


Figure 1.2: Data analysis, processing and reporting

In order to ensure comparability among ANSPs and quality of analysis, the information submitted by the ANSPs is subject to a thorough analysis which makes extensive use of ANSPs' Annual Reports and of their statutory financial accounts.

During this process a number of issues emerged:

- Annual Reports with disclosure of financial accounts are not available for some ANSPs (see Section 1.5 below). This removes one means of validating the financial data submitted;
- ANSPs which are involved in non-ANS activities (such as airport ownership and management, see Table 1.1) do not necessarily disclose separate accounts for their ANS and non-ANS activities. This means that the financial data submitted for the ANS activities cannot be validated with the information provided in the Annual Report;
- Except for a few ANSPs, Annual Reports do not disclose the separate costs for the various segments of ANS (such as en-route and terminal ANS) which means that the cost breakdown submitted cannot be reconciled.

As ANSPs progressively comply with the SES Regulation on Service Provision, which requires publication of Annual Reports including statutory accounts, and separation of ANS from non-ANS activity in ANSPs internal accounts, some of these shortcomings are expected to be gradually overcome (see also Section 1.5 below).

In most cases, data recorded in the Network Manager (NM) database have been used as the basis for the output metrics used in the ACE data analysis, and this practice has been generally accepted, including in cases where in previous years there had been discrepancies.

1.5 ANSPs' Annual Reports

ANSPs' Annual Reports provided a valuable means of validating the 2012 information disclosure data.

The SES Service Provision Regulation (SPR) (EC No 550/2004) came into force on 20 April 2004 and is applicable to 2012 Financial Accounts in all EU Member States (plus Switzerland and Norway) and to associated ANSPs. This Regulation is also applicable to States which have signed the ECAA Agreement (see Section 1.2), although the timing of its implementation is not yet decided for individual States. Among other provisions, the SPR requires that ANSPs meet certain standards of information disclosure (transparency) and reporting, and in particular that:

- ANSPs should draw up, submit to audit and publish their Financial Accounts (Art.12.1);
- in all cases, ANSPs should publish an Annual Report and regularly undergo an independent audit (Art 12.2);

- ANSPs should, in their internal accounting, identify the relevant costs and income for ANS broken down in accordance with EUROCONTROL's principles for establishing the cost-base for route facility charges and the calculation of unit rates and, where appropriate, shall keep consolidated accounts for other, non-air navigation services, as they would be required to do if the services in question were provided by separate undertakings (Art 12.3). The latter requirement is particularly relevant for the ANSPs which are part of an organisation which owns, manages and operates airports, such as Aena⁸, Avinor, Finavia, HCAA, and DHMI⁹.

Figure 1.3 displays the status of ANSPs 2012 Annual Reports and indicates that 30 out of 37 participating ANSPs have published an Annual Report for the year 2012.

It is generally considered that an Annual Report produced according to "best practice" should comprise three main components:

- a Management Report;
- Annual Financial Accounts with relevant business segmentation and explanatory notes; and,
- an independent Audit Report.

At the time of writing this report, seven ANSPs¹⁰ (including three which are subject to SES Regulations) have not published Annual Reports for 2012.

ANSPs' Annual Accounts are drafted in accordance with specific accounting principles. Often, (national) General Accepted Accounting Principles (GAAP) are used. In the context of the SES, Article 12 of the SPR prescribes that ANSPs Annual Accounts shall comply, to the maximum extent possible, with International Financial Reporting Standards (IFRS). Table 1.2 shows the 24 ANSPs whose 2012 Annual Accounts were partly or fully prepared according to IFRS¹¹.

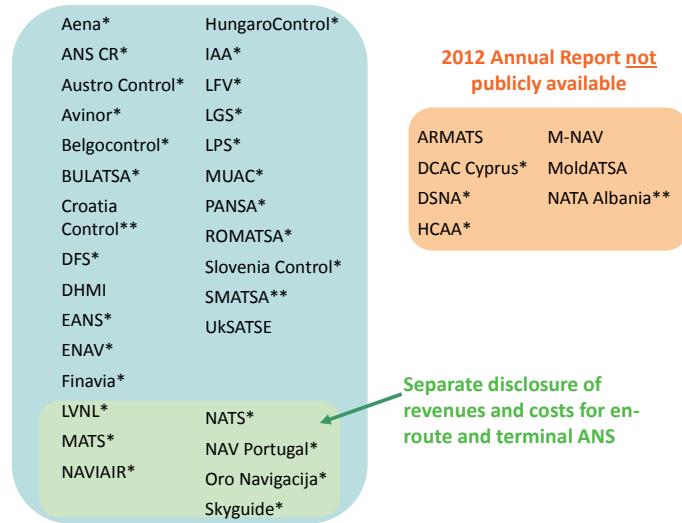


Figure 1.3: Status of 2012 Annual Reports

ANSPs reporting according to IFRS in 2012	
Aena	MATS
ARMATS	MUAC
ANS CR	NATA Albania
Austro Control	NATS
Avinor	NAVIAIR
BULATSA	NAV Portugal
Croatia Control	Oro Navigacija
DFS	PANSA
EANS	ROMATSA
LGS	Skyguide
LPS	SMATSA
LVNL	UKSATSE

Table 1.2: IFRS reporting status

⁸ In 2011, Aena went through a restructuration process relating to the separation of the airport division of Aena (creation of a new company Aena Aeropuertos S.A.) from the ANS department.

⁹ Although it should be noted that DHMI is not covered by the SES regulations.

¹⁰ At the time of writing this report, DSNA which released Annual Reports in the previous years, has not yet published an Annual Report for the year 2012.

¹¹ Skyguide Annual Accounts are prepared according to the Swiss GAAP which are close to IFRS.

It should be noted that in some cases, the implementation of IFRS may have a significant impact on an ANSPs' cost base¹² (such as different treatment of costs related to the pension scheme, and changes in depreciation rules), hence it is very important to identify and understand the impact of changes in the accounting principles used to draw the financial accounts.

1.6 ANSP benchmarking and the SES Performance Scheme

The SES Performance Scheme includes EU-wide performance targets which are transposed into binding national/FAB targets for which clear accountabilities must be assigned within performance plans. Following the PRB recommendations, EU-wide targets for Cost-Efficiency, Capacity and Environment were adopted by the EC on 3 December 2010 for RP1 (2012-2014). It should be noted that the EU-wide Cost-Efficiency target is expressed in terms of en-route determined costs per service unit, and is computed at Charging zone level (i.e. including ANSPs, MET, EUROCONTROL and NSAs costs).

The ACE factual and independent benchmarking has set the foundation for a normative analysis to quantify the potential scope of cost-efficiency improvements for ANSPs. Findings from the ACE Benchmarking analysis and the gathering of "intelligence" on ANSPs cost-efficiency performance directly feed three core processes of the SES Performance Scheme:

1. EU-wide cost-efficiency target setting;
2. Assessment of the cost-efficiency part of FABs/National Performance Plans; and,
3. Monitoring of the cost-efficiency performance during a Reference Period.

Figure 1.4 below presents the high level timeframe for the Union-wide target setting process for RP2. In September 2013, after an extensive public consultation, the PRB published recommendations to the EC for the Union-wide targets covering RP2 (2015-2019). ANSP benchmarking was one of the key evidences used to assess the scope for future performance improvements at Union-wide level and to build up the proposal for the Union-wide cost-efficiency targets. Union-wide performance targets for RP2 were adopted during the Single Sky Committee ad-hoc meeting held on the 4th February 2014.

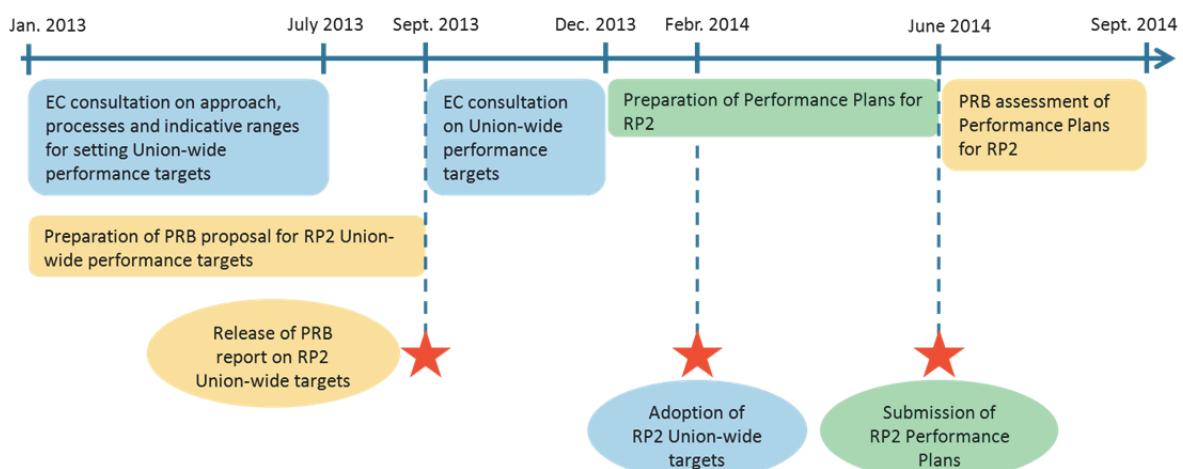


Figure 1.4: High level timeframe for RP2 Union-wide target setting process

As indicated in Figure 1.4 above, NSAs will draw up Performance Plans for RP2 during the first half of 2014. In this context, the information disclosed in Part II of the ACE 2012 Benchmarking Report

¹² From 2007 onwards, this has been the case for the German ANSP, DFS, whose cost base includes costs recognised only since the conversion to IFRS. These costs, mainly due to the revaluation of DFS pension obligations, have been spread over a period of 15 years.

(already available in the first draft released in December 2013) provided useful insight and information to interested parties, including the consultations of the Performance Plan with airspace users which are taking place between February and June 2014.

Another important milestone in the Union-wide cost-efficiency target setting process will be the assessment of Performance Plans for RP2 during the Summer 2014. The ACE 2012 data analysis will be an important input to be considered in this context.

For ANSPs operating in SES States, the year 2012 marks the start of RP1 and the end of the “full cost-recovery” mechanism for en-route ANS. Under the full cost-recovery mechanism, all the risks are borne by the airspace users. Moreover, it is considered that ANSPs are not sufficiently incentivised to deliver a better cost-efficiency performance since they have to return any over-recoveries, even if these are the result of cost-savings. Over RP1, SES States/ANSPs operate under the “determined costs” method which comprises specific risk-sharing arrangements aiming at incentivising ANSPs economic performance. The first year of RP1 can be considered as a “stress test” for the Performance Scheme since at Union-wide level actual traffic in terms of service units was some -6.5% lower than planned for 2012. The first PRB monitoring report on SES targets released in September 2013 showed that at Union-wide level, actual en-route costs were -3.3% than planned and therefore that SES States showed a certain degree of reactivity to adjust costs downwards in order to adapt to the lower traffic volumes.

This ACE 2012 Benchmarking Report complements the PRB monitoring activity by providing a detailed comparison of cost-effectiveness performance at ANSP level including a trend analysis of three main economic drivers (productivity, employment costs and support costs) over the 2009-2012 period.

PART I: PAN-EUROPEAN SYSTEM COST-EFFECTIVENESS PERFORMANCE IN 2012 AND OUTLOOK FOR 2013-2017

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2 PAN-EUROPEAN SYSTEM COST-EFFECTIVENESS PERFORMANCE IN 2012 WITH 2013-2017 OUTLOOK

The Pan-European ANS system analysed in this report comprises 37 participating ANSPs, excluding elements related to services provided to military operational air traffic (OAT), oceanic ANS, and landside airport management operations. The Pan-European ANS system also includes National Supervisory Authorities (NSAs) and other regulatory and governmental authorities, national MET providers and the EUROCONTROL Agency. In 2012, total ANS costs were around €9 200M (see Table 2.1 below), of which some €8 100M related directly to the provision of gate-to-gate ATM/CNS.

	2011	2012	12/11
	37 ANSPs	37 ANSPs	37 ANSPs
Gate-to-gate ANS revenues (not adjusted by over/under recoveries) (in € M):	9 176	8 915	-2.8%
<i>En-route ANS revenues</i>	7 287	7 025	-3.6%
<i>Terminal ANS revenues</i>	1 889	1 890	0.1%
Gate-to-gate ANS costs (in € M):	9 145	9 153	0.1%
<i>ATM/CNS provision costs</i>	8 078	8 059	-0.2%
<i>MET costs</i>	439	439	-0.1%
<i>Eurocontrol Agency costs</i>	469	489	4.3%
<i>Payment to national authorities and irrecoverable VAT</i>	159	167	4.5%
Gate-to-gate ATM/CNS costs (in € M):	8 078	8 059	-0.2%
<i>En-route ATM/CNS costs</i>	6 241	6 271	0.5%
<i>Terminal ATM/CNS costs</i>	1 837	1 788	-2.7%
Gate-to-gate ANS staff:	57 942	58 003	0.1%
<i>ATCOs in OPS</i>	17 208	17 362	0.9%
<i>ACC ATCOs</i>	9 573	9 709	1.4%
<i>APPs + TWRs ATCOs</i>	7 635	7 653	0.2%
NBV of gate-to-gate fixed assets (in € M)	7 759	7 612	-1.9%
Gate-to-gate capex (in € M)	1 052	1 075	2.2%
Outputs (in M)			
Distance controlled (km)	10 092	9 899	-1.9%
Total flight-hours controlled	14.5	14.2	-1.7%
ACC flight-hours controlled	12.8	12.7	-1.0%
IFR airport movements controlled	15.4	15.0	-2.4%
IFR flights controlled	9.8	9.5	-2.4%
Gate-to-gate ATFM delays ('000 min.)	17 823	10 610	-40.5%

Table 2.1: Key system data for 2011 and 2012, real terms

Total ANS revenues in 2012 amounted to some €8 900M. The European ANSPs employed some 58 000 staff, which is slightly larger than the workforce at Airbus worldwide (55 000 employees). Some 17 400 staff (30%) were ATCOs working on operational duty, compared to some 13 300 in the United States¹³. On average, 2.3 additional staff are required for every ATCO in OPS in Europe.

ACE also analyses indicators derived from ANSP balance sheets and capital expenditures. The total Net Book Value (NBV) of fixed assets used by the Pan-European ANSPs to provide ATM/CNS services is valued at some €7 600M, which means that overall €0.85 of fixed assets are required to generate €1 of revenue, an indication of relative capital intensity (this ratio is about 2 for airlines and about 3 for main airports operators). Fixed assets mainly relate to ATM/CNS

¹³ See the PRC report on the U.S.-Europe continental comparison of ANS cost-efficiency trends 2002-2011 (November 2013) available at <http://www.eurocontrol.int/publications/2002-2011-US-europe-continental-comparison-ans-cost-efficiency-trends>.

systems and equipment in operation or under construction. In 2012, the total ANSP capex at Pan-European system level amounted to some €1 100M.

2012	
Gate-to-gate ANS costs (European level) ~€9 153M	
En-route ANS costs (European level)	Terminal ANS costs (European level)
ATM/CNS ~€6 271M	ATM/CNS ~€1 788M
MET ~€348M	MET ~€91M
Payment to regulatory & governmental authorities ~€144M	Payment to regulatory & governmental authorities ~€22M
EUROCONTROL ~€489M	

Figure 2.1: Breakdown of ATM/CNS provision costs, 2012

From a methodological point of view, ACE 2012 first considers the total costs at State level for providing ANS, however, since some elements of ANS provision are outside the control of individual ANSPs, it then focuses on the specific costs of providing gate-to-gate ATM/CNS (€8 059M). These represent 88% of total ANS costs. Other ANS costs include the costs of aeronautical meteorology services (5%), the costs of the EUROCONTROL Agency (5%) and the costs associated to regulatory and governmental authorities (2%).

Table 2.1 above indicates that while ATM/CNS provision costs remained fairly constant (-0.2%) in 2012, EUROCONTROL costs increased by +4.3%. It should be noted that the level of 2011 EUROCONTROL costs was exceptionally low reflecting the impact of a one-off exceptional reduction (€62M) mainly relating to the implementation of IFRS budgeting.

Despite the existence of common general principles, there are inevitably discrepancies in cost-allocation between en-route and terminal ANS across the European ANSPs. This lack of consistency might distort performance comparisons carried out separately for en-route and terminal ANS. For this reason, the focus of the cost-effectiveness benchmarking analysis in this report is “gate-to-gate” ANS.

ANSPs’ ATM/CNS provision costs are then divided by an output metric to obtain a measure of performance – the **financial cost-effectiveness indicator**. The output metric is the composite flight-hour, a “gate-to-gate” measure which combines both en-route flight-hours controlled and IFR airport movements controlled.

Many factors contribute to observed differences in unit costs between ANSPs. Some of these factors are measurable; others (such as regulatory constraints) are less obviously quantifiable. Currently, three relevant factors that are outside ANSPs control are consistently measured in the ACE Benchmarking Reports. As shown in Figure 2.2 below, these include the traffic complexity and the seasonal traffic variability. The third factor is the cost of living prevailing in the different countries where ANSPs operate.

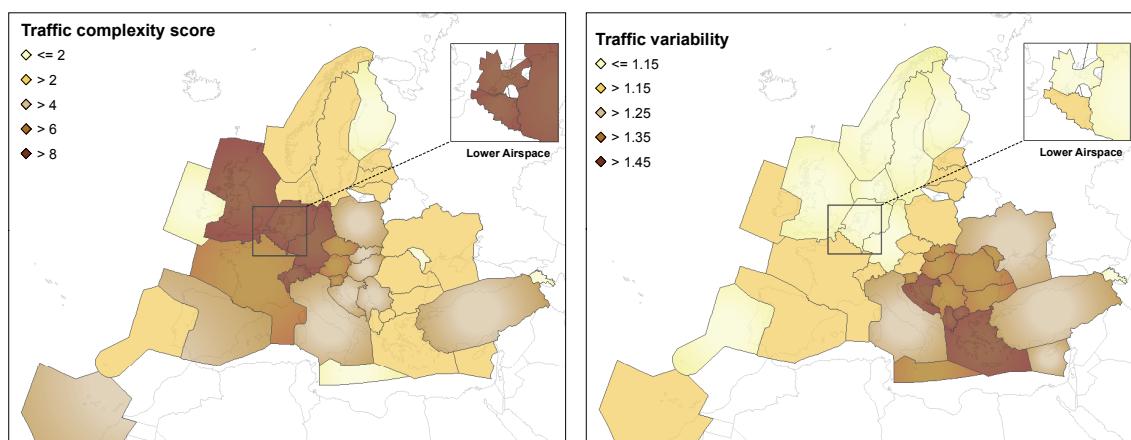


Figure 2.2: Exogenous factors measured by the PRU, 2012

Ideally, since the 37 ANSPs operate in very diverse environments across Europe, all the factors affecting performance should be taken into account in making fair performance comparisons, especially since many of these factors are outside the direct control of an ANSP. As in previous years, the analysis undertaken is a purely **factual** analysis of the cost-effectiveness indicators – measuring what the indicators **are**.

Around 56% total European gate-to-gate ATM/CNS provision costs are borne by five ANSPs (Aena, DFS, DSNA, ENAV and NATS).

The impact of size on ANSPs performance is an important policy issue given the infrastructure characteristics of the ANS sector.

The five largest ANSPs bear some 56% of total European gate-to-gate ATM/CNS provision costs, while their share of traffic is 51%. At first sight, this result contrasts with the expectation of some form of increasing returns to scale in the provision of ANS (the performance of larger ANSPs might benefit from their larger size).

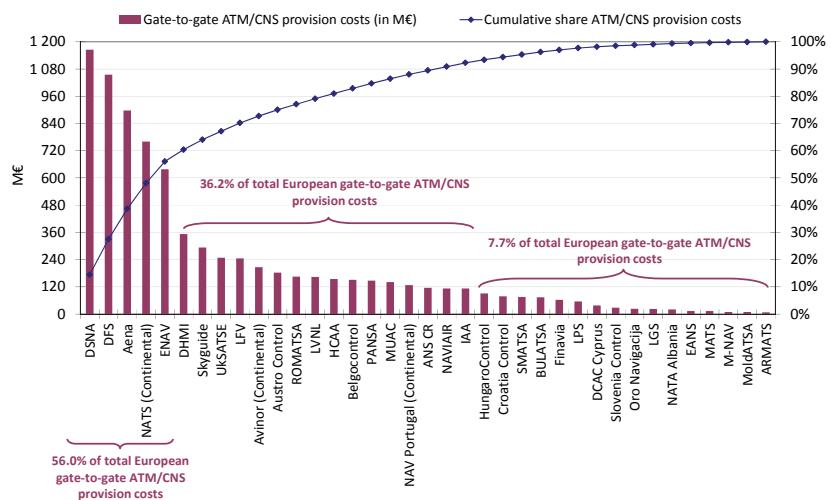


Figure 2.3: Distribution of ATM/CNS provision costs in 2012

It should be noted that:

- Under the full cost recovery regime that applied to most ANSPs until December 2011, there was little incentive to fully exploit scale effects, hence the difficulty to observe them;
- Larger ANSPs tend to develop bespoke ATM systems internally which can be more costly than a commercial off-the-shelf (COTS) solution; and,
- Size is not the only factor that has an impact on ANSPs costs.

It is expected that with the regulatory regime introduced by the SES II Performance Scheme and the incentive scheme embedded in the Charging Scheme regulation, ANSPs will have stronger incentives to exploit scale effects in future years.

Because of their weight in the Pan-European system and their relatively similar operational and economic characteristics (size, scope of service provided, economic conditions, presence of major hubs), this ACE report places a particular focus on the results of the five largest ANSPs (Aena, DFS, DSNA, ENAV and NATS).

In 2012, the slight increase in unit ATM/CNS provision costs was more than compensated by a substantial decrease in ATFM delays. As a result, 2012 unit economic costs were substantially lower than pre-recession levels in 2008.

An assessment of ANS performance should take into account the direct costs (user charges) and indirect costs (delays, additional flight time and fuel burn) borne by airspace users, while checking that ANS safety standards are met.

The PRC introduced in its ACE Benchmarking Reports the concept of economic cost-effectiveness KPI. This indicator is defined as gate-to-gate ATM/CNS provision costs plus the costs of ground

ATFM delays¹⁴ 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.

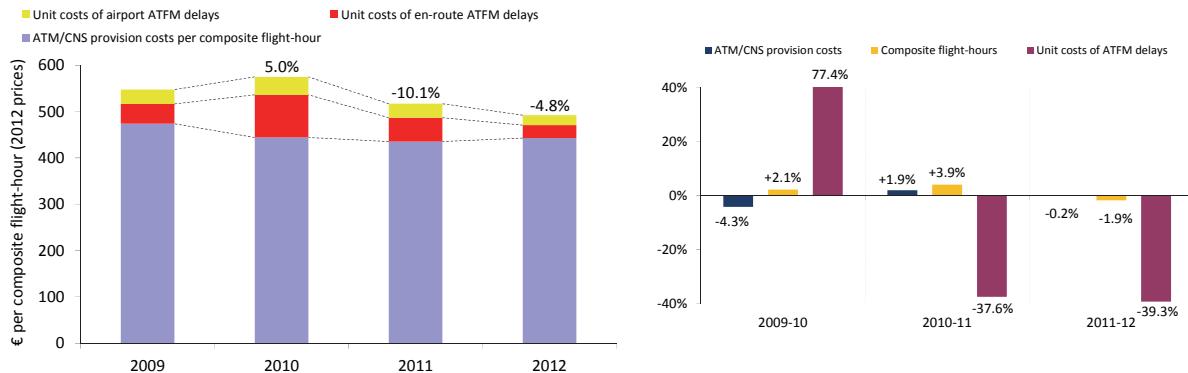


Figure 2.4: Changes in unit economic costs, 2009-2012 (real terms)

The level of the unit economic costs in 2009 reflects the substantial impact of the economic recession on the ATM industry, when composite flight-hours sharply reduced by -6.7% compared to 2008 and ATM/CNS provision costs rose by +1.3%.

In 2010, composite flight-hours rose by +2.1% while ATM/CNS provision costs fell by -4.3% in real terms. The reduction in ATM/CNS provision costs reflected the impact of cost-containment measures implemented by several European ANSPs. However, this performance improvement at system level was outweighed by a sharp increase in the unit costs of ATFM delays for a limited number of ANSPs and overall, unit economic costs rose by +5.0% in 2010.

In 2011, composite flight-hours increased faster (+3.9%) than ATM/CNS provision costs (+1.9%), resulting in a -2.0% decrease in unit ATM/CNS provision costs compared to 2010. In addition, since the unit costs of ATFM delays significantly reduced (-37.6%), unit economic costs substantially decreased in 2011 (-10.1%).

In 2012, ATM/CNS provision costs remained fairly constant (-0.2%) while composite flight-hours decreased by -1.9%, resulting in an increase in unit ATM/CNS provision costs (+1.7%) compared to 2011. In the meantime, for the second year in a row, the unit costs of ATFM delays significantly fell (-39.3%) contributing to the substantial decrease in unit economic costs observed in 2012 (-4.8%). As a result, unit economic costs amounted to €492 in 2012. This is lower than the level achieved before the economic crisis (i.e. unit economic costs amounted to €544 in 2008).

Figure 2.5 below shows that between 2011 and 2012, economic gate-to-gate costs per composite flight-hour fell for 20 ANSPs. For ten of these ANSPs, the main driver for the decrease in economic gate-to-gate unit cost was a reduction in ATFM delays (see red portion of the bar). This is particularly the case for Aena, HCAA and NATA Albania.

¹⁴ The cost of ATFM delays (€85 per minute in 2012) is based on the findings of the study “European airline delay cost reference values” realised by the University of Westminster in March 2011. Further details on the computation of the economic costs per composite flight-hour at ANSP and Pan-European system level are available in Annex 2 of this report.

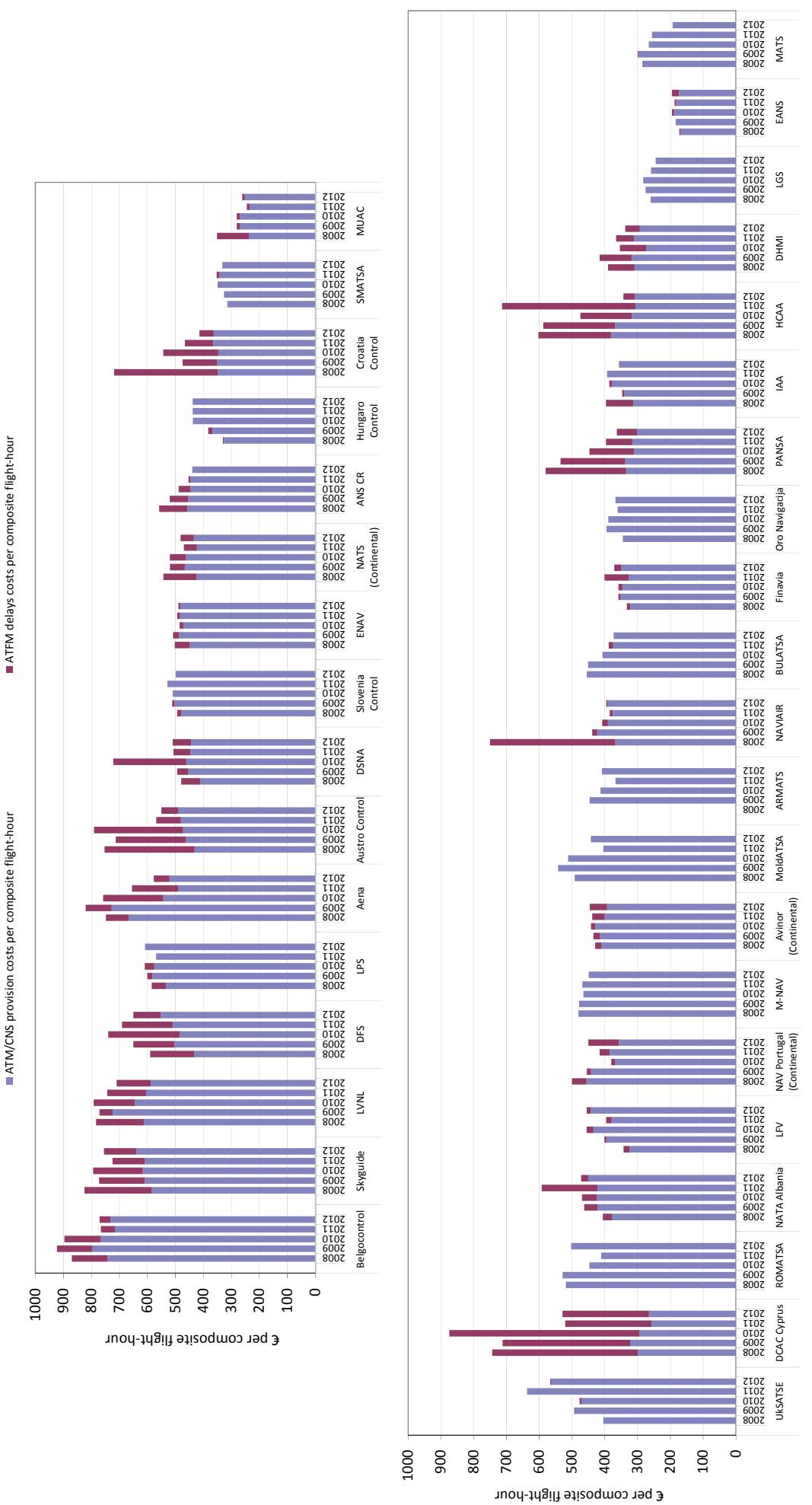


Figure 2.5: Changes in economic cost-effectiveness by ANSP, 2009-2012 (real terms)

The quality of service improvement observed for Aena mainly reflects a substantial reduction of the en-route ATFM delays generated by the Spanish ACCs. In 2011, ATFM delays represented 25% of Aena economic costs which was substantially higher than the Pan-European system average (16%). These ATFM delays were partly due to (a) social tensions following the transition period that was ongoing Spain in 2010 and 2011, and (b) to the unexpected impact of the Arab Spring events on the traffic demand which exceeded the capacity available (i.e. this was particularly the case for Barcelona, Palma and Canarias ACCs). In 2012, the share of ATFM delays in Aena unit economic costs reduced to a level (10%) close to those observed in 2008 and 2009. This is an indication that the capacity issues observed for Aena in 2010 and 2011 have been addressed in 2012.

The substantial reduction in ATFM delays for HCAA contributed to the decrease observed at Pan-European system level. The share of ATFM delays in HCAA economic costs was exceptionally high in 2011 (57%) mainly due to social tensions. In 2012, it appears that this issue was addressed since the share of ATFM delays in HCAA economic costs reduced to 10% in line with the Pan-European system average.

On the other hand, for two ANSPs (DCAC Cyprus and NAV Portugal) the share of ATFM delays in economic costs accounts for more than 20% in 2012. DCAC Cyprus has had recurrent ATC capacity issues for several years. The implementation of capacity enhancement measures contributed to reduce ATFM delays in 2011-2012 compared to previous years. However, it should be noted that the share of ATFM delays in DCAC Cyprus unit economic costs remains very high at some 50% in 2012. The higher unit costs of ATFM delays for NAV Portugal in 2012 mainly reflect an increase in ATFM delays in the last months of the year mainly due to ATC staffing issues.

There is a wide range of unit ATM/CNS provision costs amongst ANSPs in 2012.

In 2012, unit ATM/CNS provision costs range from €732 (Belgocontrol) to €174 (EANS), a factor greater than four. Although the five largest ANSPs operate in relatively similar economic and operational environments, there is a substantial variation in unit ATM/CNS provision costs, ranging from DFS (€552) to NATS (€434).

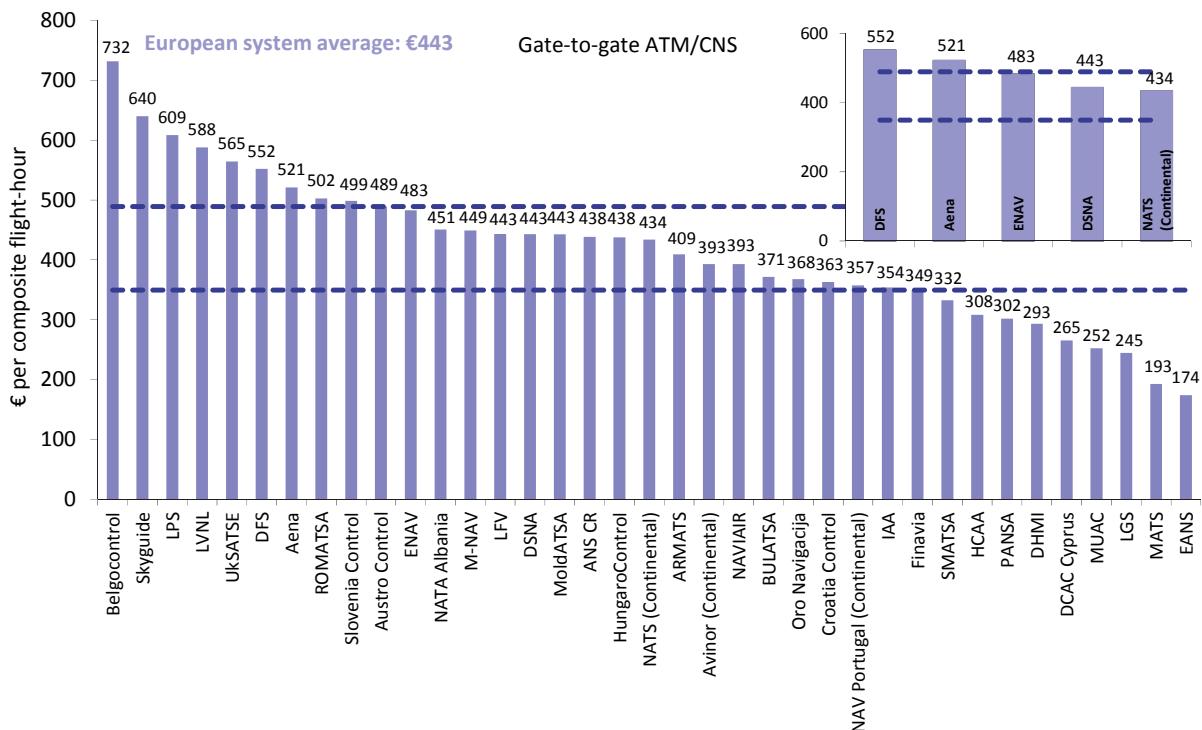


Figure 2.6: ATM/CNS provision costs per composite flight-hour, 2012

Belgocontrol and LVNL are amongst the ANSPs with the highest unit costs, ranking first and fourth in Figure 2.6 above. It should be noted that both ANSPs exclusively provide ATC services in lower airspace and own infrastructure which is made available to MUAC. To better assess the cost-effectiveness of ATM/CNS provided in each of the Four States (Belgium, Germany, the Netherlands, and Luxembourg) national airspaces, MUAC costs and outputs are consolidated with the costs and outputs of the national providers. This adjustment is presented in Figure 2.7 below.

The bottom of Figure 2.7 shows the figures which have been used for this “adjustment”. The costs figures are based on the cost allocation keys used to establish the Four States cost-base, while the flight-hours are based on those controlled by MUAC in the three FIRs (Belgium, Netherlands and Germany).

The top of Figure 2.7 provides a view of this consolidated ATM/CNS provision costs per composite flight-hour in the airspace of Belgium, the Netherlands and Germany (see blue bars).

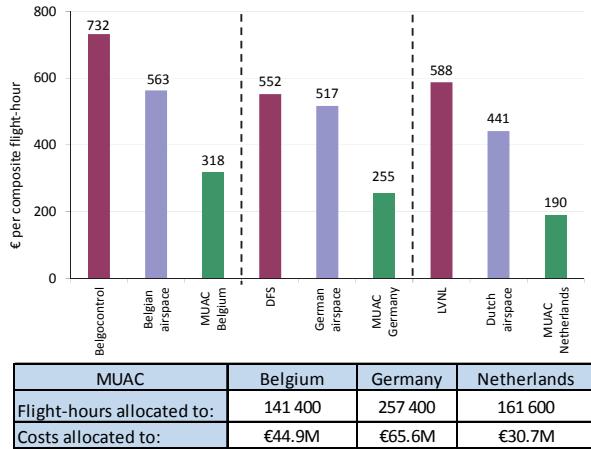


Figure 2.7: Adjustment of the financial cost-effectiveness indicator for ANSPs operating in the Four States airspace, 2012

Figure 2.6 indicates that in 2012 the unit ATM/CNS provision costs of various ANSPs operating in Central and Eastern European countries (e.g. LPS, UkSATSE, ROMATSA, Slovenia Control, NATA Albania and M-NAV) are higher than the Pan-European system average and in the same order of magnitude as the unit costs of ANSPs operating in Western European countries where the cost of living is much higher. For most of these ANSPs, the relatively higher unit costs mainly reflect relatively lower ATCO-hour productivity (see Figure 2.15 on p.24) and/or relatively higher unit support costs (see Figure 2.26 on p.33).

In 2012, 22 ANSPs could reduce ATM/CNS provision costs compared to 2011 actuals, most of them in a context of traffic decrease. This shows a certain degree of reactivity in adjusting costs downwards in order to adapt to the lower traffic volumes.

At Pan-European system level, the unit ATM/CNS provision costs reduced by -6.6% compared to 2009 and amount to €443 in 2012. This indicates that three years after the sharp traffic decrease experienced in 2009, unit ATM/CNS provision costs reached in 2012 a level close to that achieved before the economic crisis (i.e. €436 in 2008).

Figure 2.8 provides a detailed analysis of the changes in cost-effectiveness at ANSP level between 2011 and 2012, identifying the cost and the traffic effects. Figure 2.8 shows that 22 ANSPs could reduce their ATM/CNS provision costs between 2011 and 2012 (see lower part of the chart). For 18 ANSPs, the lower ATM/CNS costs were associated with a reduction in traffic volumes. In most of the cases, the reduction in ATM/CNS provision costs could compensate for the fall in traffic and therefore these ANSPs could avoid an increase in unit costs. At face value, this indicates for these ANSPs a certain degree of reactivity in adjusting costs downwards in a context of traffic decrease.

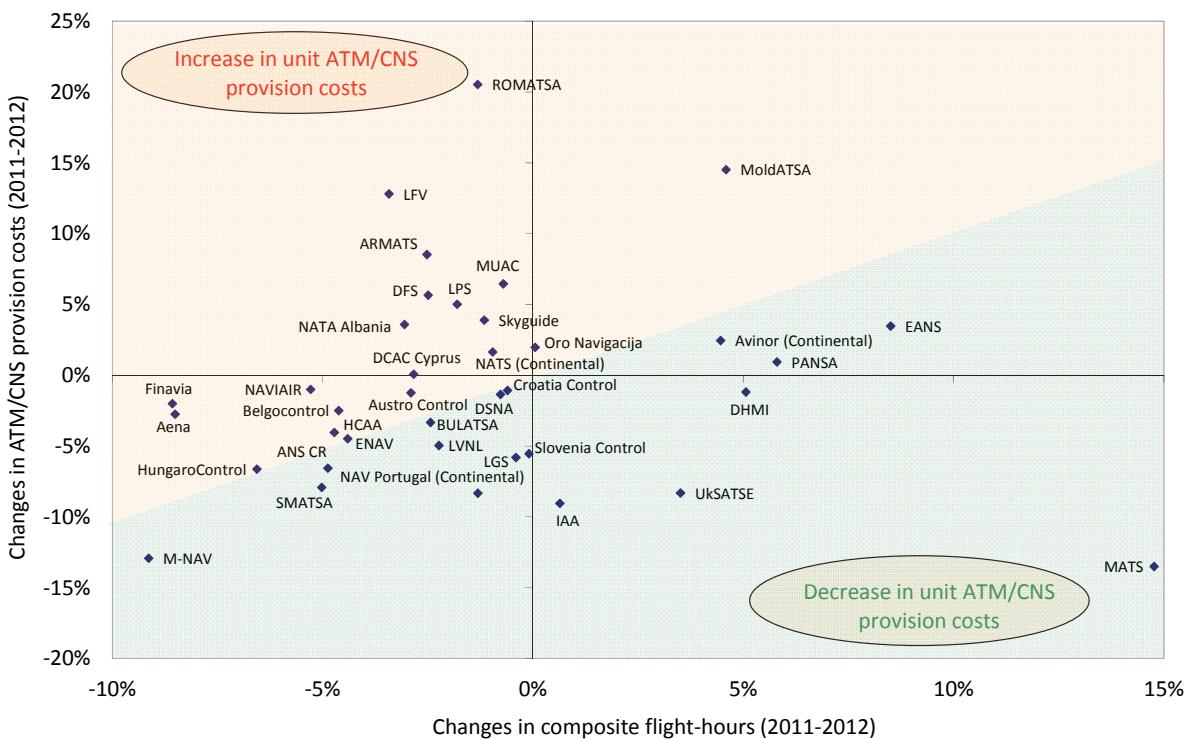


Figure 2.8: Changes in ATM/CNS provision costs and traffic volumes, 2011-2012 (real terms)

Figure 2.8 also shows that four ANSPs (DHMI, IAA, MATS and UKSATSE) could reduce ATM/CNS provision costs in a context of traffic increase in 2012.

Out of the five largest ANSPs, Aena (-2.8%), ENAV (-4.5%) and DSNA (-1.4%) could achieve a reduction in ATM/CNS provision costs in 2012 in a context of traffic decrease (-8.5%, -4.4% and -0.8%, respectively). For Aena, this performance improvement was not sufficient to avoid an increase in unit ATM/CNS provision costs in 2012 (+6.3%). In 2012, unit costs also increased for DFS (+8.3%) and NATS (+2.6%). For DFS, the increase in unit costs reflects an increase in ATM/CNS provision costs (+5.6%) mainly due to higher staff costs (+10% or +€63.8M) while traffic decreased by -2.5%. The increase in DFS staff costs observed for the year 2012 mainly reflects (a) an increase in pension costs consecutive to a change in the discount rate for occupational pensions, and (b) higher gross wages and salaries reflecting the collective agreements signed in October 2011. For NATS, the increase in unit ATM/CNS provision costs mainly results from higher ATM/CNS provision costs (+1.6%), and in particular higher depreciation costs (+19%) while traffic decreased by -1.0%. The higher depreciation costs for NATS in 2012 mainly reflect the first full year of depreciation of iFACTS and the implementation of the Electronic Flight Data feature in the FDP system.

Figure 2.8 also indicates that between 2011 and 2012, ATM/CNS provision costs increased by more than +5.0% for six ANSPs (including DFS):

- For MUAC, the increase in ATM/CNS provision costs (+6.4%) mainly reflects higher staff costs which are due to (a) the payment of a bonus to the staff for achieving performance objectives, and (b) to retroactive salary adjustments according to IAS.
- The increase in ATM/CNS provision costs for MoldATSA (+14.5%) is due to higher operating costs and depreciation costs while traffic increased by +4.6%.
- For ARMATS, ATM/CNS provision costs substantially increased in 2012 (+8.5%) while traffic volumes reduced by -2.5%. The rise in ATM/CNS provision costs mainly reflects higher staff costs and capital-related costs.

- The significant increase in ROMATSA 2012 gate-to-gate ATM/CNS provision costs (+20.5%) mainly reflects the reporting of exceptional costs relating to a provision for employee benefits. Excluding those exceptional costs, ROMATSA 2012 ATM/CNS provision costs would have remained fairly constant (+0.2%) compared to 2011.
- LFV ATM/CNS provision costs rose by +12.8% in 2012 while traffic fell by -3.4%. The increase in LFV ATM/CNS provision costs mainly reflects significantly higher pension related costs associated with the increase of future pension obligations.

More details on the changes in unit ATM/CNS provision costs for individual ANSPs are provided in Part II of this Report.

In a context of lower traffic growth than expected, actual 2012 ATM/CNS provision costs are some -3% lower than planned in November 2011. This is also the case for most of the SES ANSPs: an indication that the financial incentives embedded within the charging scheme already provided some results for the first year of RP1.

Another complementary analysis to assess the degree of ANSPs reactivity to adjust costs downwards in response to the decrease in traffic is to compare the actual 2012 ATM/CNS provision costs with the plans prepared in November 2011 (and reported as part of the ACE 2010 data cycle)¹⁵. For the years 2012-2014 which correspond to the SES Performance Scheme RP1, the costs and traffic information provided in ACE 2010 by the ANSPs operating in SES States is in line with the information disclosed in adopted National Performance Plans.

Table 2.2 indicates that in 2012, the actual number of composite flight-hours is -5.1% lower than planned in ACE 2010 (November 2011). Table 2.2 also shows that actual 2012 ATM/CNS provision costs are -€235M (or -3.1%) lower than planned, which is a noteworthy achievement for the ANS industry, although this was not sufficient to compensate for the lower traffic and therefore to avoid higher than planned unit ATM/CNS provision costs (+2.1%).

European system level	2012
Planned composite flight-hours in Nov. 2011 (M)	17.3
Actual composite flight-hours (M)	16.5
Difference between actual and planned composite flight-hours (%)	-5.1%
Planned ATM/CNS provision costs in Nov. 2011 (M€2012)	7 533
Actual ATM/CNS provision costs (M€2012)	7 298
Difference between actual and planned costs (M€2012)	-235
Difference between actual and planned costs (%)	-3.1%

Table 2.2: Comparison of ATM/CNS provision costs and composite flight-hours at system level (figures provided in Nov. 2011 versus actual data) (€2012)

Figure 2.9 below shows that for 30 ANSPs, the actual 2012 traffic was lower than planned in November 2011. For eight ANSPs, the actual 2012 traffic was at least -10% below ACE 2010 plans. It should be noted that in November 2011 some of these ANSPs planned for a rather optimistic traffic growth which did not materialise in 2012. This is the case for Croatia Control which expected a traffic increase of +10% in 2012.

For MATS, the actual 2012 traffic was +49.2% higher than planned in November 2011. This substantial deviation is due to the fact that in 2012, following the civil war, part of Libyan airspace was closed and flights that used to cross from East to West through the Libyan airspace were passing through the airspace controlled by MATS.

¹⁵ Note that the planned en-route costs provided by NATS in its ACE 2010 submission reflect the figures reported in the UK Performance Plan for RP1. This is different from the methodology used by NATS to report historic and actual ATM/CNS provision costs which are based on IFRS accounting. For this reason, NATS is not included in this analysis.



Figure 2.9: Comparison of 2012 actual ATM/CNS provision costs and traffic with ACE 2010 plans (real terms)

Figure 2.9 shows that for 28 ANSPs, actual 2012 costs were lower than planned in November 2011. Among the five largest ANSPs, 2012 actual costs were lower than planned for Aena (-6.6%), DSNA (-4.8%) and ENAV (-9.4%). Given their weight in the European system, these ANSPs significantly contributed to reduce actual 2012 ATM/CNS provision costs by -3.1% compared to ACE 2010 plans. On the other hand, DFS 2012 actual costs were slightly higher than planned (i.e. +1.1%).

For six ANSPs, 2012 actual costs are more than -10% lower than planned in November 2011 (i.e. MATS (-24.4%), M-NAV (-17.7%), DCAC Cyprus (-16.9%), IAA (-10.6%), DHMI (-10.6%) and NATA Albania (-10.2%). It should be noted, however, that these ANSPs (except DCAC Cyprus and M-NAV) were planning for significant costs increases compared to their 2010 levels.

The right hand side of Figure 2.9 shows that for eight ANSPs, actual 2012 costs were higher than planned in November 2011. For four of them, NAV Portugal (+6.2%), ROMATSA (+9.6%), LFV (+13.7%) and UKSATSE (+22.9%) actual costs were more than +5% higher than planned.

For ANSPs operating in SES States, the year 2012 marks the start of RP1 with the determined costs "method" and the end of the "full cost-recovery" mechanism for en-route ANS. Figure 2.9 shows that for most of the SES ANSPs, ATM/CNS provision costs are lower than planned in November 2011 plans. This is an indication that the financial incentives embedded within the charging scheme already provided some results for the first year of RP1.

At Pan-European system level, ATCO-employment costs increased while productivity remained fairly constant and unit support costs rose in a context of traffic decrease. As a result, financial cost-effectiveness performance slightly deteriorated in 2012.

In 2012 at Pan-European system level, the average ATM/CNS provision cost per composite flight-hour is €443. Figure 2.10 shows the analytical framework which is used in the ACE analysis to break down the financial cost-effectiveness indicator into basic economic drivers.

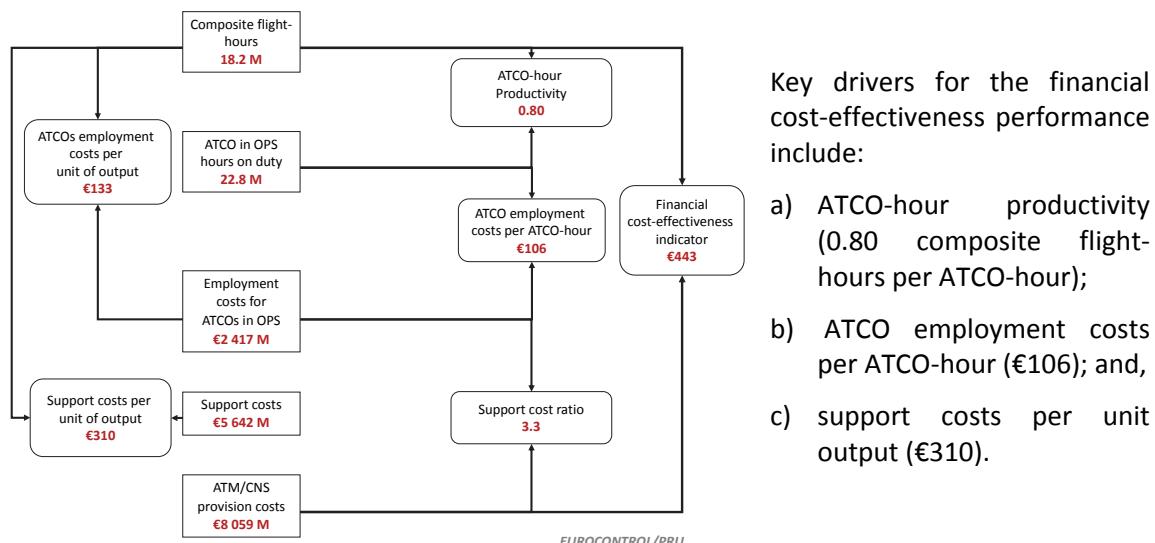


Figure 2.10: ACE performance framework, 2012

Around 30% of ATM/CNS provision directly relates to ATCOs in OPS employment costs while 70% relate to “support” functions including non ATCOs in OPS employment costs, non-staff operating costs and capital related costs such as depreciation costs and the cost of capital.

At system level, unit ATM/CNS provision costs rose by +1.7% in real terms between 2011 and 2012. Figure 2.11 shows that in 2012, employment costs per ATCO-hour rose by +1.3% while ATCO-hour productivity remained fairly constant (+0.3%). In the meantime, unit support costs rose by +2.0% mainly reflecting the fact that at Pan-European system level support costs were not adjusted downwards compared to 2011 (+0.1%) while the number of composite flight-hours reduced by -1.9%.

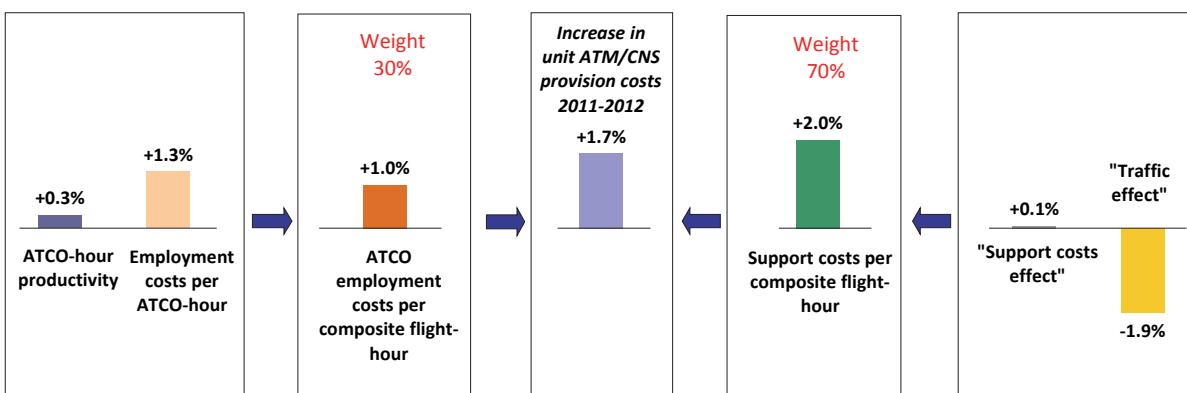


Figure 2.11: Changes in the financial cost-effectiveness indicator, 2011-2012 (real terms)

A detailed analysis of the changes in the key drivers of cost-effectiveness between 2009 and 2012 is provided hereafter.

Overall, in 2012 Pan-European ANSPs could limit the impact of the traffic decrease on productivity through a more effective use of available ATC capacity and existing resources.

Over the four years period (2009-2012), ATCO-hour productivity rose by +10.1% at Pan-European system level. Figure 2.12 indicates that starting from a low base in 2009 (reflecting the fall in traffic which resulted from the economic recession), ATCO-hour productivity substantially increased for two consecutive years (+6.7% in 2010 and +2.9% in 2011) and remained fairly constant in 2012 (+0.3%).

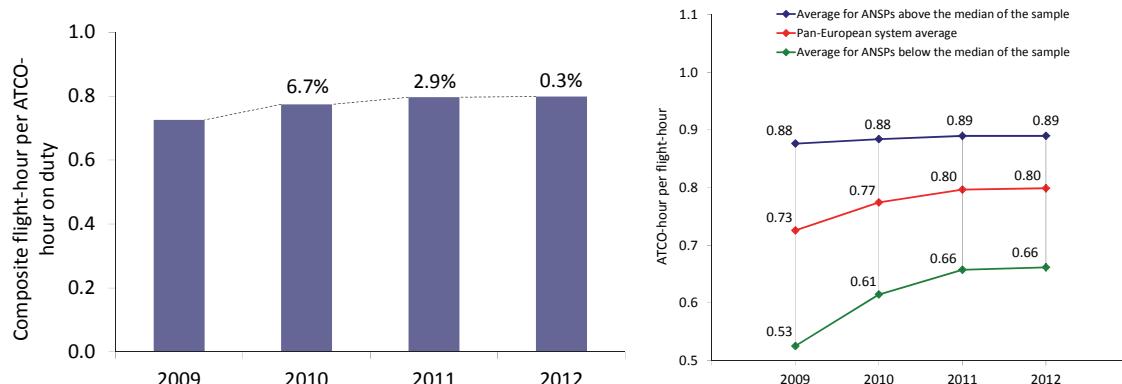


Figure 2.12: Changes in ATCO-hour productivity, 2009-2012

The increases in ATCO-hour productivity observed at Pan-European system level over the 2009-2012 period mainly reflect improvements in ANSPs with relatively lower ATCO-hour productivity levels (see green line in the right-hand chart of Figure 2.12), while the ATCO-hour productivity of ANSPs with higher productivity levels remained relatively constant.

Strong productivity increases were mainly achieved by Central and Eastern Europe ANSPs benefiting from higher traffic growth. However, significant improvements in productivity were also achieved by some ANSPs which started from a higher base in 2009 (e.g. IAA).

At Pan-European system level, the increase in productivity achieved between 2009 and 2012 (+10.1%) is mainly due to the fact that the overall traffic increase (+4.1%) was absorbed with substantially fewer ATCO-hours on duty (-5.4%).

Figure 2.13 shows that the reduction of ATCO-hours on duty between 2009 and 2012 is mainly driven by a significant decrease in overtime hours (-72.0%) over the whole period.

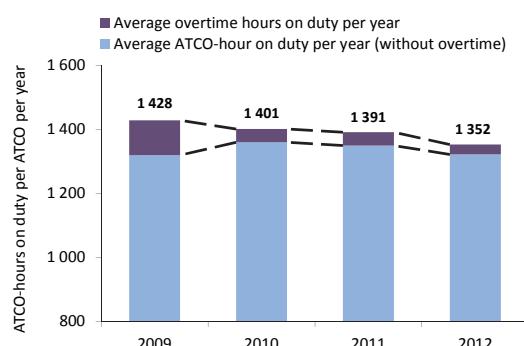
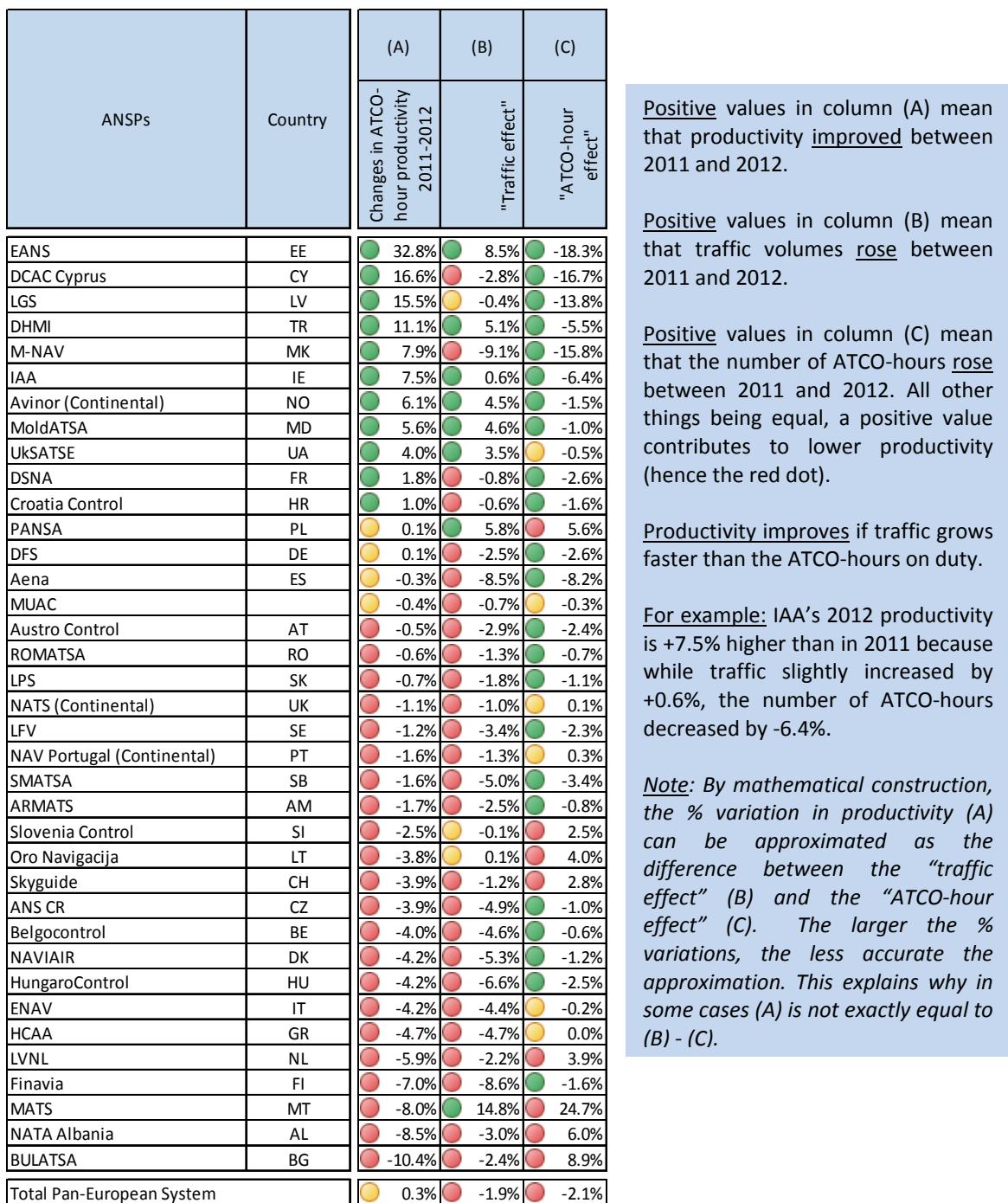


Figure 2.13: Changes in average ATCO-hours on duty, 2009-2012

These results are heavily influenced by the structural changes implemented in 2010-2011 by Aena following the introduction of Law 9/2010 which was adopted in Spain in 2010. This law introduced new working conditions for Spanish ATCOs, rising contractual working hours and significantly reducing the number of overtime hours, which was one of the main driver for high ATCO employment costs and relatively lower productivity for Aena in the past. Indeed, between 2009 and 2012, Aena ATCO-hour productivity substantially increased from 0.52 to 0.78 (+50%).

In addition, as shown in Figure 2.14 below, 26 out of 37 ANSPs could reduce ATCO-hours on duty in 2012. This indicates that overall, in 2012 Pan-European ANSPs could limit the impact of the traffic

decrease on productivity through a more effective use of available ATC capacity and existing resources.



Positive values in column (A) mean that productivity improved between 2011 and 2012.

Positive values in column (B) mean that traffic volumes rose between 2011 and 2012.

Positive values in column (C) mean that the number of ATCO-hours rose between 2011 and 2012. All other things being equal, a positive value contributes to lower productivity (hence the red dot).

Productivity improves if traffic grows faster than the ATCO-hours on duty.

For example: IAA's 2012 productivity is +7.5% higher than in 2011 because while traffic slightly increased by +0.6%, the number of ATCO-hours decreased by -6.4%.

Note: By mathematical construction, the % variation in productivity (A) can be approximated as the difference between the "traffic effect" (B) and the "ATCO-hour effect" (C). The larger the % variations, the less accurate the approximation. This explains why in some cases (A) is not exactly equal to (B) - (C).

Figure 2.14: Annual changes in ATCO-hour productivity, composite flight-hours and ATCO-hours on duty, 2011-2012

In 2012, the ATCO-hour productivity of the Pan-European system as a whole amounted to 0.80 composite flight-hours per ATCO-hour. The ATCO-hour productivity for each ANSP in 2012 is shown in Figure 2.15 below. It is important to note that the metric of ATCO-hour productivity used in this report reflects the average productivity during a year for a given ANSP and does not give an indication of the productivity at peak times which can be substantially higher.

There is a wide range of ATCO-hour productivity among ANSPs. The ANSP with the highest ATCO-hour productivity is MUAC (1.94), which only provides ATC services in upper airspace, while the

ANSP with the lowest ATCO-hour productivity is ARMATS (0.19), i.e. one of the smallest ANSPs in terms of traffic volumes.

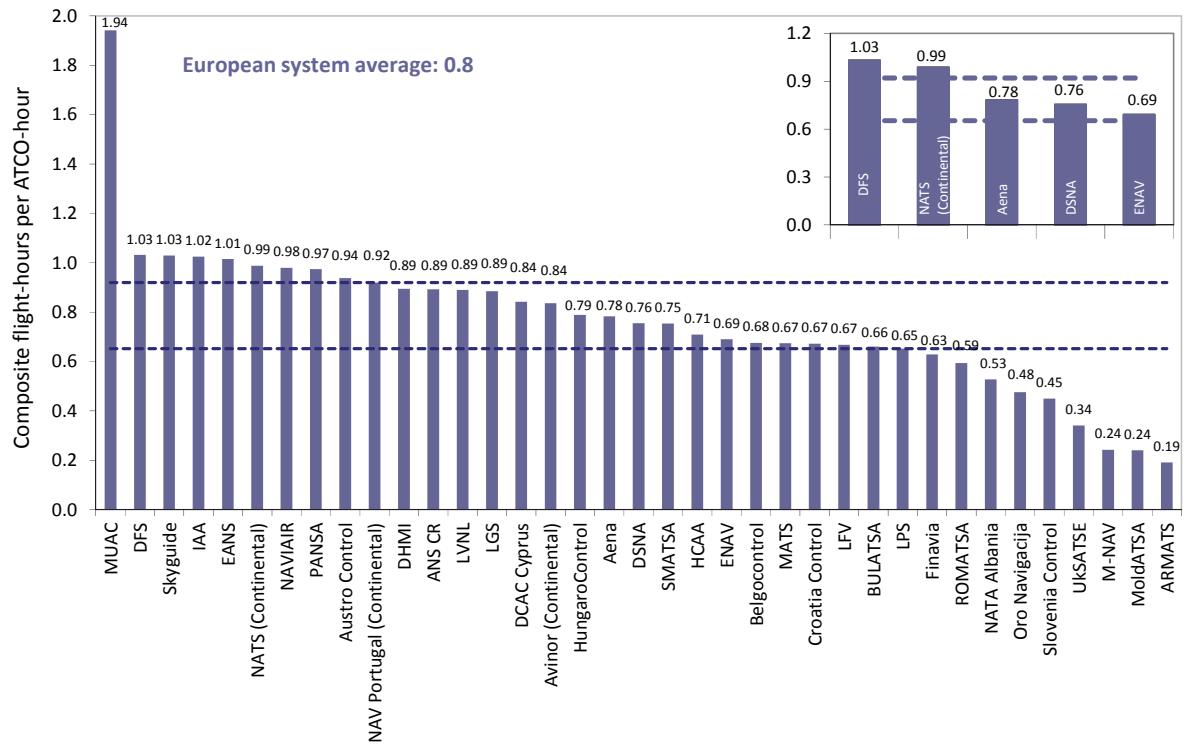


Figure 2.15: ATCO-hour productivity (gate-to-gate), 2012

Figure 2.15 also indicates that there are substantial differences in ATCO-hour productivity even among the five largest ANSPs. Indeed, DFS ATCO-hour productivity (1.03) is some +49% higher than that of ENAV (0.69).

It is important to mention that significant gains in cost-effectiveness could be achieved if the European average productivity (0.80) was raised to the level of the top quartile in Figure 2.15 (0.92). Most of the ANSPs that achieve or are close to top quartile ATCO-hour productivity (ANS CR, Austro Control, DFS, LVNL, MUAC, NATS and Skyguide) are among the ANSPs with the most complex traffic. On the other hand, ARMATS, M-NAV, MoldATSA and UKSATSE, which belong to the ANSPs with the least complex traffic (see Figure 2.2), show an ATCO-hour productivity which is lower than the bottom quartile. Low productivity in some of these ANSPs may be a consequence of their small size, and the consequent difficulty in adapting their available ATC capacity and existing infrastructure to low traffic volumes and high seasonal variability.

Improvements in ATCO-hour productivity can result from more effective OPS room management and by making a better use of existing resources, for example through the adaptation of rosters (preferably individually based to enhance flexibility) and shift times, effective management of overtime, and through the adaptation of sector opening times to traffic demand patterns. Similarly, advanced ATM system functionalities and procedures are drivers for productivity improvements. It is also expected that SES tools such as FABs, the Network Manager, the performance scheme and the technological pillar (SESAR) contribute to increase ATCO productivity by a significant factor while ensuring safety standards.

Latest forecasts indicate that traffic volumes are not expected to be above 2008 levels before 2016. For this reason, there should be an opportunity to maintain the overall amount of ATCO-hours at Pan-European system level and, all else equal, increase ATCO-hour productivity without significantly affecting the quality of service provided and without implementing massive investment programmes.

More details on the changes in ATCO-hour productivity for individual ANSPs are provided in Part II of this Report.

ATCO-hour productivity measured at ANSP level reflects an average performance, which can hide large differences among ACCs even for those operating in the same country/ANSP. It is therefore important to analyse and compare productivity at ACC level.

In Figure 2.16, the 63 ACCs part of the ACE 2012 data analysis are grouped in clusters based on three operational characteristics: (1) their complexity scores, (2) the average used flight levels, and (3) their number of sectors. More information on the definition of these clusters can be found in previous ACE reports¹⁶.

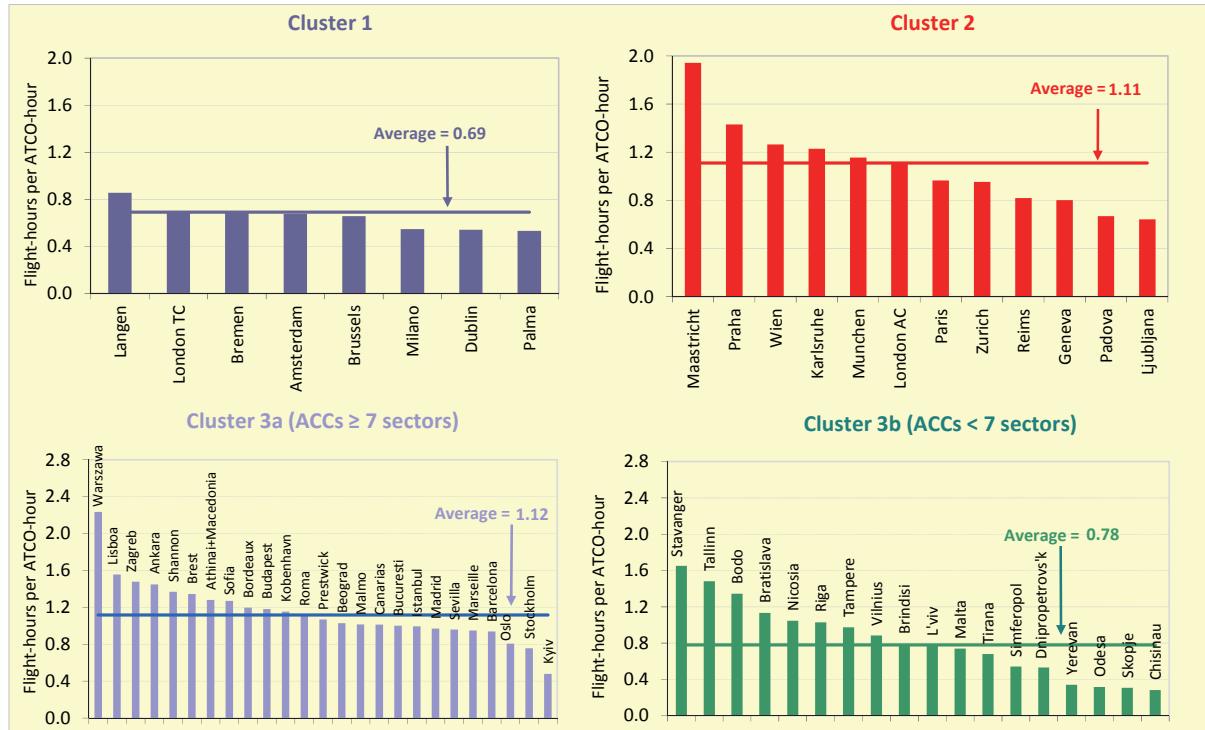


Figure 2.16: Summary of productivity results at ACC level, 2012

So far, no clear-cut statistical relationship between ATCO productivity, traffic complexity and traffic variability could be inferred because the relationships and potential trade-offs between all these metrics are not straightforward. Nevertheless, it is useful to compare the ATCO productivity of ACCs that share similar “operational” characteristics. Each cluster is briefly described below:

- **Cluster 1 (ACCs serving predominantly lower airspace with relatively high structural complexity)** has the lowest average productivity of any of the clusters (0.69 flight-hour per ATCO-hour). Palma, with the lowest productivity, has the highest seasonal traffic variability in Cluster 1.
- **Cluster 2 (ACCs serving dense upper airspace) has an average productivity of 1.11 flight-hour per ATCO-hour.** Within this cluster, Maastricht has significantly higher productivity (1.94 flight-hours per ATCO-hour, some +75% above the average in Cluster 2).
- **Cluster 3a (ACCs with 7 sectors or more and serving airspace with relatively low complexity)** has an average productivity of 1.12 flight-hour per ATCO-hour. Within this cluster, Warszawa has significantly higher productivity (2.23 flight-hours per ATCO-hour). It

¹⁶ See for example the ACE 2008 Benchmarking Report on p.104. Report available on the PRC website: (<http://www.eurocontrol.int/articles/prc-and-prb-publications>).

should also be noted that within this cluster Brest and Bordeaux have the highest overall complexity, and Canarias, Shannon and Oslo the lowest.

- **Cluster 3b (ACCs with less than 7 sectors serving airspace with relatively low complexity)** has an average productivity of 0.78 flight-hour per ATCO-hour. While Chisinau shows the lowest productivity, it also has one of the lowest overall traffic complexity.

The analysis of ATCO-hour productivity at ACC level would seem to indicate that, whilst complexity measures are helpful in providing a way of clustering ACCs into broadly consistent groups, within these clusters there are still large differences in productivity performance across individual ACCs.

ATCO-hour productivity, defined as flight-hours controlled per ATCO-hour on duty, can be split into two main components:

- **ACC sector productivity:** This is the ratio of the output, measured by the flight-hours controlled by the ACC, to sector-hours open. This indicator shows, on average, how many aircraft are simultaneously in a sector for a given ACC. All else being equal, higher sector productivity will improve ATCO-hour productivity.
- **ACC staffing per sector:** This is the ratio of ATCO-hours on duty to sector-hours open. This indicator shows, on average, how many ATCOs are used to man a sector. All else being equal, a reduction in the staffing per sector will increase ATCO-hour productivity.

Figure 2.17 below displays the breakdown of ATCO-hour productivity into ACC sector productivity and ACC staffing per sector for each cluster. It also displays a line showing the average ATCO-hour productivity achieved by the ACCs in the cluster: the greater the slope of the line, the higher the average ATCO-hour productivity. ACCs below the line have a worse than average ATCO-hour productivity for the cluster and ACCs above the line have a better than average ATCO-hour productivity.

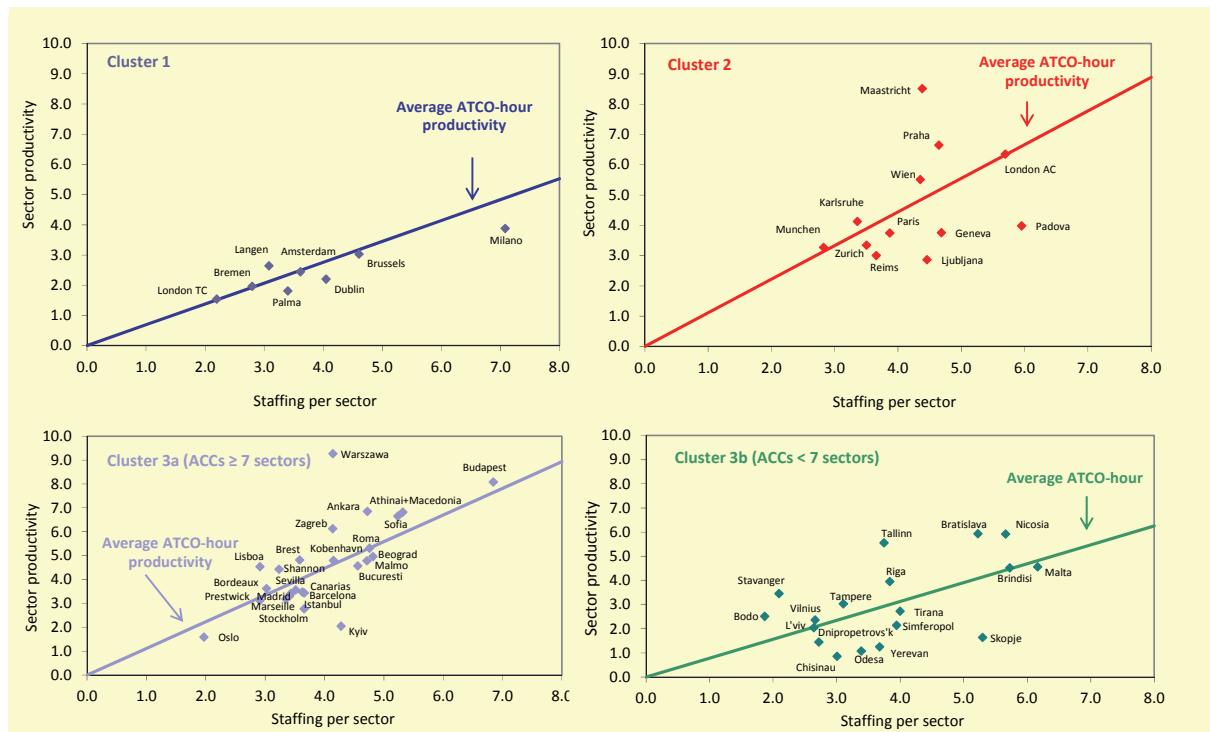


Figure 2.17: ACC sector productivity and staffing per sector, 2012

Figure 2.17 indicates that in Cluster 2, the greater ATCO-hour productivity in Maastricht is mainly the result of significantly higher sector productivity (more than eight aircraft on average

simultaneously present in a sector). It is noteworthy that MUAC sector productivity is two to three times the productivity achieved by ACCs with a similar staffing per sector in Cluster 2.

On the other hand, the graphs for Cluster 3a and Cluster 3b show that in these clusters, similar levels of ACC sector productivity are achieved with very different staffing configuration and practices, or alternatively similar levels of ACC staffing are delivering a wide range of sector productivity.

Several factors are likely to affect ATCO productivity. Low productivity might be due to spare capacity and low utilisation of the available resources, especially in the less dense/complex ACCs. Another explanation might be due to higher seasonal traffic variability.

Other factors as yet unidentified (and not measured) such as the impact of different operational concepts and processes, the operational flexibility, could also affect ATCO productivity performance. There may also be cultural and managerial differences. These elements would deserve further analysis in order to provide some “explanation” of the differences in ATCO-productivity and identify best practice.

ATCO employment costs are catching up in many Central and Eastern European ANSPs.

At Pan-European system level, ATCO employment costs per ATCO-hour slightly decreased between 2009 and 2012 (-1.3% or -0.4% p.a.).

Figure 2.18 shows that this is driven by:

- a significant decrease for the year 2010 (-5.0%); and,
- employment costs per ATCO-hour increases in 2011 (+2.6%) and 2012 (+1.3%).

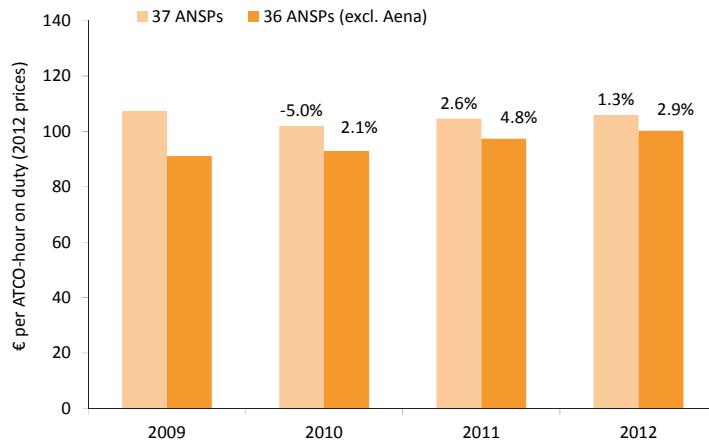


Figure 2.18: Changes in ATCO employment costs per ATCO-hour, 2009-2012 (real terms)

Figure 2.18 shows that this overall change is significantly affected by the decrease in Aena ATCO employment costs over the years 2009 and 2010. Indeed excluding Aena, ATCO employment costs have increased in real terms by +2.1% in 2010, +4.8% in 2011 and +2.9% in 2012.

In 2012, the average unit ATCO employment costs in the Pan-European system amount to €106 per ATCO-hour. Figure 2.19 shows the values for this indicator for all the ANSPs.

There is a wide range of ATCO-hour employment costs across ANSPs, which is not surprising given the heterogeneity in the social and economic environments across Europe.

In 2012, MUAC ATCO employment costs per ATCO-hour (€197) are the highest in Europe, above DFS (€172). MUAC ATCO employment costs per ATCO-hour significantly increased in 2012 (+21.9%) mainly reflecting the payment of a bonus to the staff for achieving performance objectives, and retroactive salary adjustments. DFS employment costs per ATCO-hour also rose in 2012, albeit in a lower proportion (+9.7%), following the implementation of the new collective agreements signed in October 2011.

On the other hand, Aena employment costs per ATCO-hour which were the highest in 2011, rank fifth (€160) and decreased for the third consecutive year in 2012 (-5.1% after reductions of -13.3% and -6.4% in 2010 and 2011, respectively).

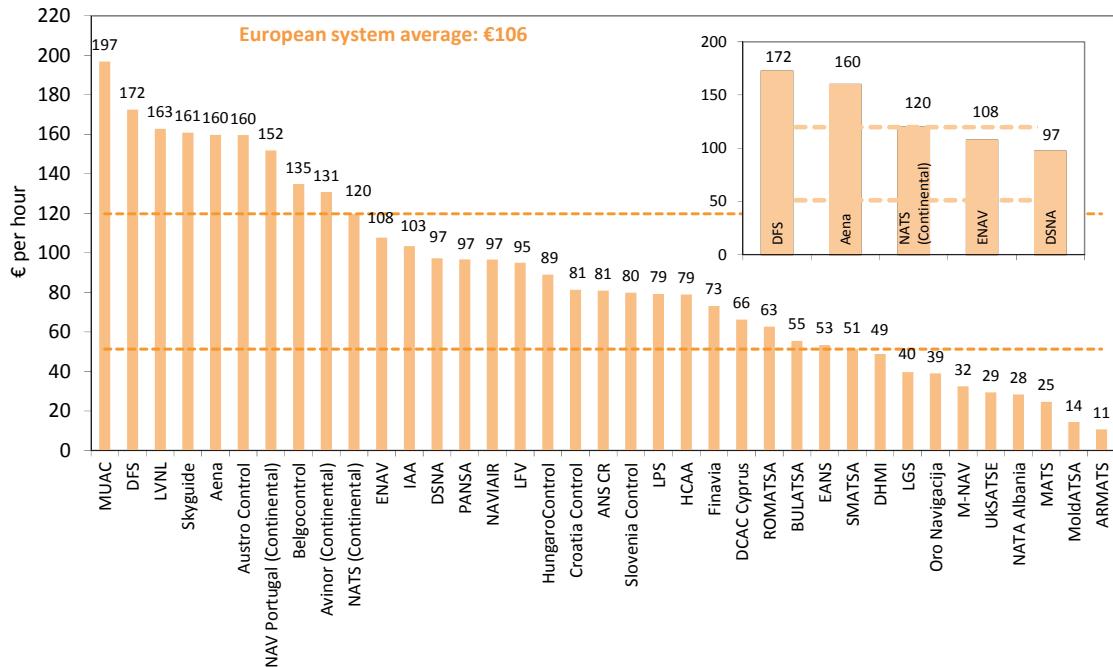


Figure 2.19: ATCO employment costs per ATCO-hour (gate-to-gate), 2012

A major exogenous factor that underlies differences in unit employment costs is the difference in prevailing market wage rates in the national economies in general. This is also associated with differences in the cost of living. To assess the influence of these exogenous differences, employment costs per ATCO-hour have been examined in the context of Purchasing Power Parity (PPP). There are some limitations¹⁷ inherent to the use of PPPs and for this reason the ACE data analysis does not put a significant weight on results obtained with PPPs adjustments. PPPs are nevertheless a useful analytical tool in the context of international benchmarking.

Figure 2.20 below shows the ATCO employment costs per ATCO-hour both **before** and **after** adjustment for PPP. The adjustment reduces the dispersion of this indicator. After PPP adjustment, the average unit employment costs per ATCO-hour amounts to €112 (compared to €106 without adjustment). For many Central and Eastern European ANSPs (ANS CR, BULATSA, Croatia Control, HungaroControl, LPS, PANSA, ROMATSA, Slovenia Control and SMATSA) the PPP adjustment brings the unit employment costs close to those in Western Europe.

¹⁷ For instance, it is possible that, for a given country, the cost of living in regions where the ANSP headquarter and other main buildings (e.g. ACCs) are located is higher than the average value computed at national level.

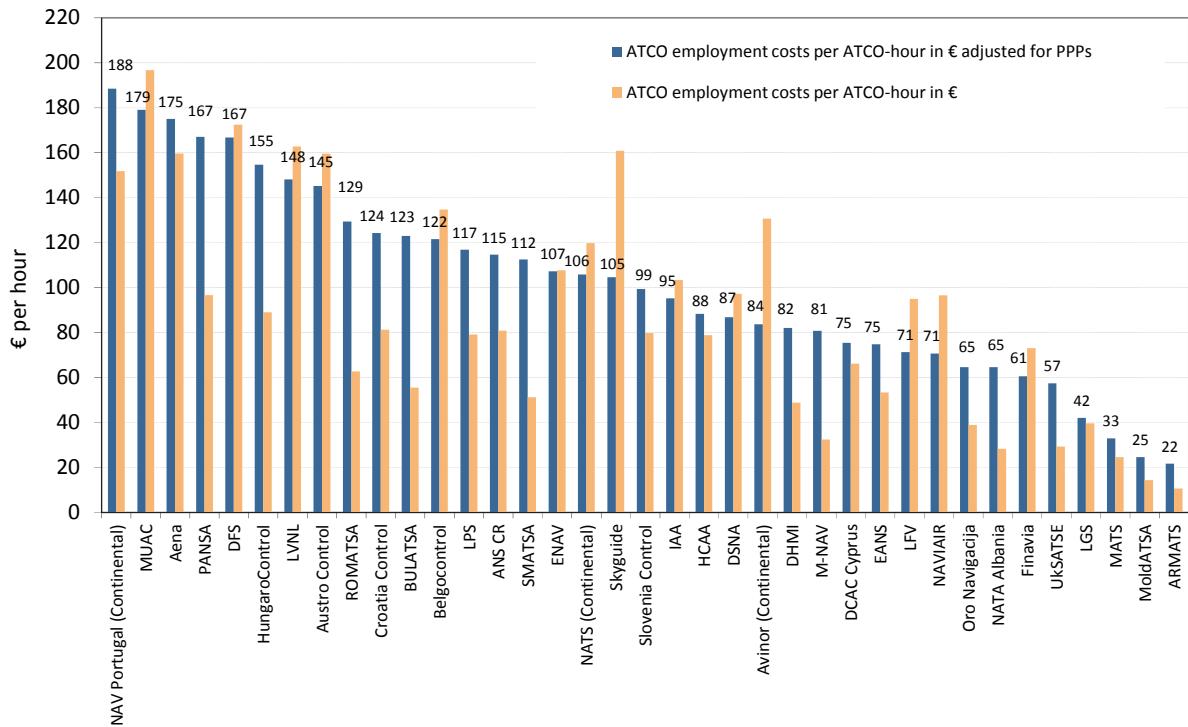


Figure 2.20: Employment costs per ATCO-hour with and without PPPs, 2012

Figure 2.21 shows the changes in ATCO employment costs per ATCO-hour for ANSPs operating in Central, Eastern and Western European countries¹⁸.

Significant increases in ATCO employment costs per ATCO-hour are observed for ANSPs operating in Central and Eastern European countries and which started from a relatively low base in 2009.

This illustrates the gradual convergence of employment costs in Central and Eastern European economies following the strengthening of the economic integration and enhanced labour mobility.

Employment costs are typically subject to complex bargaining agreements between ANSPs management and staff which usually are embedded into a collective agreement. The duration of the collective agreement, the terms and methods for renegotiation greatly vary across ANSPs. In some cases salary conditions are negotiated every year. High ATCO employment costs may be compensated for by high productivity (e.g. MUAC). Therefore, in the context of staff planning and contract renegotiation, it is important for ANSPs to manage ATCOs employment costs effectively and to set quantitative objectives for ATCO productivity.

More details on the changes in ATCO-hour employment costs for individual ANSPs are provided in Part II of this Report.

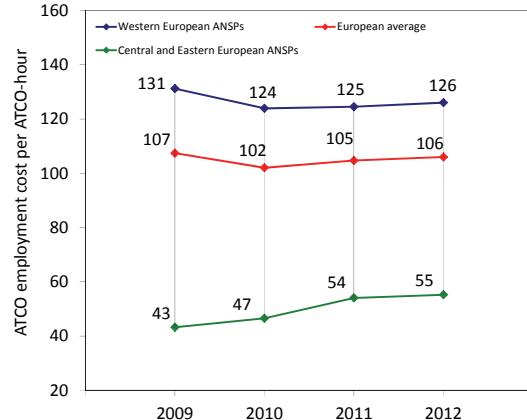


Figure 2.21: Convergence in ATCO employment costs for ANSPs operating in Eastern and Western European countries, 2009-2012 (real terms)

¹⁸ In Figure 2.21, the Central and Eastern European countries are those that joined the European Union from 2004 onwards plus Albania, Armenia, Croatia, F.Y.R Macedonia, Moldova, Turkey and Ukraine.

After two years of consecutive reductions in 2010 (-4.1%) and 2011 (-2.7%), unit support costs rose by +2.0% in 2012 mainly reflecting the impact of the traffic shortfall (-1.9%).

As indicated in Figure 2.22, support costs per composite flight-hours reduced (-4.9% in real terms) between 2009 and 2012 at Pan-European system level.

Figure 2.22 shows that unit support costs consecutively reduced in 2010 (-4.1%) and 2011 (-2.7%) reflecting the impact of the cost-containment measures implemented by European ANSPs. In 2012, unit support costs rose by +2.0%. This mainly reflects the decrease in traffic (-1.9%), while support costs remained fairly constant (+0.1%).

Contrary to ATCO employment costs, support costs encompass a variety of cost items which require specific analysis. There is a general acknowledgement that the Pan-European system has excessive support costs due to its high level of operational, organisational, technical and regulatory fragmentation.

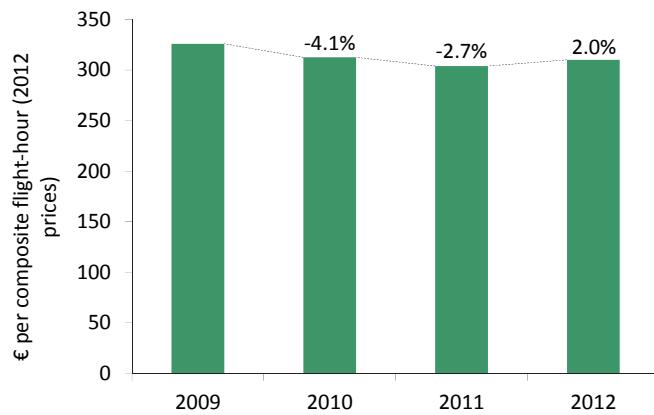


Figure 2.22: Changes in support costs per composite flight-hour, 2009-2012 (real terms)

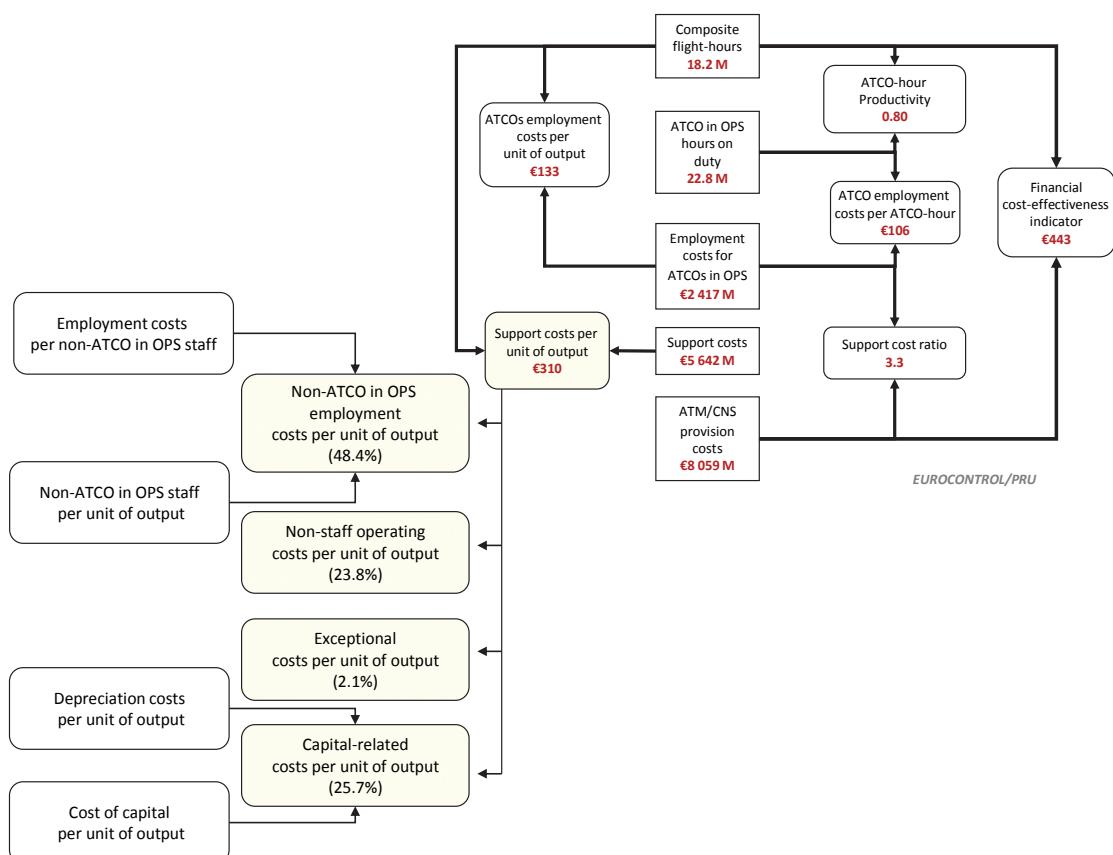


Figure 2.23: Framework for support costs analysis, 2012

As shown in Figure 2.23, support costs can be broken down into four separate components that provide further insight into the nature of support costs:

- a) **Employment costs for non-ATCO in OPS staff**; these cover ATCOs on other duties, trainees, technical support and administrative staff (48.4% of total support costs). These costs can be affected by the following factors:
 - Outsourcing of non-core activities (such as maintenance of technical equipment, and professional training) could transfer costs from this category to non-staff costs.
 - Research & development policies may involve ATM systems either being developed in-house, or purchased off-the-shelf. In principle, either solution could lead to the most cost-effective outcome, depending on circumstances; this would depend on whether there were, for example, significant economies of scale, or major transaction costs.
 - Arrangements relating to the collective agreement and the pension scheme for non-ATCOs in OPS.
- b) **Non-staff operating costs** mostly comprise expenses for energy, communications, contracted services, rentals, insurance, and taxes (23.8% of total support costs). These costs can be affected by the following factors:
 - The terms and conditions of contracts for outsourced activities.
 - Enhancement of the cooperation with other ANSPs to achieve synergies in the context of a FAB (sharing training of ATCOs, joint maintenance, and other matters).
- c) **Capital-related costs**, comprising depreciation and financing costs for the capital employed (25.7% of total support costs). These costs can be affected by the following factors:
 - The magnitude of the investment programme.
 - The accounting life of the assets.
 - The degree to which assets are owned or rented.
- d) **Exceptional costs** which represent some 2.1% of total support costs.

Figure 2.24 shows the changes in the different components of support costs (see the “support costs effect” bar on the right-hand side of Figure 2.11) between 2011 and 2012.

In 2012, increases in employment costs for support staff (+€109M) and exceptional costs (+€56M) were compensated by reductions in non-staff operating costs (-€85M), depreciation costs (-€26M), and in the cost of capital¹⁹ (-€51M).

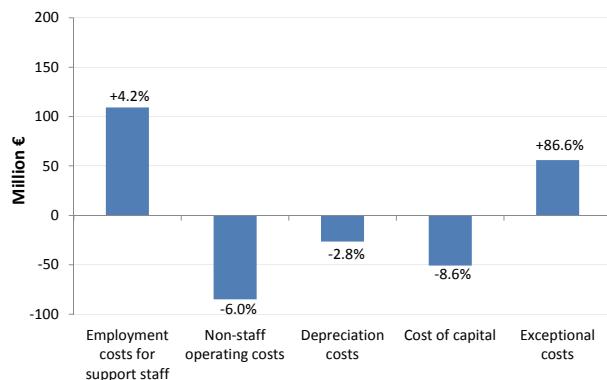


Figure 2.24: Changes in the components of support costs, 2011-2012 (real terms)

¹⁹ It should be noted that the cost of capital originally reported by DFS in its 2012 data submission was significantly lower (-€38M or -51%) than in 2011. This difference was mainly due to the use of a negative return on equity (i.e. -3.16%) to compute the en-route cost of capital in 2012. It is understood that this negative rate of return on equity reflects the actual return (ex-post) taking into account the revenue loss incurred on DFS en-route activity. However, for the purposes of the ACE benchmarking analysis, and in order to ensure consistency with the data provided by the other ANSPs, a return on equity of 7.75% has been used to compute DFS en-route cost of capital. This figure corresponds to the return on equity that was planned for 2012 in the National Performance Plan for RP1.

The significant decrease observed for the cost of capital (-€51M) is mainly due to a substantial decrease in the cost of capital reported by UkSATSE (-€50M). It should be noted that the cost of capital reported by UkSATSE includes the total amount of capital expenditures spent during the year, and that particularly high capex were spent in 2011. Excluding UkSATSE, the cost of capital at Pan-European level in 2012 would be similar to that of 2011 (-€0.4M) and 2012 support costs would be +0.6% higher than in 2011 (compared to +0.1% when UkSATSE is included).

The reductions achieved in 2012 in terms of non-staff operating costs (-6.0%) and depreciation costs (-2.8%) mainly reflect the impact of the cost-containment measures implemented by a majority of the Pan-European ANSPs in order to adapt to lower traffic levels. The lower depreciation costs in 2012 are mainly due to the postponement of non-crucial investment projects to future years. Figure 2.25 shows that for a majority of ANSPs, actual capital expenditures were lower than planned in ACE 2011 for the year 2012.

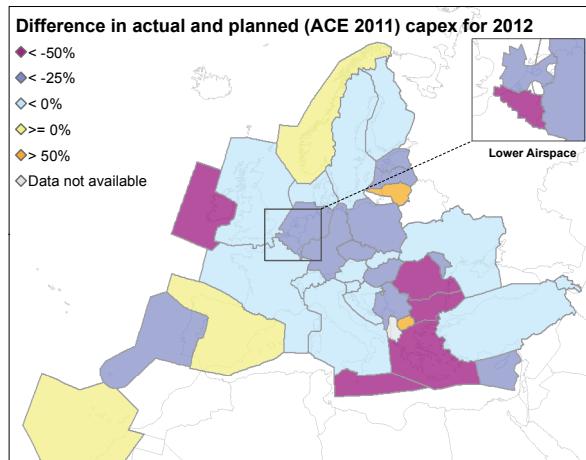


Figure 2.25: Difference between actual and planned capex for 2012 (real terms)

On the other hand, Figure 2.25 indicates that for a few ANSPs (e.g. Aena, Avinor, M-NAV and Oro Navigacija) actual 2012 capex is higher than planned.

The substantial increase in employment costs for support staff (+€109M) is mainly driven by higher staff costs observed for Aena (+€53M) and DFS (+€43M) compared to 2011.

For Aena, the increase in support staff costs mainly reflects costs associated with the Social Plan for Voluntary Layoffs (SPVL) for non-ATCO staff (i.e. €32M) which was implemented in 2012. For DFS, these increases are mainly due to (a) higher pension-related costs consecutive to a change in the discount rate for occupational pensions and (b) higher gross wages and salaries reflecting the collective agreements signed in October 2011, covering the period June 2011 – October 2012.

Employment costs can be significantly affected by the type of pension arrangements, and particularly whether the pension scheme is based on “defined benefits” or “defined contributions”. Some ANSPs have already taken decisive actions to deal with future pension obligations, notably changing the pension scheme for new recruits and moving away from “defined benefits” pension plans.

A revised version of IAS 19 (i.e. “employee benefits”) was implemented in January 2013. One of the main revisions of IAS 19 relates to the departure from the “corridor approach”. This implies that from 2013 onwards, for ANSPs operating under a “defined benefits” pension scheme, any actuarial gains and losses arising from a change in actuarial assumptions will have to be reported in the Balance Sheet financial statements. For those ANSPs, which in the past applied the “corridor approach” to reduce the impact of the changes in actuarial assumptions on ANS charges, the revision of IAS 19 will already affect 2013 costs.

Several ANSPs, like Austro Control and DFS have explicitly flagged this issue as they would be significantly impacted by the implementation of the amended IFRS 19. This issue requires the utmost attention given the long term consequences of pensions-related decisions and their magnitude in the cost bases and impact on chargeable unit rates.

There is a wide range in unit support costs among ANSPs, i.e. a factor greater than four in 2012. When computed at FAB level, differences are becoming less marked since unit support costs range from €356 for the Danube FAB to €212 for the Baltic FAB.

At Pan-European system level, support costs per composite flight-hour amount to €310 in 2012. Figure 2.26 shows that the level of unit support costs varies significantly across ANSPs – a factor greater than four between Belgocontrol which has the highest support cost per composite flight-hour in 2012 (€532) and EANS (€121).

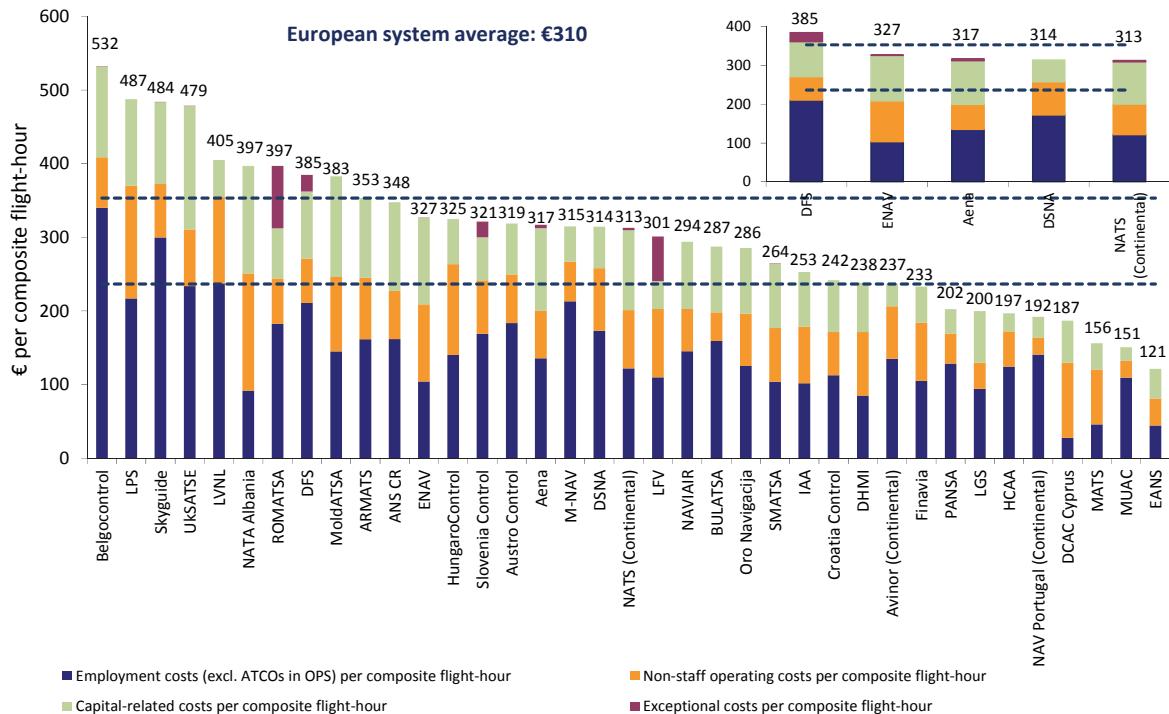


Figure 2.26: Support costs per composite flight-hour at ANSP level²⁰, 2012

Figure 2.26 indicates that there are significant differences in the composition of support costs amongst the 37 ANSPs, and in particular in the proportion of employment costs (blue bar) and non-staff operating costs (orange bar). The choice between providing some important operational support functions internally or externally has clearly an impact on the proportion of support costs that is classified as employment costs, non-staff operating costs, or capital-related costs. In some cases, the maintenance of ATM systems is outsourced and the corresponding costs are reported as non-staff operating costs. For other ANSPs, these activities are rather carried out by internal staff and the relating costs appear as employment costs or as capital-related costs when, according to IFRS, the employment costs of staff working on R&D projects can be capitalised in the balance-sheet.

More details on the level and changes in support costs for individual ANSPs are provided in Part II of this Report.

Figure 2.27 shows the unit support costs computed at FAB level²¹. ANSPs which are not participating to the ACE 2012 data analysis or not formally part of a FAB initiative are not included in Figure 2.27.

²⁰ It should be noted that the cost of capital reported by ANS CR in its ACE 2012 data submissions is higher than the costs charged to airspace users. Indeed, ANS CR did not charge any cost of capital to terminal ANS users.

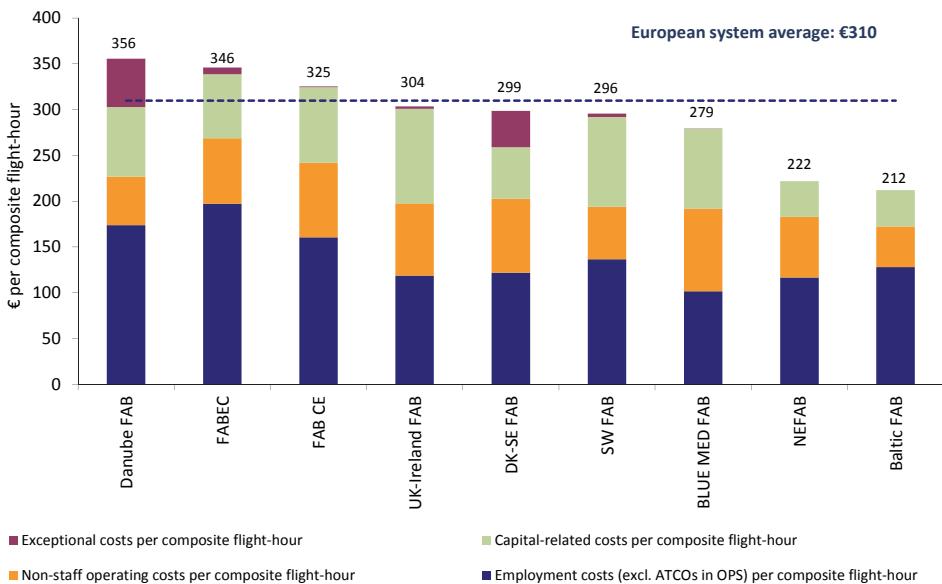


Figure 2.27: Support costs per composite flight-hour at FAB level, 2012

When computed at FAB level, unit support costs range from €356 for the Danube FAB to €212 for the Baltic FAB, a much lower dispersion than when unit support costs are computed at ANSP level. The Danube FAB (€356), FABEC (€346) and the FAB CE (€325) show unit support costs above the Pan-European system average (€310).

It should be noted that some 15% of Danube FAB unit support costs relate to exceptional costs associated with employee benefits borne by ROMATSA in 2012. Excluding those exceptional costs, the unit support costs of Danube FAB would amount to €303.

FABEC ANSPs show the second highest unit support costs in 2012 (€346). There is a very wide range in terms of unit support costs within FABEC (from €532 for Belgocontrol to €151 for MUAC²¹). This reflects a variety of situations with very large ANSPs and smaller ones, some of which exclusively operate in lower airspace (Belgocontrol and LVNL).

The unit support costs for FAB CE amount to €325 which is higher than the UK-Ireland FAB (€304) and DK-SE FAB (€299) despite the fact that the cost of living within the FAB CE area tends to be lower than in the UK-Ireland FAB and the DK-SE FAB. For instance, Figure 2.26 indicates that for ANSPs part of FAB CE (LPS (€487), ANS CR (€348), HungaroControl (€325) and Slovenia Control (€321)), unit support costs are higher than those of Aena (€317), DSNA (€314), NATS (€313) and NAVIAIR (€294). Further analysis would be required to understand the main drivers underlying these differences.

Support costs amount to 70% of total ATM/CNS provision costs. Effective management of these costs has therefore a major impact on ANSPs cost-effectiveness performance. In this context, initiatives towards joint procurement and maintenance of ATM infrastructure as well as the rationalisation of investment programmes within FABs are encouraged. For instance, reducing the unit support costs of the Pan-European system (€310) by some 10% to reach a level in line with that of the Blue Med FAB would generate savings of some €560M.

²¹ The unit support costs at FAB level displayed in Figure 2.27 are obtained by summing the support costs of all the ANSPs that are part of the FAB initiative and dividing them by the corresponding total number of composite flight-hours. The result of this computation is the weighted average of ANSPs unit support costs at FAB level.

²² It should also be noted that MUAC support costs do not include the costs relating to the infrastructure which is made available for joint use and provided free of charges by the ANSPs operating in the Four States airspace.

After an increase of +1.7% in 2012, unit ATM/CNS provision costs are planned to slightly decrease until 2017 (-0.8% p.a.).

At European system level, after the +1.7% increase in 2012, gate-to-gate unit ATM/CNS provision costs are planned to further rise by +2.8% in 2013 and then to decrease by -2.9% in 2014. As a result, gate-to-gate unit ATM/CNS provision costs are expected to remain fairly constant between 2012 and 2014.

Gate-to-gate unit ATM/CNS provision costs are then expected to increase in 2015 (+0.8%) and to decrease in 2016 (-1.9%) and 2017 (-2.6%). Overall, unit costs are planned to decrease by -0.8% p.a. over 2012-2017.

For most of the ANSPs, the planned en-route costs data reported in their ACE 2012 data submission are based on the information provided in June 2013 in the context of the Enlarged Committee for Route Charges. The en-route determined costs provided in the RP2 Performance Plans which will be submitted end of June 2014 are likely to be based on different planning assumptions.

In 2012, ANSPs capital expenditures amounted to some €1 075M. The right hand-side of Figure 2.29 compares the capex planned in ACE 2011 with the plans provided in ACE 2012 for the ANSPs that consistently reported forward-looking figures over this period²³. Figure 2.29 shows that 2012 actual capital expenditures are -16% lower than planned in ACE 2011 for 2012. This mainly reflects the postponement of non-crucial investment projects to future years, in particular 2015 and 2016.

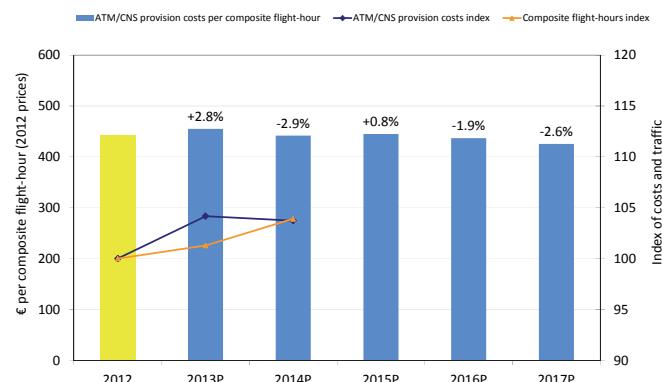


Figure 2.28: Forward-looking cost-effectiveness at European system level (2012-2017, real terms)

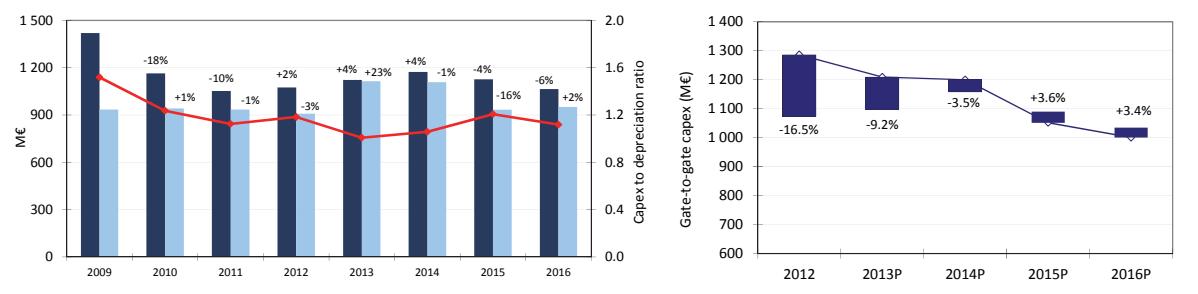


Figure 2.29: Forward-looking capital expenditures at Pan-European system level (2009-2016, real terms)

Overall, the cumulative capex planned for the period 2013-2016 amounts to some €4 488M and represents 50% of the 2012 total ANS revenues. A significant proportion of these investments relate to major upgrades or to the replacement of existing ATM systems.

Additional details on the nature of the major investment projects for each ANSPs are provided in Part II of this Report.

²³ Note that the decreases in planned capex and depreciation costs observed in 2015 are due to the fact that Aena and HCAA did not provide complete forward-looking data in their ACE 2012 data submissions.

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PART II: COST-EFFECTIVENESS PERFORMANCE FOCUS AT ANSP LEVEL

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3 FOCUS ON ANSPS INDIVIDUAL COST-EFFECTIVENESS PERFORMANCE

3.1 Objective of this chapter

This chapter comprises two pagers for each ANSP participating to the ACE 2012 analysis. These two pagers include an analysis of the historical development of the financial cost-effectiveness indicator and its main components over the 2009-2014 period. Individual ANSP cost-effectiveness performance is also examined in the context of a group of ANSPs which operate in relatively similar operational and economic environments (comparator groups). Finally, these two pagers comprise historical information and projections about capital expenditures provided by each ANSP.

This chapter should provide useful insights and information to NSAs for the drawing up of the performance plans for RP2 during the first half of 2014.

3.2 Historical development of cost-effectiveness performance, 2009-2012

The first page presents, for each ANSP, an assessment of its cost-effectiveness performance, and how it has developed over the four-year period 2009-2012. It examines the overall economic cost-effectiveness indicator and its two components (ATM/CNS costs per composite flight-hour, ATFM delay costs per composite flight-hour), and their evolution over the period (top left). It puts these in the context of the traffic growth observed in the ANSP's airspace (top right). In this page, financial data are all expressed in real terms (2012 prices).

Developments in the components of financial cost-effectiveness (ATCO-hour productivity, ATCO employment costs per ATCO-hour, and support costs per composite flight-hour) are also examined (middle left), to help understand the underlying causes of changes in overall cost-effectiveness.

The charts on the middle right provide additional information in order to better understand the drivers behind the changes in the three components of financial cost-effectiveness. First, the changes in ATCO-hour productivity are examined in the light of changes in composite flight-hours, number of FTE ATCOs in OPS and corresponding hours on duty. A second chart focuses on the changes in ATCO-hours on duty, and in particular on overtime hours. The third chart presents the changes in support costs are broken down into employment costs of staff other than ATCOs in OPS; non-staff operating costs; capital-related costs (depreciation and the cost of capital); and exceptional items, where present.

The bottom set of graphs examine how the changes in the components over the whole period contribute to the change in the overall financial cost-effectiveness indicator. The left-hand graphs relate to ATCOs in OPS; the right-hand graphs to other elements of cost ("support costs"). The left-hand graphs show how the change in ATCO productivity combines with the change in unit ATCO employment costs to make a change in ATCO employment costs per unit output. The right-hand graphs show how the change in support costs combines with traffic growth to make a change in support costs per composite flight-hour. The relative contribution of these two effects to the change in the financial cost-effectiveness indicator depends on the relative weight of ATCO employment costs, on the one hand, and support costs, on the other, in the overall ATM/CNS provision cost.

The presentation of financial time-series data

Presentation and comparison of historical series of financial data from different countries poses problems, especially when different currencies are involved, and inflation rates differ. There is a danger that time-series comparisons can be distorted by transient variations in exchange rates which happened to be particularly the case in 2009 in the wake of the financial crisis. In this chapter, the focus is on the historical development of financial performance indicators **in a given ANSP**.

For this reason, the following approach has been adopted for allowing for inflation and exchange rate variation. The financial elements of performance are assessed, for each year, in **national** currency. They are then converted to national currency in 2012 prices using national inflation rates. Finally, for comparison purposes in 2012, all national currencies are converted to euros using the 2012 exchange rate.

This approach has the virtue that an ANSP's performance time series is not distorted by transient changes in exchange rates over the period. It does mean, however, that the performance figures for any ANSP in a given year prior to 2012 are not the same as the figures in that year's ACE report, and cannot legitimately be compared with another ANSP's figures for the same year. Cross-sectional comparison using the figures in this report is only appropriate for 2012 data.

The historical inflation figures used in this analysis were obtained from EUROSTAT or from the International Monetary Fund. For the projections, the ANSPs' own assumptions concerning inflation rates were used. Details of the monetary parameters used for 2012 are given in Annex 6 to this report.

3.3 ANSP's cost-effectiveness within the comparator group, 2009-2012

The top charts of the second page present the financial cost-effectiveness indicator and its main components for individual ANSPs in comparison with their respective comparator group. The approach is to consider each ANSP in the context of a group of other ANSPs (comparators) which operate in relatively similar operational and economic environments.

The chart on the top-left shows the level and changes in unit ATM/CNS provision costs over the 2009-2012 period for each ANSP part of the comparator group. The chart on the top-right shows for each ANSP the deviations in unit ATM/CNS provision costs, ATCO-hour productivity, employment costs per ATCO-hour and unit support costs from the average of the comparator group at the start (2009) and at the end (2012) of the period considered.

The ANSP comparator groups used for the benchmarking analysis are presented in the table below. These comparator groups were determined for the purposes of the RP2 cost-efficiency target-setting process using a two-step approach combining the use of statistical tools (cluster analysis) with expert judgement. For a full description of the process, methodology and results see Annex I.C of the PRB report on RP2 EU-Wide Targets Ranges²⁴ released in May 2013.

Nine groups of comparators have been identified, some comprising a relatively large number of ANSPs and others only comprising two organisations. Due to the unique nature of its airspace (upper airspace only, across four States), it was determined that Maastricht (MUAC) should be considered separately and therefore this ANSP was not included in the comparator group benchmarking analysis. Finally, two groups have been designed for the ANSPs not operating in SES States. It should be noted that the names of these groups have been chosen for mnemonic purposes only.

²⁴ This document is available at: <http://ec.europa.eu/transport/media/consultations/doc/2013-07-03-sesrp2/report.pdf>.

Comparator Groups	Members
Five Largest	Aena
	DFS
	DSNA
	ENAV
	NATS (Continental)
Central Europe	ANS CR
	HungaroControl
	LPS
	Slovenia Control
	Croatia Control
	PANSA
South Eastern Europe	HCAA
	BULATSA
	ROMATSA
South Med	DCAC Cyprus
	MATS
Western Europe	Austro Control
	NAVIAIR
	Skyguide
Atlantic	NAV Portugal (Continental)
	IAA
Baltic States	EANS
	LGS
	Oro Navigacija
Nordic States	Avinor (Continental)
	LFV
	Finavia
BelNed	Belgocontrol
	LVNL
Non-SES 1	DHMI
	UkSATSE
Non-SES 2	ARMATS
	M-NAV
	MoldATSA
	NATA Albania
	SMATSA

Table 3.1: ANSPs comparator groups

3.4 Historical and forward-looking information on capital investment projects

The charts which are displayed in the middle and the bottom of the second page provide historical information and projections about capital expenditures provided by each ANSP.

The chart on the middle of the page shows the historical and planned evolution of capital expenditure and depreciation, highlighting the ANSP's investment cycles and their magnitude, across time. The ratio of these quantities (usually greater than one) is an indication of the rate at which the overall asset base is being expanded.

Finally, two tables present information on the nature of the main ANSP's capex projects between 2006 and 2017. The first table provides a high-level overview of the magnitude of capital expenditures by area (i.e. ATM, Communication, Surveillance, etc.) over the 2006-2017 period and of the upgrade/replacement cycles of the main ATM systems for each ACC. The last table provides detailed information on the top 5 capex projects in monetary terms including the domain, the financial amount and the time period of the project.

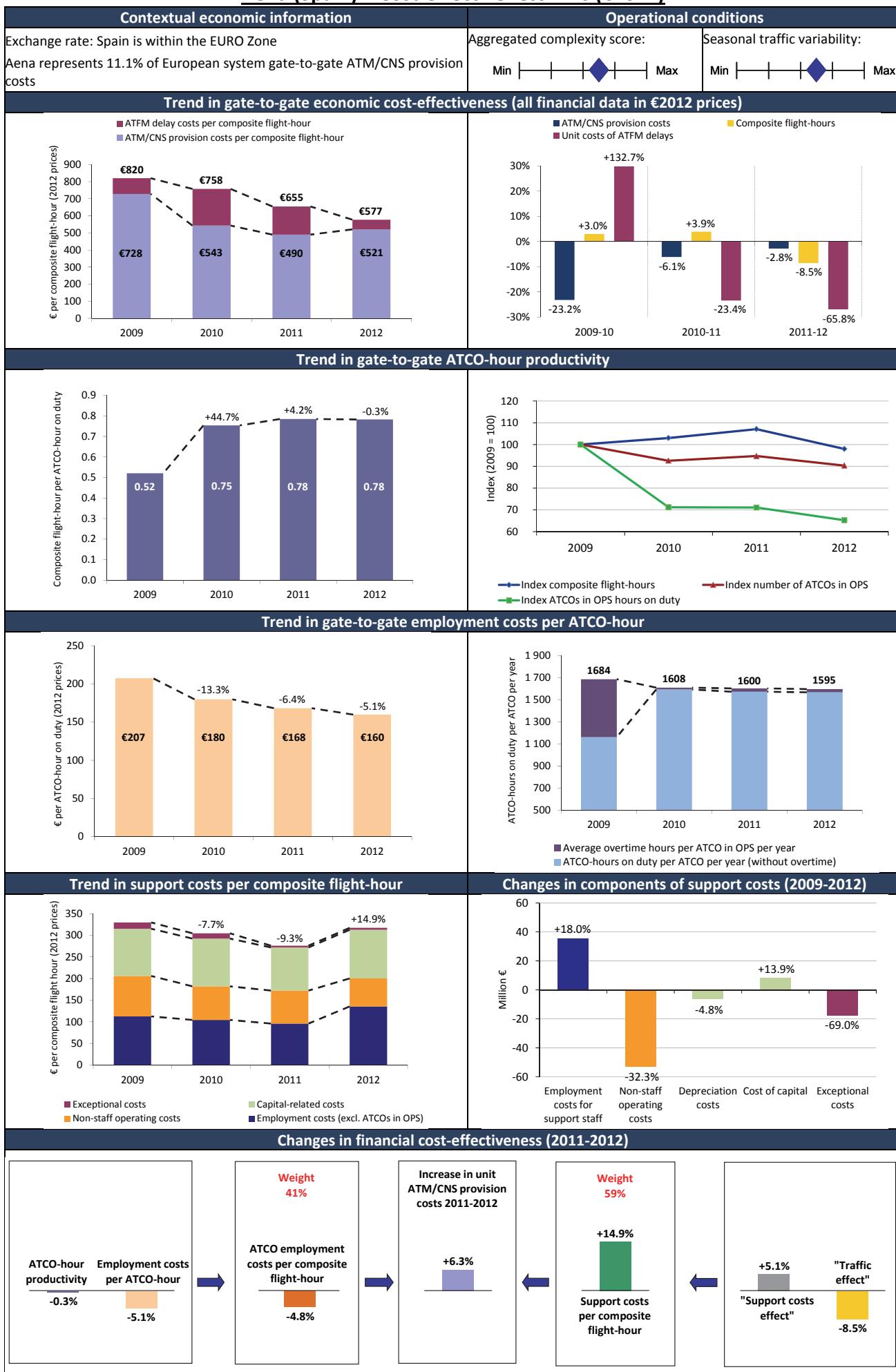
3.5 Cost-effectiveness performance focus at ANSP level

To facilitate the reading of this section, the table below displays the page number of the individual benchmarking analysis for each ANSP.

ANSP name	Country	Page
Aena	Spain	44
ANS CR	Czech Republic	46
ARMATS	Armenia	48
Austro Control	Austria	50
Avinor (Continental)	Norway	52
Belgocontrol	Belgium	54
BULATSA	Bulgaria	56
Croatia Control	Croatia	58
DCAC Cyprus	Cyprus	60
DFS	Germany	62
DHMI	Turkey	64
DSNA	France	66
EANS	Estonia	68
ENAV	Italy	70
Finavia	Finland	72
HCAA	Greece	74
HungaroControl	Hungary	76
IAA	Ireland	78
LFV	Sweden	80
LGS	Latvia	82
LPS	Slovak Republic	84
LVNL	Netherlands	86
MATS	Malta	88
M-NAV	F.Y.R. Macedonia	90
MoldATSA	Moldova	92
MUAC		94
NATA Albania	Albania	96
NATS (Continental)	United Kingdom	98
NAV Portugal (Continental)	Portugal	100
NAVIAIR	Denmark	102
Oro Navigacija	Lithuania	104
PANSA	Poland	106
ROMATSA	Romania	108
Skyguide	Switzerland	110
Slovenia Control	Slovenia	112
SMATSA	Serbia and Montenegro	114
UkSATSE	Ukraine	116

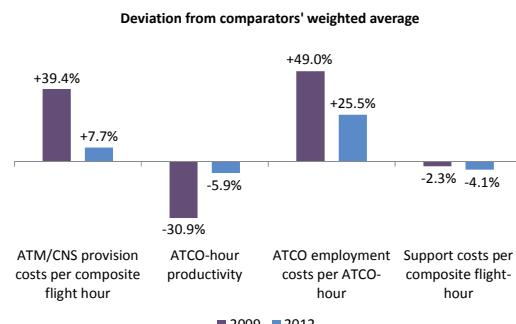
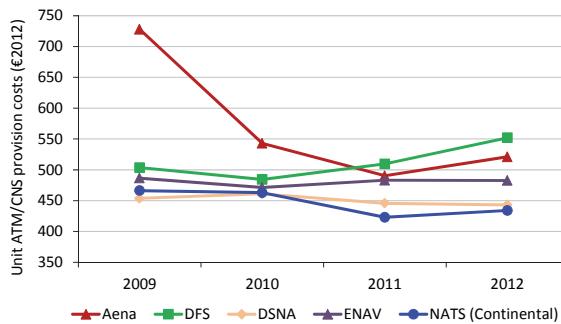
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Aena (Spain) – Cost-effectiveness KPIs (€2012)

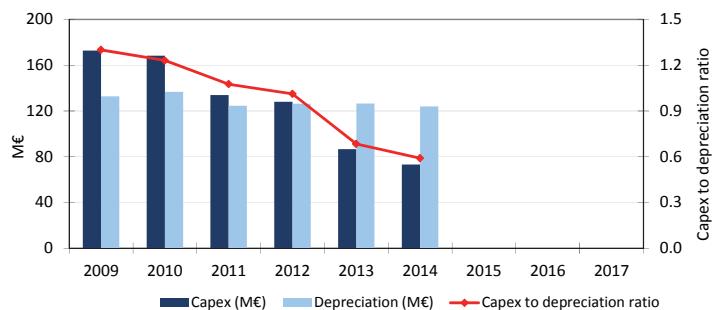


Aena (Spain) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPs	RDPS	HMI	VCS
							C: 2006 (all ACCs)*	C: 2006 (all ACCs)*	C: 2006 (all ACCs)*	C: 2000 (All ACCs-TMA) 2002 (All ACCs-En-route)*
						2006				
						2007				
						2008				
						2009			Canarias, Palma	
						2010	All ACCs	All ACCs	All ACCs	Barcelona
						2011				Madrid, Sevilla
						2012	All ACCs	All ACCs	All ACCs	
						2013				
						2014	All ACCs	All ACCs	All ACCs	Canarias
						2015				Madrid
						2016				
						2017				Barcelona

* C = Commissioning ■ Upgrade ■ Replacement

Focus on the top five capex projects

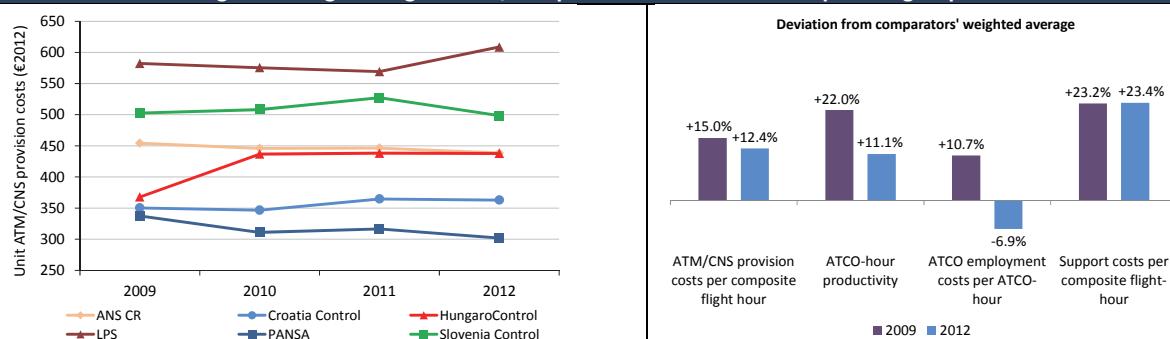
Note that the capex provided by Aena for the purposes of the ACE 2012 benchmarking analysis only included information relating to the capex spent in 2012. Furthermore, the monetary amounts provided for the five main capex in 2012 only represents some 12% of the total capex spent during that year. Aena was not in a position to provide information on the five main capex projects planned for the 2013-2017 period. It is expected that in future submissions, more comprehensive actual and planned capex information is provided by Aena for the purposes of the ACE benchmarking analysis.

ANS CR (Czech Republic) – Cost-effectiveness KPIs (€2012)

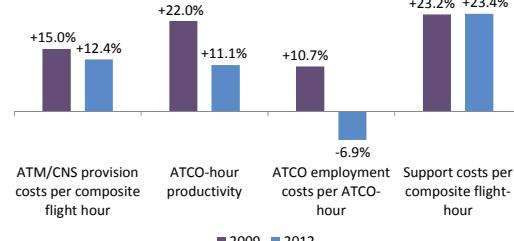


ANS CR (Czech Republic) – (€2012)

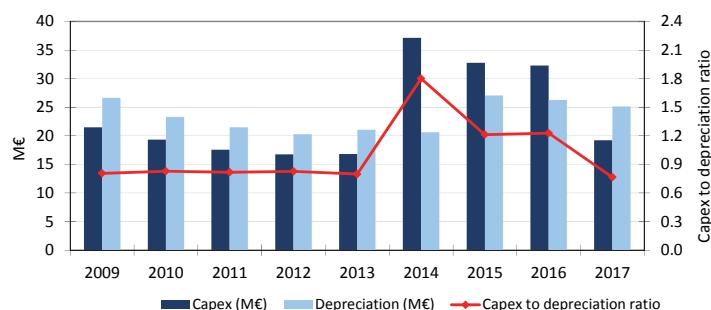
Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Deviation from comparators' weighted average



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 1994*	C: 2000*	C: 2007*	C: 2007*
						2006				
						2007				
€102.0M (2008-2019)	€15.4M (2011-2019)			€22.0M		2008				
						2009				
						2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Replacement of RDP and FDP systems in Praha ACC (Neopteryx)	ATM	48.1	2011	2019
2	Upgrade of RDP and FDP systems	ATM	38.0	2010	2016
3	"TB 2007" Project involving the complete renovation of the "Technical Block Building" at Prague airport	Buildings	13.0	2008	2011
4	Replacement of radio communication equipment and Replacement of VCS	COM	10.3	2012	2017
5	Building of the security centre in Ostrava airport	Buildings	5.9	2011	2015

ARMATS (Armenia) – Cost-effectiveness KPIs (€2012)



ARMATS (Armenia) – (€2012)



Austro Control (Austria) – Cost-effectiveness KPIs (€2012)



Austro Control (Austria) – (€2012)

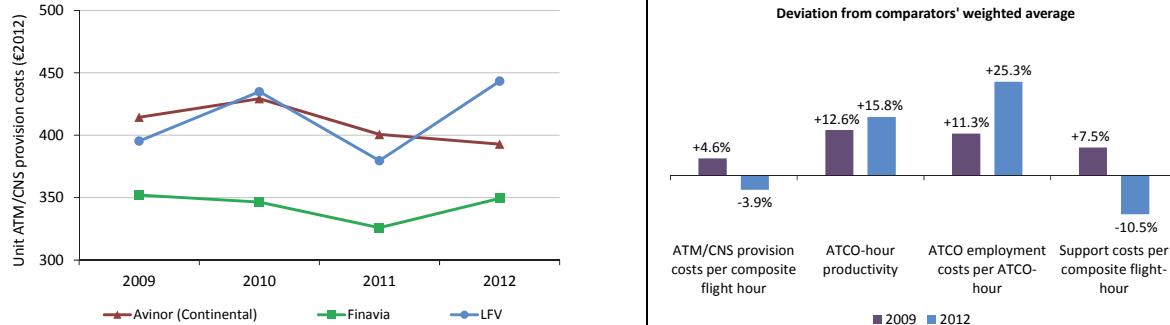


Avinor Continental (Norway) – Cost-effectiveness KPIs (€2012)

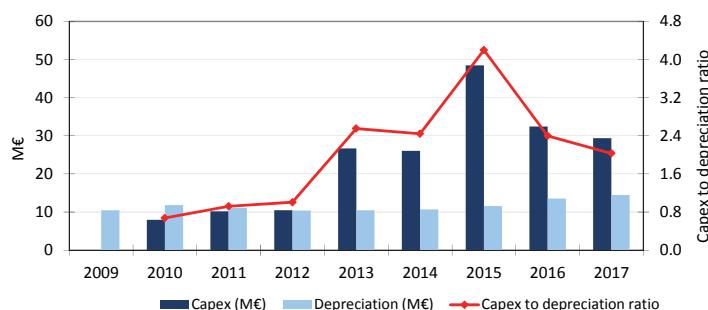


Avinor Continental (Norway) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPs	RDPS	HMI	VCS
							C: 1996 (Oslo) 2004 (Stav.) 2008 (Bodo)*	C: 1996 (Oslo) 2004 (Stav.) 2008 (Bodo)*		C: 2007 (Bodo) 2009 (Oslo)*
						2006				
						2007				Bodo
€176.9M (2008-2024)						2008	Bodo	Bodo		
						2009	Oslo	Oslo		Oslo
						2010				
						2011				
						2012	Stavanger	Stavanger		Oslo
						2013				Bodo
						2014				Stavanger
						2015				
						2016				
						2017				

* C = Commissioning ■ Upgrade ■ Replacement

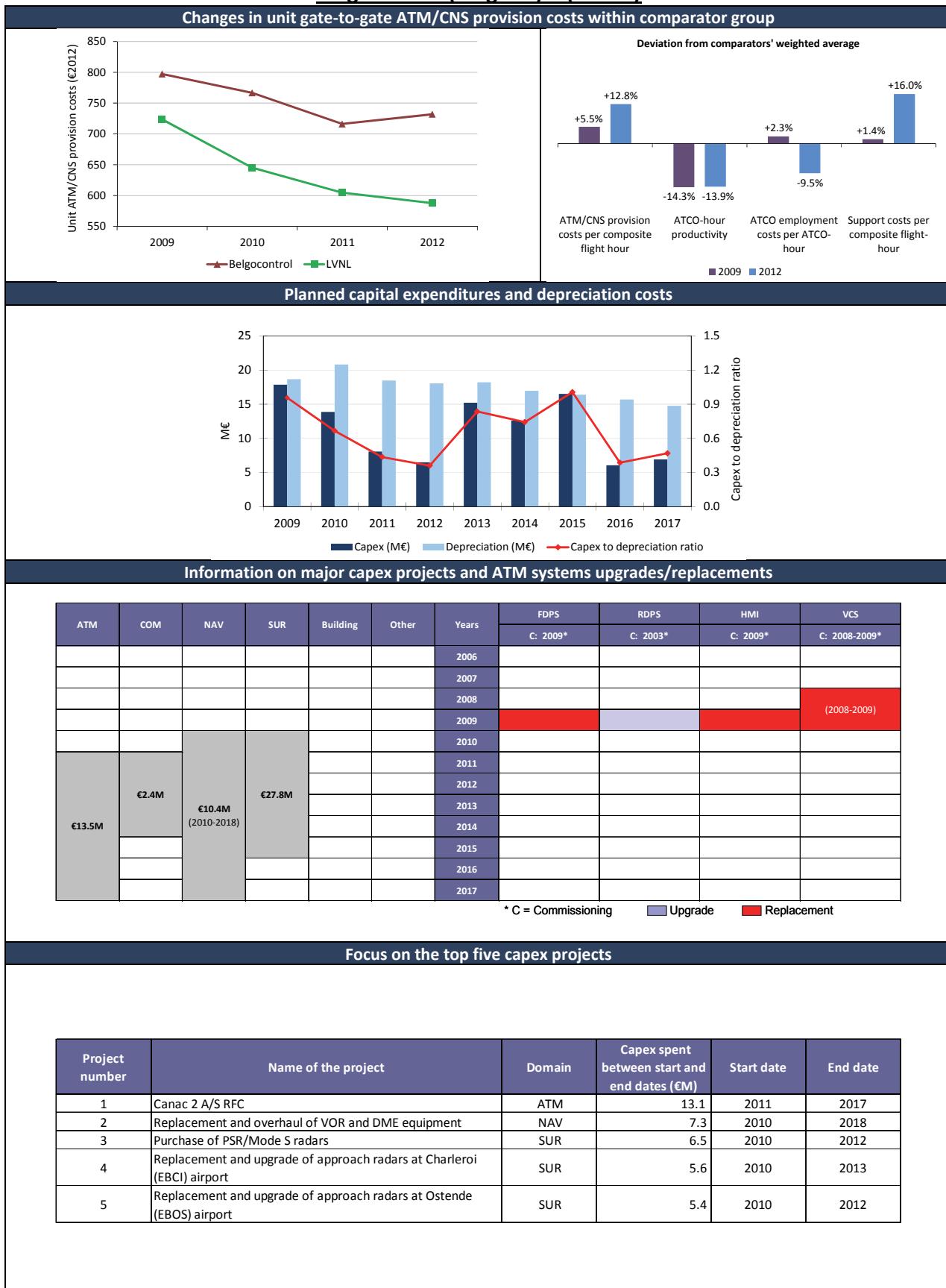
Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Replacement of ATM systems	ATM	111.7	2012	2021
2	RVT (Remote and Virtual Towers, will replace the traditional ATC/AFIS TWR with a remotely operated solution)	ATM	27.7	2015	2024
3	NORWAM (Replace existing radars with WAM and ADS-B technology)	SUR	26.6	2013	2018
4	SNAP (Southern Norway Airspace Project) project	ATM	17.2	2008	2014
5	TCI (Target Concept Implementation, will extend life of existing ATM system and implement government requirements related to Datalink and Free Route Air Space)	ATM	15.9	2013	2016

Belgocontrol (Belgium) – Cost-effectiveness KPIs (€2012)



Belgocontrol (Belgium) – (€2012)



BULATSA (Bulgaria) – Cost-effectiveness KPIs (€2012)



BULATSA (Bulgaria) – (€2012)



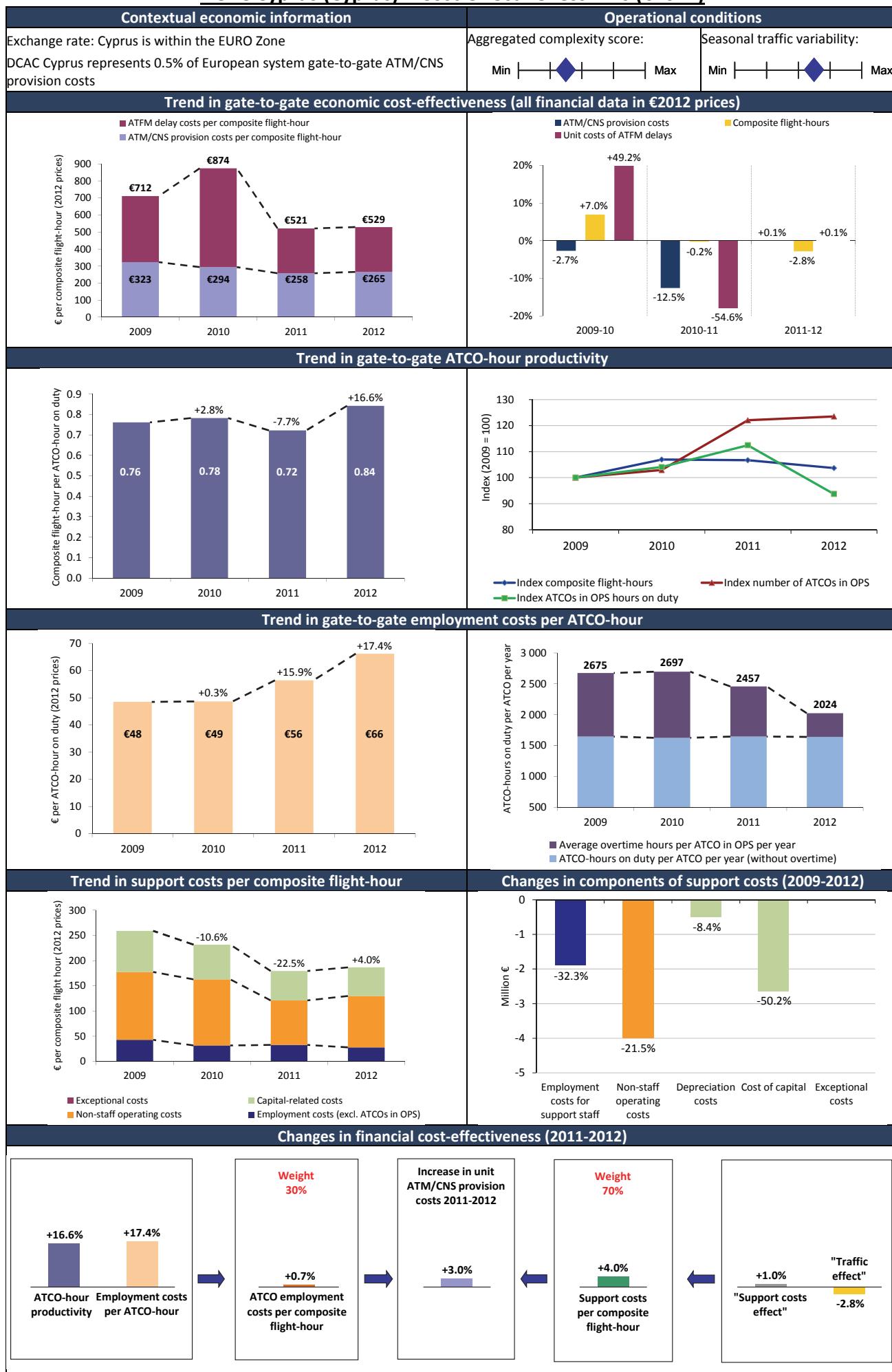
Croatia Control (Croatia) – Cost-effectiveness KPIs (€2012)



Croatia Control (Croatia) – (€2012)



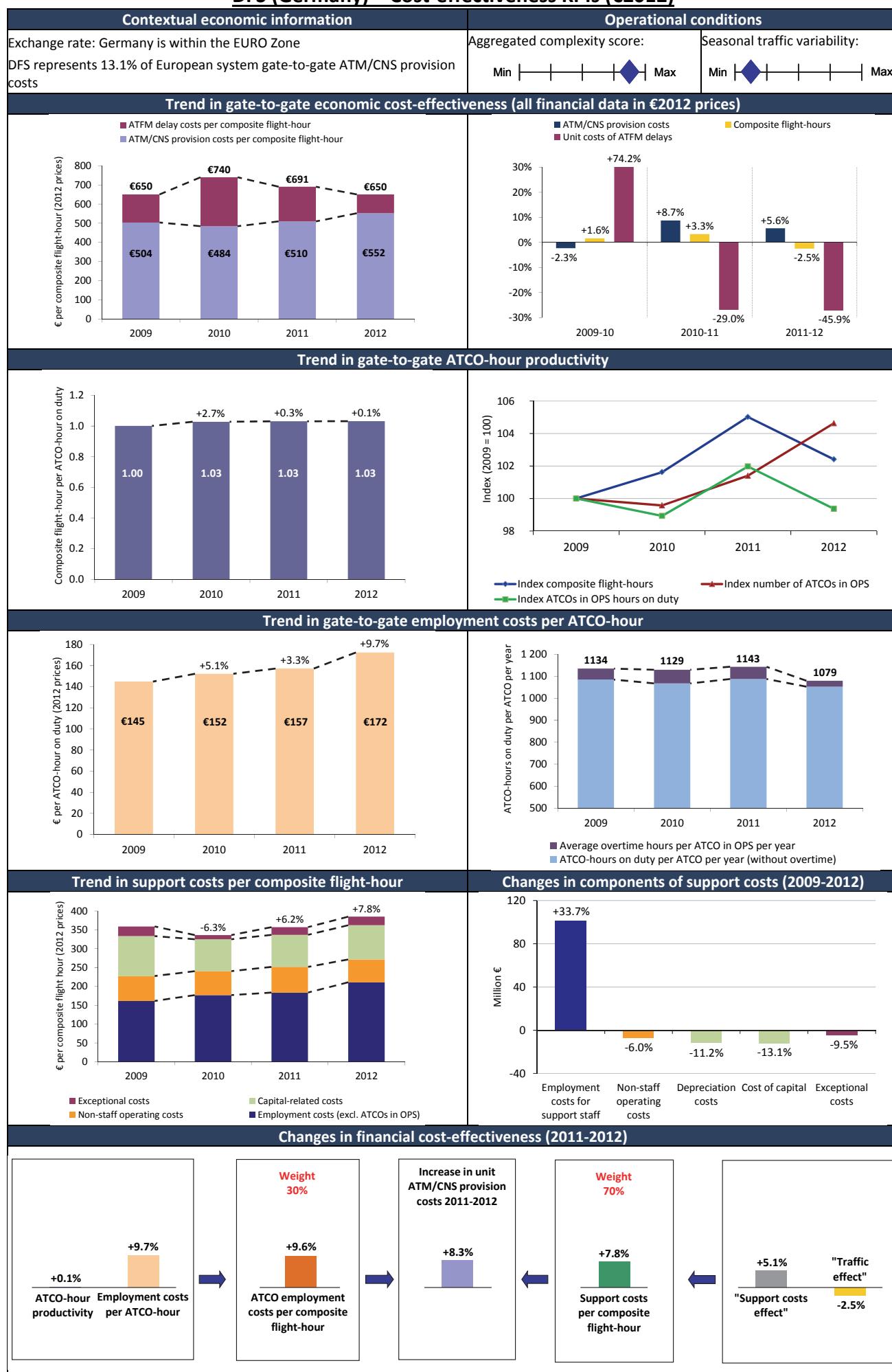
DCAC Cyprus (Cyprus) – Cost-effectiveness KPIs (€2012)



DCAC Cyprus (Cyprus) – (€2012)

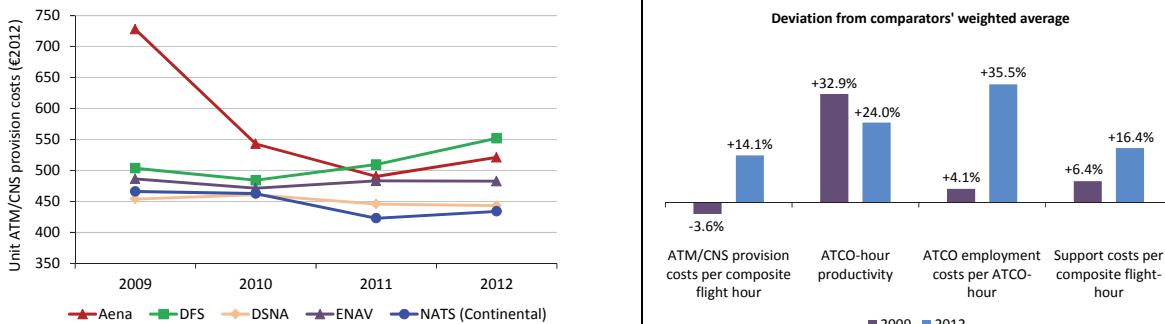


DFS (Germany) – Cost-effectiveness KPIs (€2012)

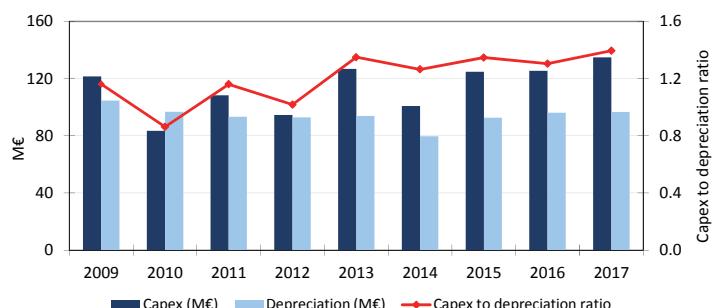


DFS (Germany) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

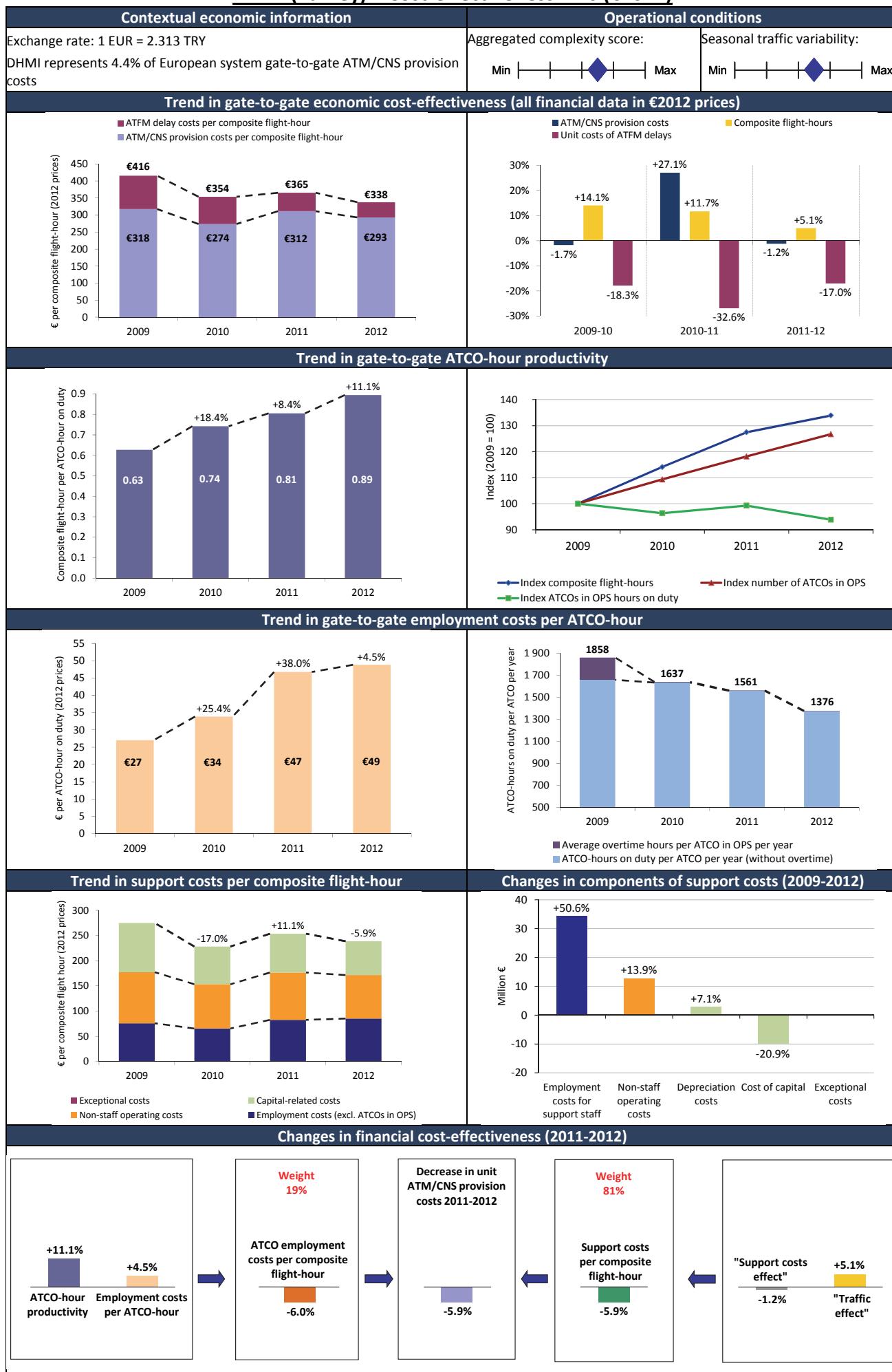
ATM	COM	NAV	SUR	Building	Other	Years	FDPs	RDPS	HMI	VCS
							C: 2011 (Karlsruhe)	C: 2011 (Karlsruhe)	C: 2011 (Karlsruhe)	C: 2009 (Karlsruhe)
€298.9M (2004-2020)	€114.2M (2007-2020)	€77.2M (2006-2020)	€179.3M (2002-2018)	€36.3M		2006	Karlsruhe			
						2007				
						2008	Bremen, Langen, München		Langen	
						2009				Karlsruhe
						2010			Bremen	
						2011	Karlsruhe	Karlsruhe	Karlsruhe	
						2012			München	
						2013				Langen (2012-2013)
						2014				München (2013-2014)
						2015	Langen (2015-2016)	Langen (2015-2016)	Langen (2015-2016)	
						2016	München (2016-2017)	München (2016-2017)	München (2016-2017)	
						2017	Bremen (2017-2018)	Bremen (2017-2018)	Bremen (2017-2018)	

* C = Commissioning ■ Upgrade ■ Replacement

Focus on the top five capex projects

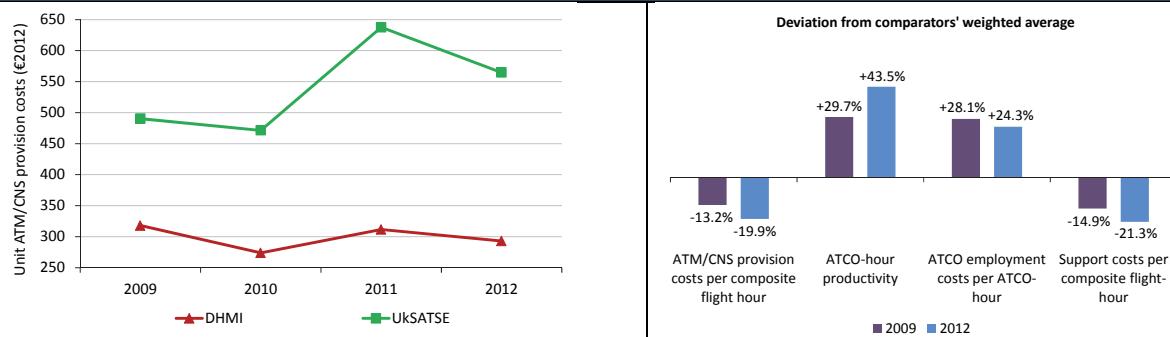
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Programme iCAS	ATM	159.3	2006	2020
2	P2 ATCAS Rehosting	ATM	75.2	2007	2019
3	Rasum 8.33 kHz	COM	68.8	2007	2020
4	Technikzentrum Campus Langen	Buildings	58.2	2009	2016
5	Extension of München ACC	Buildings	52.8	2008	2014

DHMI (Turkey) – Cost-effectiveness KPIs (€2012)

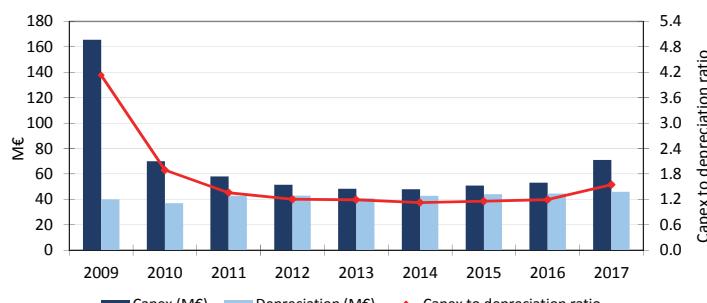


DHMI (Turkey) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2008 (All ACCs)*	C: 2008 (All ACCs)*	C: 2008 (All ACCs)*	C: 2005 (All ACCs)*
€93.4M	€40.6M	€15.8M	€105.5M	€93.3M		2006				
						2007				
						2008	All ACCs	All ACCs	All ACCs	
						2009				
						2010				
						2011				Ankara
						2012	All ACCs	All ACCs	All ACCs	Istanbul
						2013				
						2014	All ACCs	All ACCs	All ACCs	All ACCs
						2015				
						2016				
						2017				

* C = Commissioning ■ Upgrade ■ Replacement

Focus on the top five capex projects

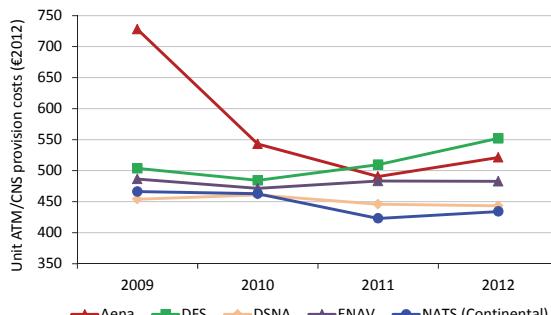
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Replacement of existing radars and procurement of additional radars	SUR	44.3	2008	2014
2	ATC training complex	Building	43.2	2011	2016
3	Purchase of new Radar Data Processing and Flight Data Processing systems, new Human Machine Interface and Controller Working Positions	ATM	41.4	2009	2013
4	Air navigation communication and terminal systems periodic modernisation	COM	40.6	2010	2015
5	Central Ankara ACC and ATC Complexes	ATM	38.6	2008	2014

DSNA (France) – Cost-effectiveness KPIs (€2012)

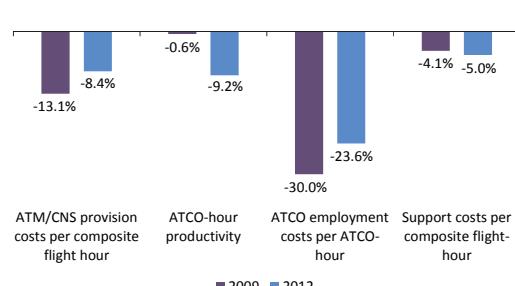


DSNA (France) – (€2012)

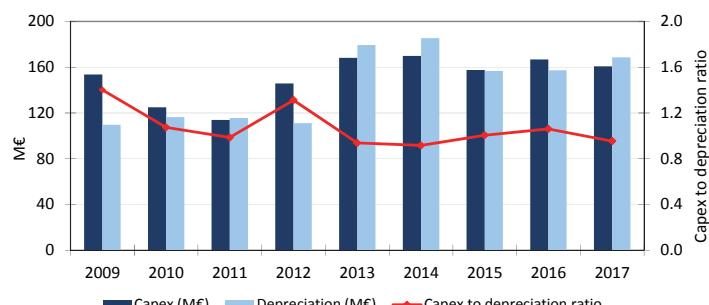
Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Deviation from comparators' weighted average



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other**	Years	FDPs	RDPS	HMI	VCS
							C: 1982*	C: 1982*	C: 2000*	C: 2000 (Marseille) 2000/2003 (Brest) 2002/2005 (Reims) 2002/2006 (Paris) 2003 (Bordeaux)*
€780M- €805M (2003-2021)	€142.0M (2005-2016)					2006				Paris (2002/2006)
						2007		All ACCs		
						2008				
						2009			All ACCs	
						2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016	Marseille, Reims	Marseille, Reims	Marseille, Reims	
						2017	Paris	Paris	Paris	

**The amount provided under "Other" (i.e. €50.0M) relates to the new airport Notre Dame de Landes in Nantes and includes capex relating to ATM C/N/S and building

* C = Commissioning

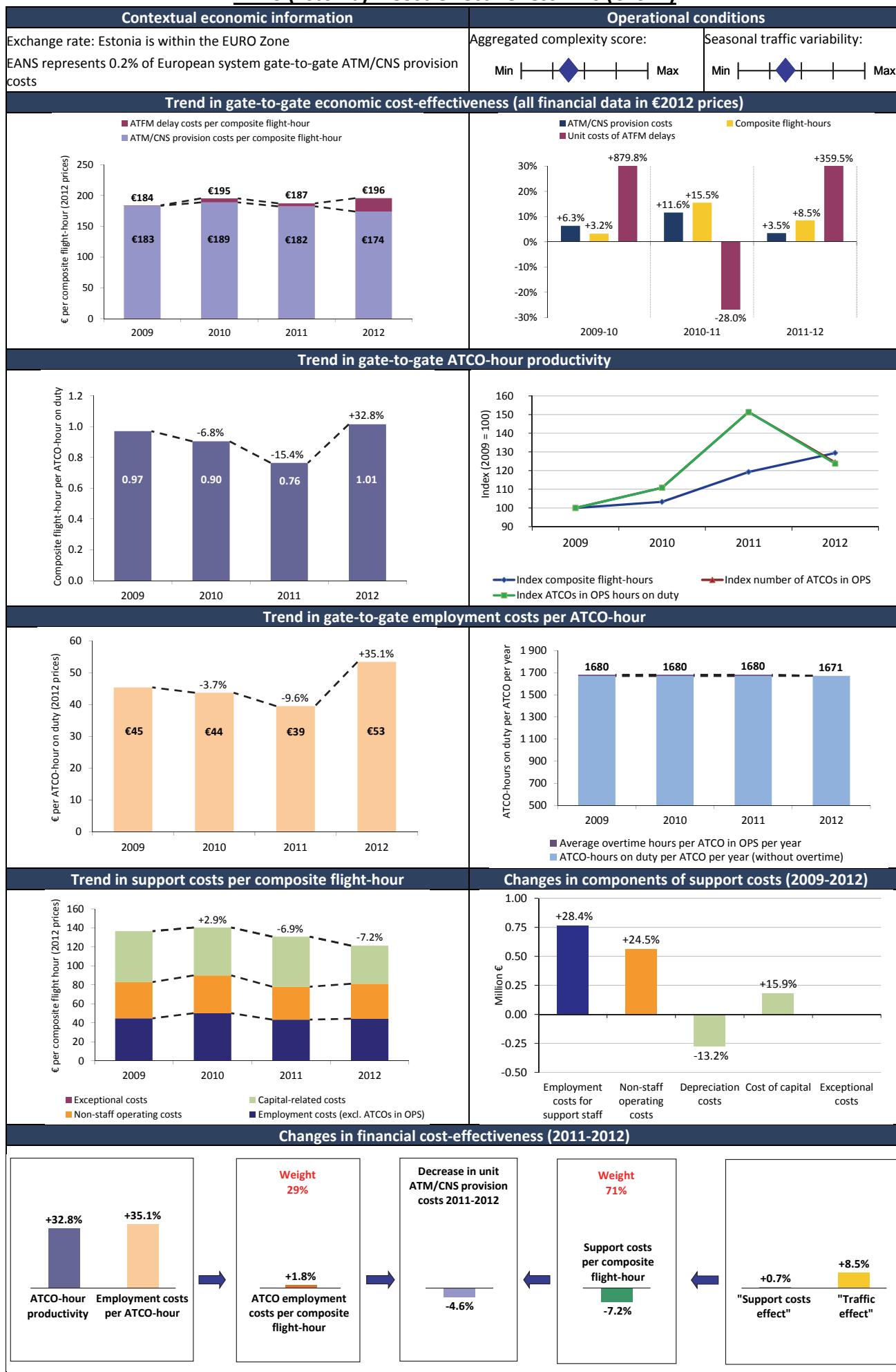
■ Upgrade

■ Replacement

Focus on the top five capex projects

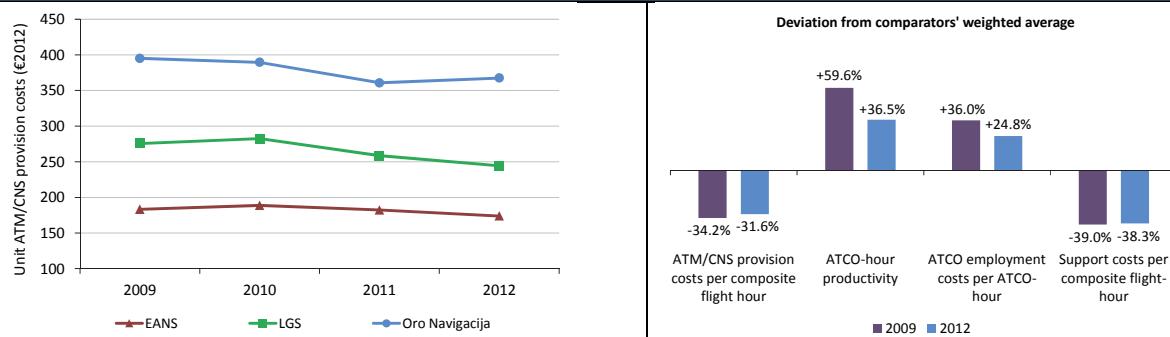
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	4FLIGHT, including COFLIGHT (EFDP) and ERATO (MTCD)	ATM	705.0	2003	2019
2	SYSAT: New ATM system for APP and TWR operational units	ATM	75-100	2012	2021
3	CSSIP: Renewal of LAN and WAN to use IP standard (integrates the former project ISOCRATE)	COM	92.0	2005	2015
4	Notre Dame Des Landes (New airport for Nantes)	Other	50.0	2012	2017
5	VCS : Voice Communication Systems (FABEC cooperation)	COM	50.0	2012	2016

EANS (Estonia) – Cost-effectiveness KPIs (€2012)

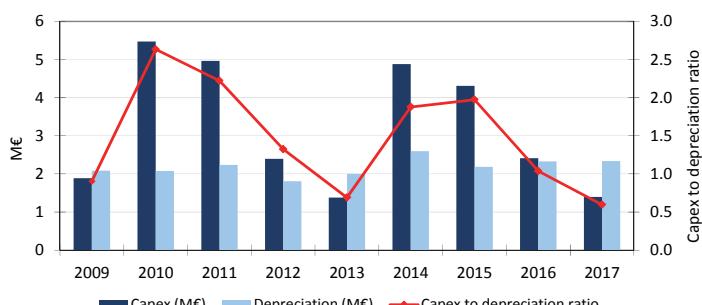


EANS (Estonia) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2012*	C: 2002*	C: 2012*	C: 2012*
						2006				
						2007				
						2008				
€9.0M	€2.7M	€2.5M	€2.9M	€0.2M		2009				
						2010				
						2011				
						2012	1.5		1.5	1.5
						2013				
						2014		1.5		
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Replacement EUROCAT ATM system in Tallinn ACC (including new ATCO HMI)	ATM	8.0	2009	2012
2	Expenses in Surveillance*	SUR	2.9	2011	2015
3	Communication*, including: - €0.3M capex related to the new VCS - €0.5M implementation of Aeronautical Message Handling System (AMHS)	COM	2.7	2010	2015
4	Expenses in Navigation*	NAV	1.5	2012	2015
5	New Tallinn TWR ATM system	ATM	1.0	2009	2010

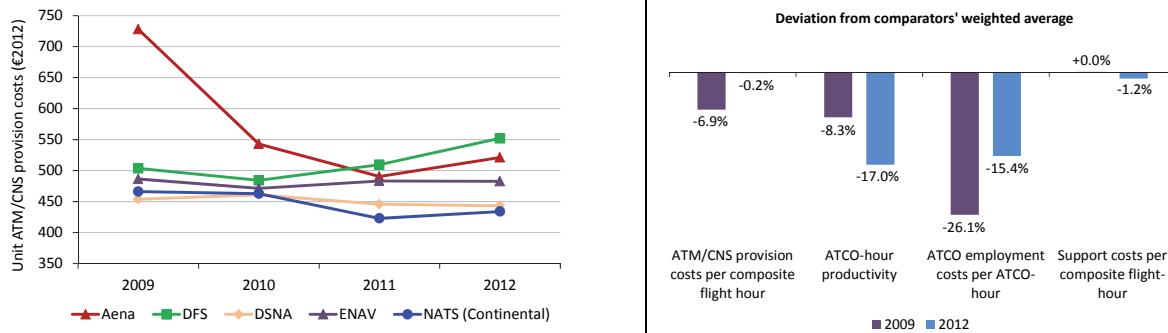
*Source: Estonia National Performance Plan (NPP, June 2011).

ENAV (Italy) – Cost-effectiveness KPIs (€2012)

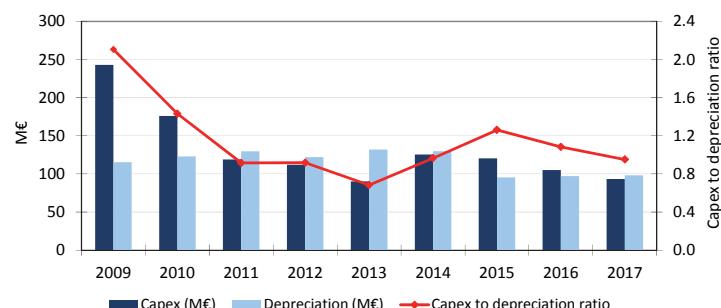


ENAV (Italy) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPs	RDPS	HMI	VCS
							C: 1999 (All ACCs)*	C: 1999 (All ACCs)*	C: 1999 (All ACCs)*	C: 2000 (Roma) 2001 (Padova) 2005 (Brindisi, Mil.)*
						2006				Roma
						2007				
						2008				Brindisi, Milano, Padova
€272.4M	€87.5M	€64.7M	€10.6M	€200.8M	€27.8M	2009				Roma
						2010				
						2011				
						2012				
						2013				
						2014				
						2015	All ACCs	All ACCs	All ACCs	Replacement
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Development of an integrated platform for the management of ATM procedures and aeronautical data (program 4-FLIGHT)	ATM	156.4	2009	2015
2	Realisation of civil infrastructures	Building	146.8	2009	2015
3	Modernisation of the radio assistance equipment	NAV	64.7	2009	2015
4	Automation of the operating system	ATM	64.1	2009	2015
5	Implementation of the new airspace design system	ATM	51.9	2009	2015

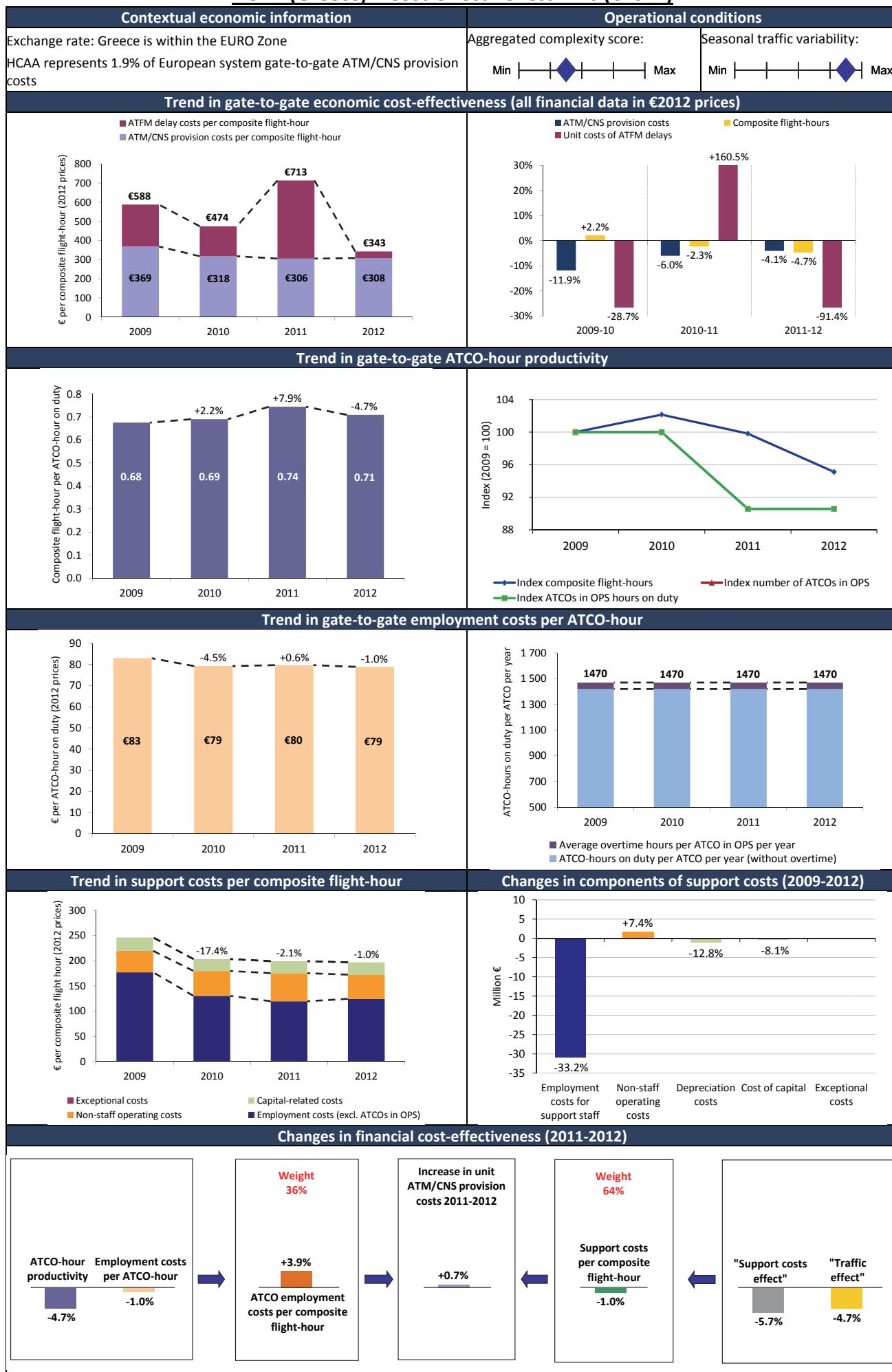
Finavia (Finland) – Cost-effectiveness KPIs (€2012)



Finavia (Finland) – (€2012)

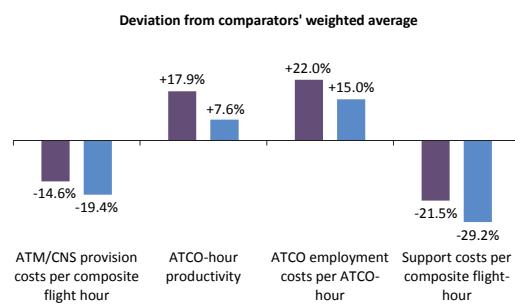
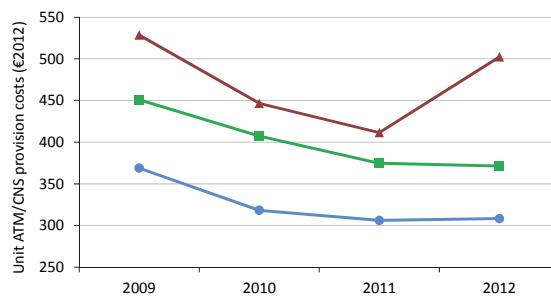


HCAA (Greece) – Cost-effectiveness KPIs (€2012)

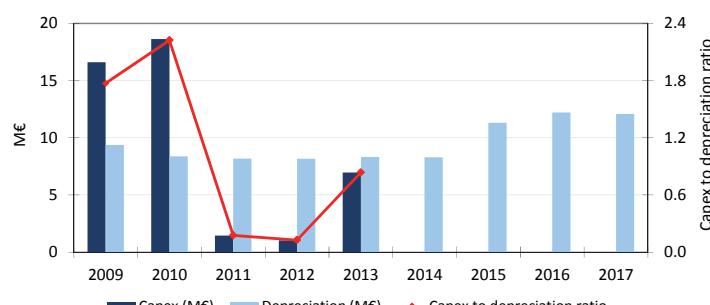


HCAA (Greece) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2000*	C: 2000*	C: 2000*	C: 1999*
						2006				
						2007				
						2008				
€10.7M	€15.1M		€9.3M			2009				
						2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

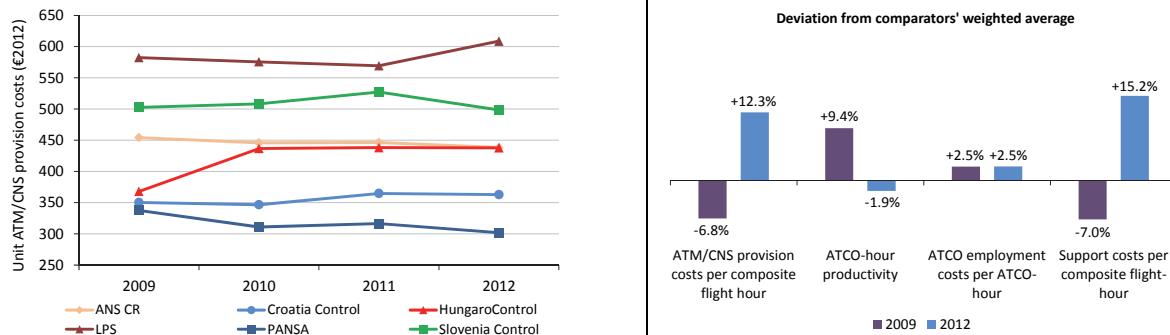
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Purchase of VCS/RCS systems for Athinai/Makedonia ACC	COM	8.5	2013	2015
2	Upgrade of PALLAS system (FDPS, RDPS, ODS, HMI)	ATM	8.0	2013	2015
3	Purchase of a surface radar (SMR/A-SMGCS) at Thessaloniki/Makedonia International airports	SUR	3.8	2009	2013
4	Purchase of Multilateration/WAM equipment	SUR	3.1	2013	2015
5	Purchase of VCS/RCS systems for 5 main airports	COM	2.9	2013	2015

HungaroControl (Hungary) – Cost-effectiveness KPIs (€2012)

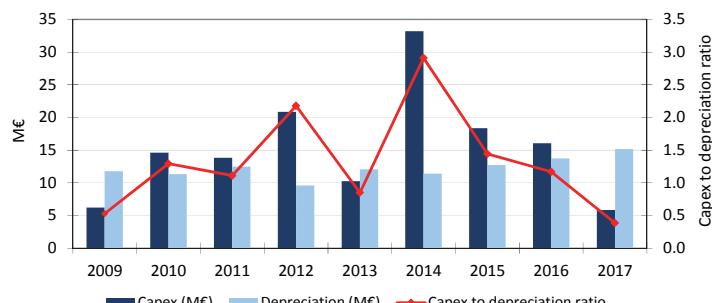


HungaroControl (Hungary) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 1998*	C: 1998*	C: 1998*	C: 2009*
						2006				
						2007				
						2008				
						2009				
€28.6M	€23.3M	€2.0M	€20.6M			2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

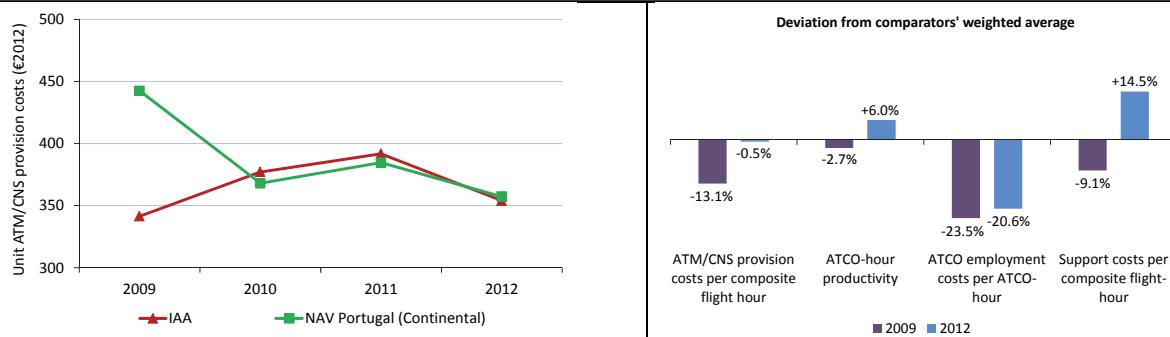
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	MATIAS SW and HW upgrade (ANS III project)	ATM	18.4	2009	2012
2	CPDLC implementation	COM	15.1	2012	2014
3	ANS III Building (ANS III project)	Building	14.7	2010	2012
4	ANS III Technology (ANS III project)	ATM	7.2	2010	2012
5	G/G COM infrastructure deployment	COM	6.2	2010	2012

IAA (Ireland) – Cost-effectiveness KPIs (€2012)

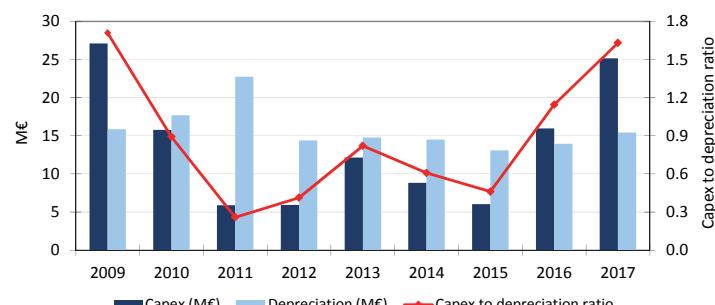


IAA (Ireland) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2003 (All ACCs)*			
€67.0M	€12.0M		€23.0M			2006				
						2007				
						2008				
						2009	All ACCs	All ACCs	All ACCs	
						2010				
						2011	All ACCs	All ACCs	All ACCs	
						2012	All ACCs		All ACCs	
						2013				
						2014				
						2015				All ACCs
						2016				
						2017				

* C = Commissioning ■ Upgrade ■ Replacement

Focus on the top five capex projects

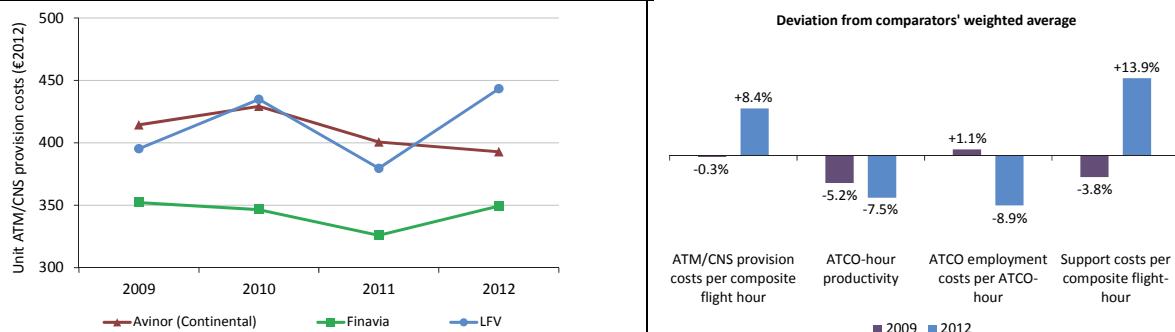
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	COOPANS (BUILD 1) initiative, including the replacement of the current FDP and RDP systems	ATM	49.0	2006	2012
2	Radar Replacement	SUR	20.0	2006	2011
3	Commissioning of Voice Communications System Switch	COM	12.0	2010	2016
4	COOPANS (BUILD 2) initiative	ATM	8.0	2010	2014
5	COOPANS (BUILD 3) initiative	ATM	8.0	2013	2016

LFV (Sweden) – Cost-effectiveness KPIs (€2012)

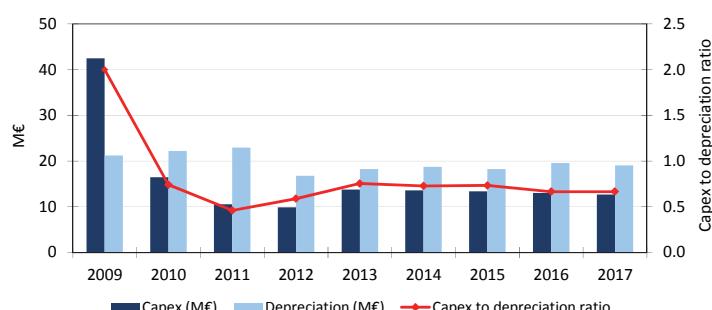


LFV (Sweden) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPs	RDPS	HMI	VCS
							C: 2012 (Malmo) 2013 (Stokholm)*	C: 2012 (Malmo) 2013 (Stokholm)*	C: 2012 (Malmo) 2013 (Stokholm)*	C: 2010 (All ACCs)*
€89.9M €9.9M (2007-2018)						2006				
						2007				
						2008				
			€11.6M €6.4M			2009				
						2010				All ACCs
						2011				
						2012	Malmo	Malmo	Malmo	
						2013	Stockholm	Stockholm	Stockholm	
						2014				
						2015				
						2016				
						2017				

* C = Commissioning ■ Upgrade ■ Replacement

Focus on the top five capex projects

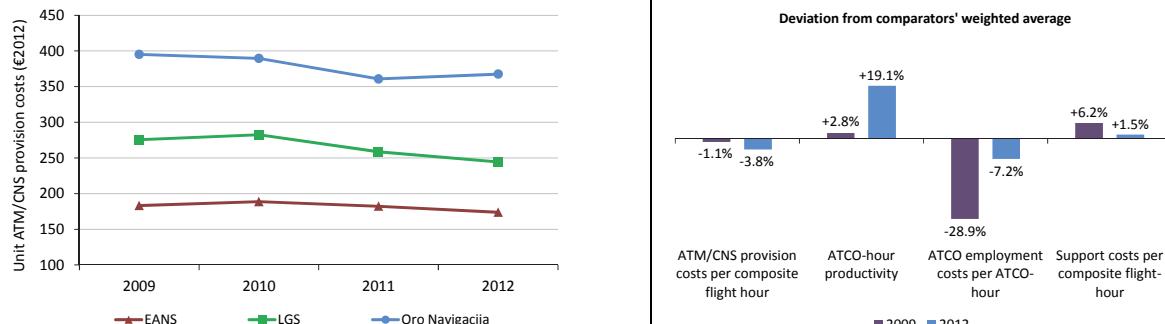
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	COOPANS	ATM	78.6	2006	2017
2	Training and support building in Malmo	Buildings	11.6	2007	2011
3	Remote Tower Centre (RTC)	ATM	7.1	2010	2014
4	Surveillance Upgrade Program (WAM)	SUR	6.4	2009	2014
5	VHF Radio / UHF / 8,33kHz	COM	6.1	2007	2018

LGS (Latvia) – Cost-effectiveness KPIs (€2012)

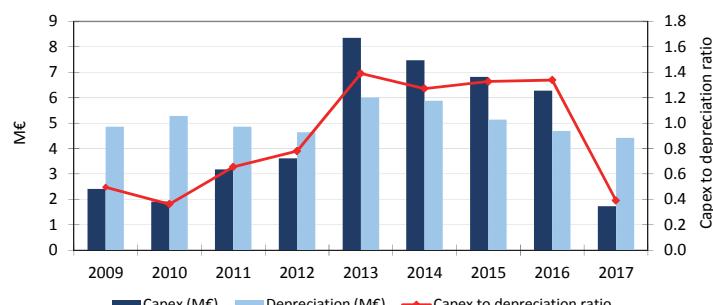


LGS (Latvia) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

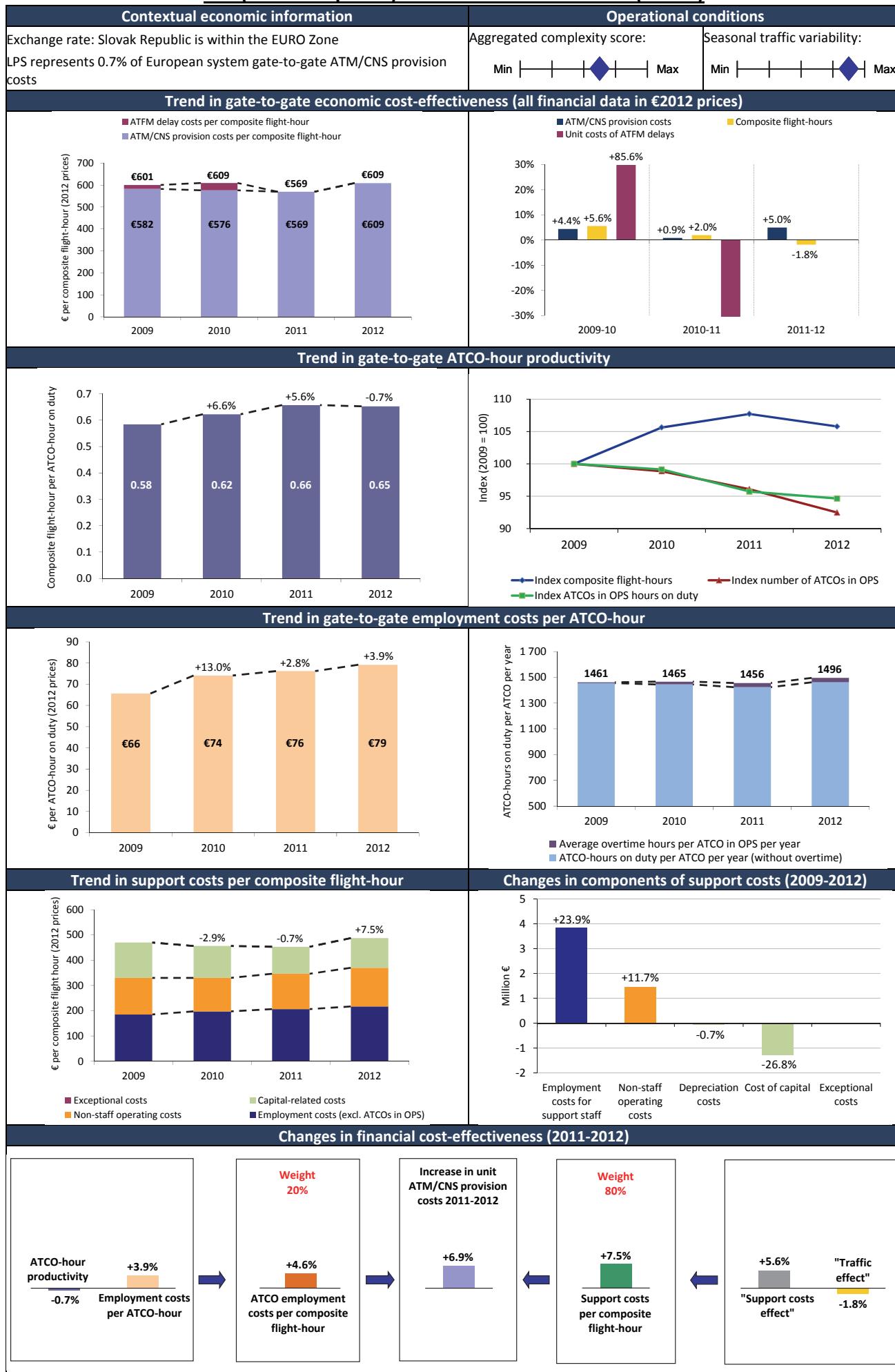
ATM	COM	NAV	SUR	Building	Other	Years	FDPs	RDPs	HMI	VCS
							C: 1999*	C: 1999*	C: 1999*	C: 2004*
€13.8M			€12.6M			2006				
						2007				
						2008				
						2009				
						2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

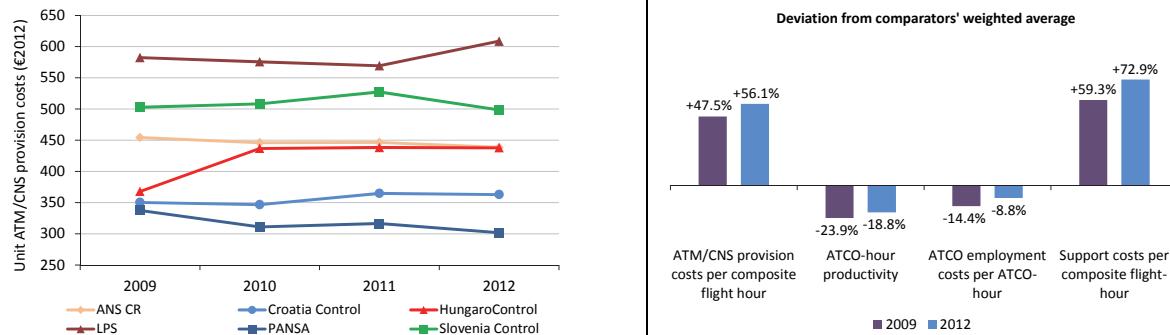
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Modernization of surveillance system for provision of ATS in Latvia (MSSAL project) - 3 radars exchange	SUR	9.2	2007	2009
2	PBN Implementation	ATM	4.1	2013	2016
3	Modernization of Automated ATC system (ATRACC)	ATM	3.9	2010	2013
4	Modernization of VHF "Air-Ground" communication system	COM	2.3	2012	2013
5	ILS/DME RWY18 Riga	NAV	2.3	2008	2009

LPS (Slovak Republic) – Cost-effectiveness KPIs (€2012)

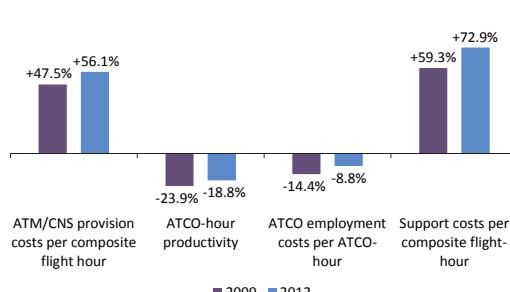


LPS (Slovak Republic) – (€2012)

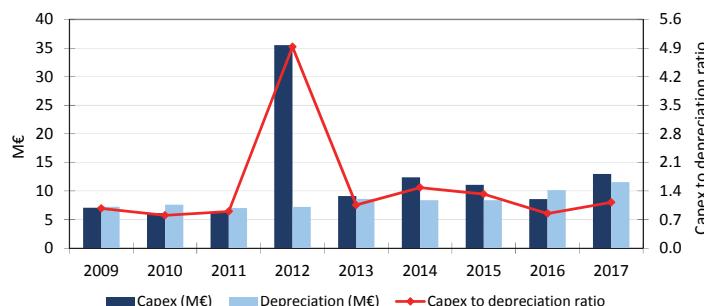
Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Deviation from comparators' weighted average



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 1999*	C: 2005*	C: 1999*	C: 2009*
						2006				
						2007				
						2008				
						2009				
€23.5M (2010-2018)	€2.2M	€5.1M	€34.2M			2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Construction of the new ACC in Bratislava	Building	30.0	2007	2012
2	E2000-Upgrade	ATM	20.0	2015	2018
3	Construction of infrastructure related to the new MSSR in Mošník	Building	4.2	2009	2015
4	Upgrade of communication system	COM	2.2	2012	2012
5	Upgrade of the E2000 PLCA system	ATM	2.2	2010	2012

LVNL (Netherlands) – Cost-effectiveness KPIs (€2012)



LVNL (Netherlands) – (€2012)



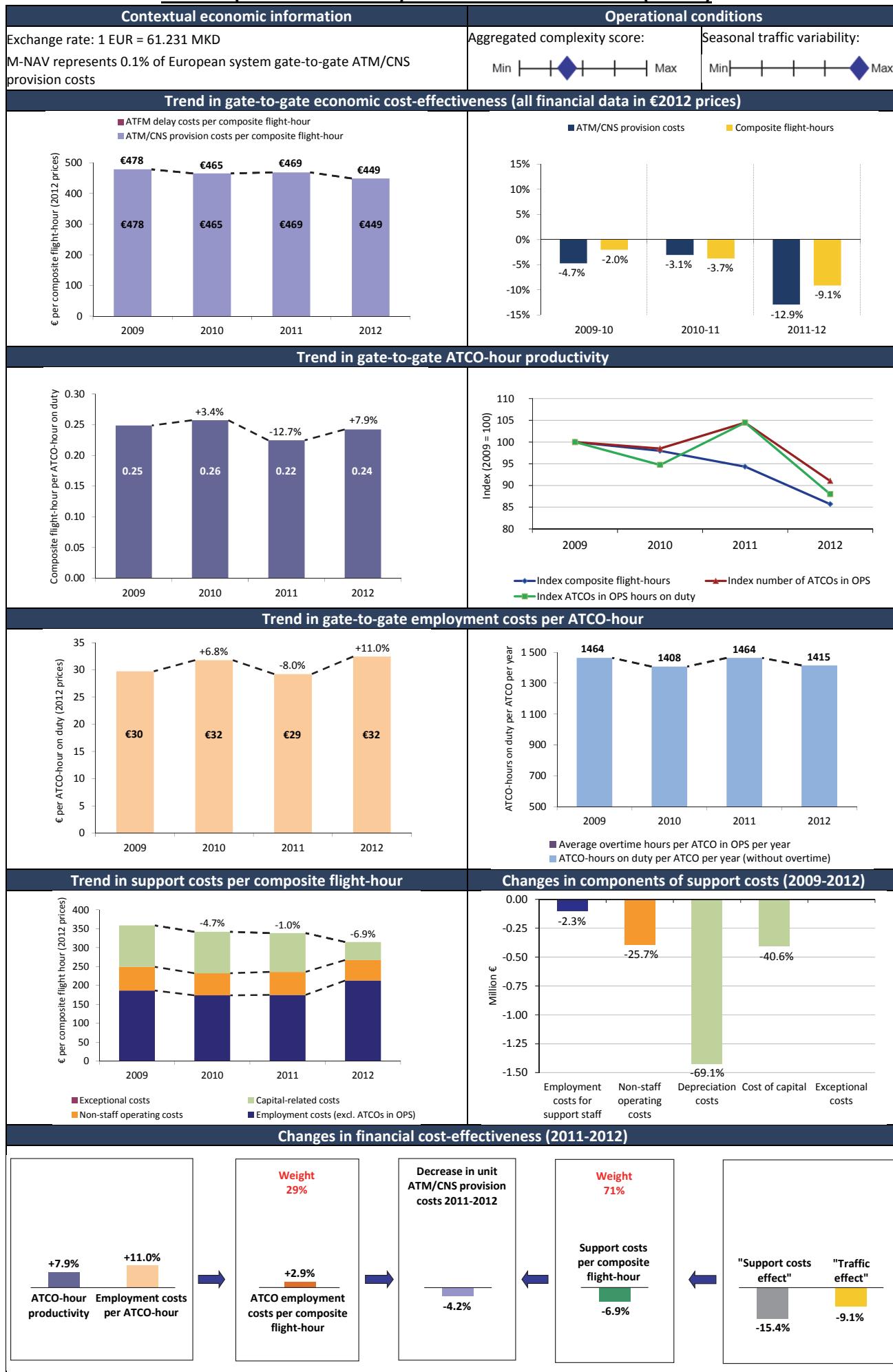
MATS (Malta) – Cost-effectiveness KPIs (€2012)



MATS (Malta) – (€2012)



M-NAV (F.Y.R. Macedonia) – Cost-effectiveness KPIs (€2012)



M-NAV (F.Y.R. Macedonia) – (€2012)



MoldATSA (Moldova) – Cost-effectiveness KPIs (€2012)



MoldATSA (Moldova) – (€2012)



MUAC (Maastricht) – Cost-effectiveness KPIs (€2012)

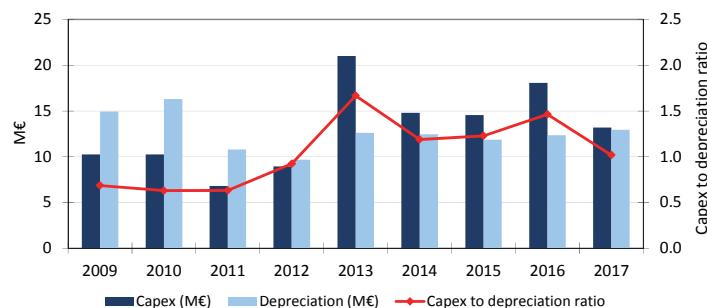


MUAC (Maastricht) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group

Due to the unique nature of its airspace (upper airspace only, across four States), it was determined that Maastricht (MUAC) should be considered separately and therefore this ANSP is not included in the comparator group benchmarking analysis

Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2008*	C: 2008*	C: 2002*	C: 1995*
€115.1M (2003-2016)						2006				
						2007				
						2008	C: 2008*	C: 2008*		
				€17.1M	€30.7M	2009			Upgrade	
						2010				
						2011				
						2012				
						2013		C: 2008*		
						2014			Replacement	
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

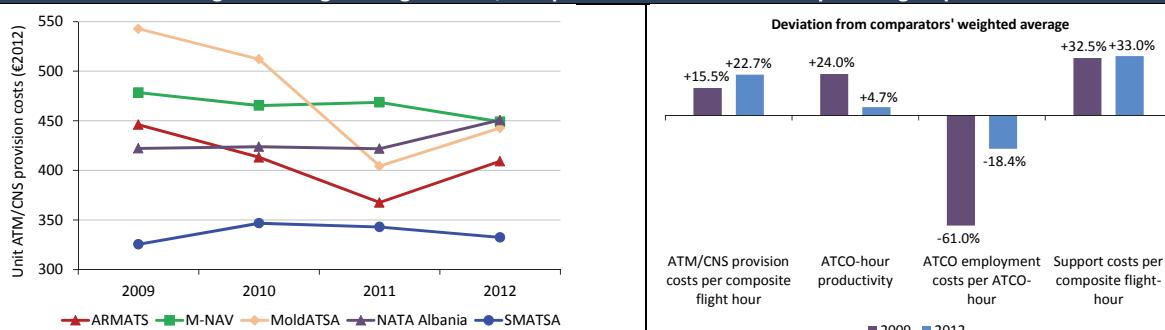
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Procurement of new FDPS	ATM	50.0	2003	2011
2	Other	Other	30.7	2012	2016
3	Implementation of the new CWP system	ATM	22.3	2012	2016
4	Renewal of infrastructure	Building	13.5	2012	2014
5	Replacement of the VCS system	ATM	13.3	2011	2016

NATA Albania (Albania) – Cost-effectiveness KPIs (€2012)

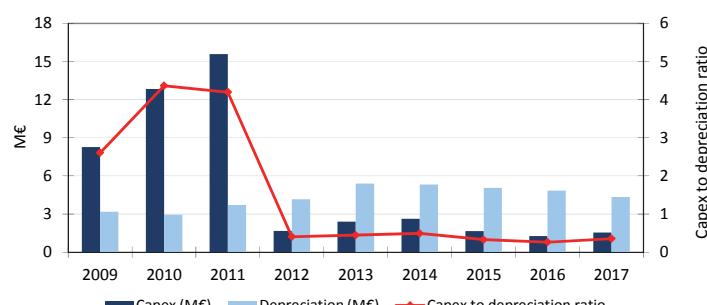


NATA Albania (Albania) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2004*	C: 2004*	C: 2004*	C: 2008*
						2006				
						2007				
						2008				
						2009				
€17.7M	€2.0M	€1.6M	€13.8M	€0.3M		2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

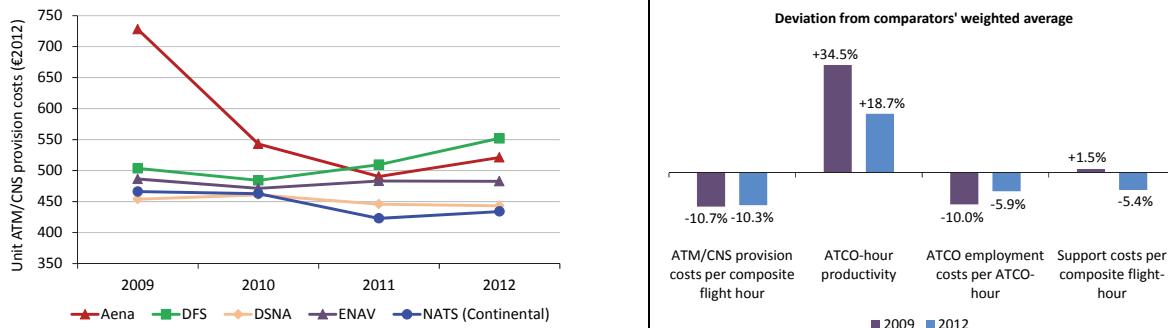
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Purchase of a new ATM system	ATM	14.5	2008	2012
2	New joint ACC/APP/TWR building located near Mother Teresa Airport	Buildings	13.5	2008	2011
3	Remote radio facility (RXTX radio for VHF)	COM	2.0	2008	2012
4	Purchase of a Voice Communication System	ATM	1.8	2008	2011
5	Purchase and installation of the ILS equipment.	NAV	1.6	2010	2011

NATS Continental (United Kingdom) – Cost-effectiveness KPIs (€2012)

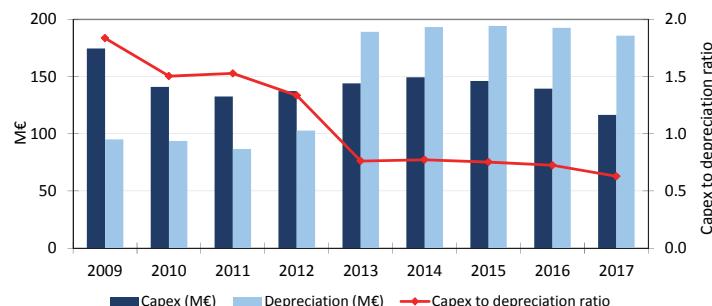


NATS Continental (United Kingdom) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

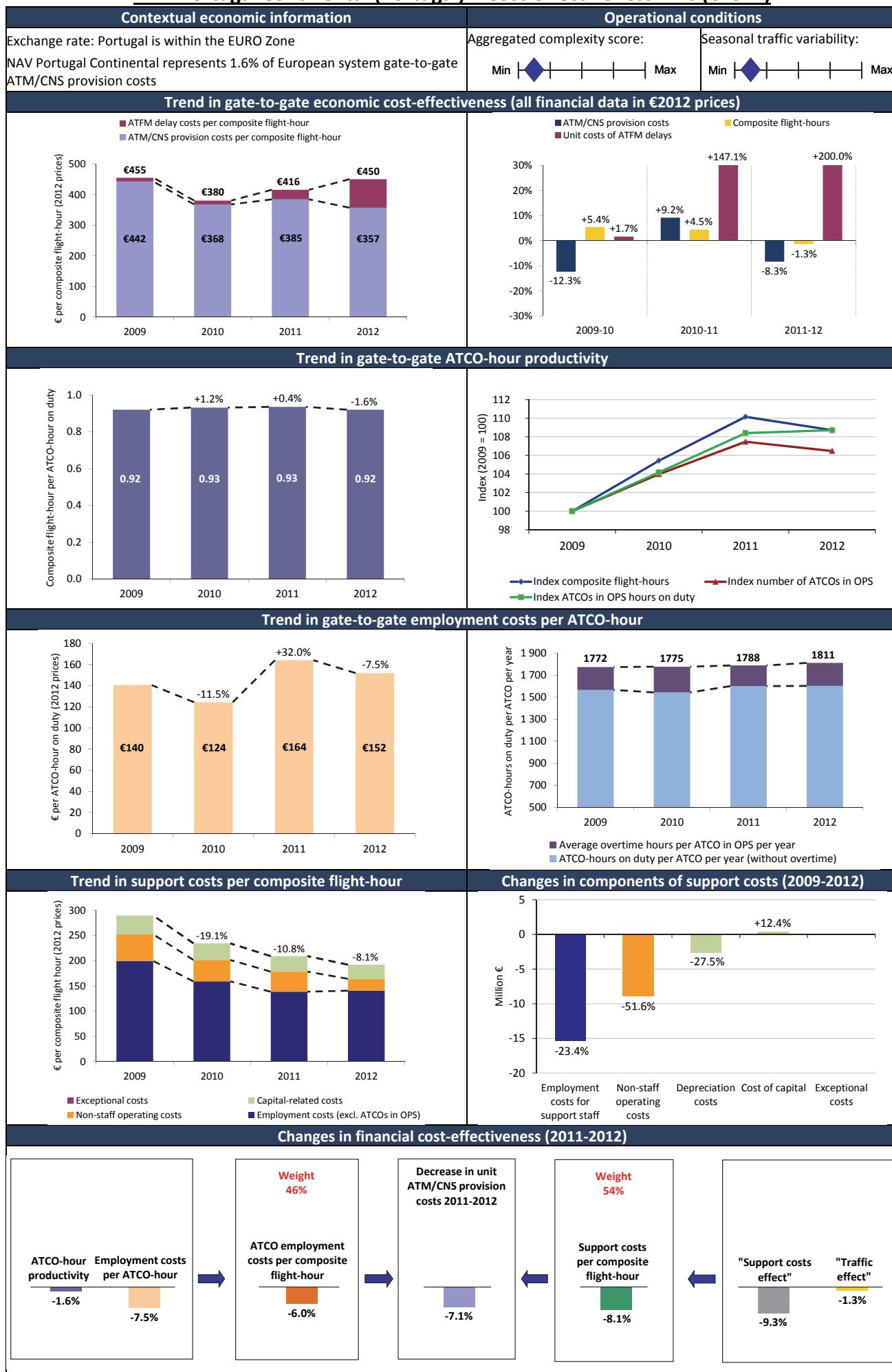
ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2001 (London AC, London TC and Prest.)*	C: 1996 (Lon. AC) 2007 (Lon. TC) 2009 (Prest.)*	C: 2001 (Lon. AC) 2007 (Lon. TC) 2009 (Prest.)*	C: 2002 (Lon. AC) 2007 (Lon. TC) 2008 (Prest.)*
€751.9M (2003-2019)						2006				
						2007		London TC	London TC	London TC
				€18.0M		2008				London AC Prestwick
						2009		London AC Prestwick	Prestwick	
						2010	Prestwick	London TC	London TC	
						2011	London AC and London TC		London AC	London TC
						2012		London AC		
						2013				
						2014		London TC and Prestwick	London TC and Prestwick	
						2015				
						2016				
						2017				

* C = Commissioning ■ Upgrade ■ Replacement

Focus on the top five capex projects

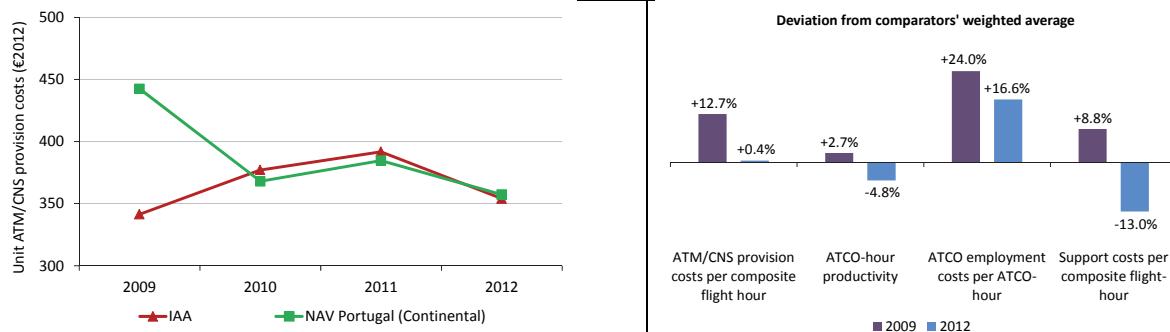
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	ACC systems software development	ATM	239.7	2015	2019
2	iTEC	ATM	209.3	2015	2019
3	iFACTS	ATM	191.0	2003	2011
4	CNS infrastructure	ATM	126.6	2015	2019
5	Other capex	Other	103.7	2015	2019

NAV Portugal Continental (Portugal) – Cost-effectiveness KPIs (€2012)

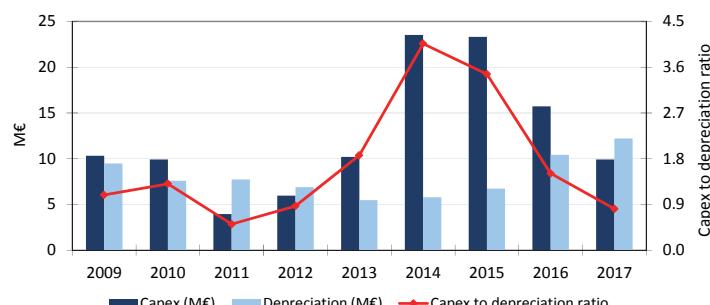


NAV Portugal Continental (Portugal) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2001*	C: 2001*	C: 2001*	C: 1999*
						2006				
						2007				
						2008				
						2009				
						2010				
€55.5M	€7.1M	€6.9M	€16.1M	€7.6M		2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

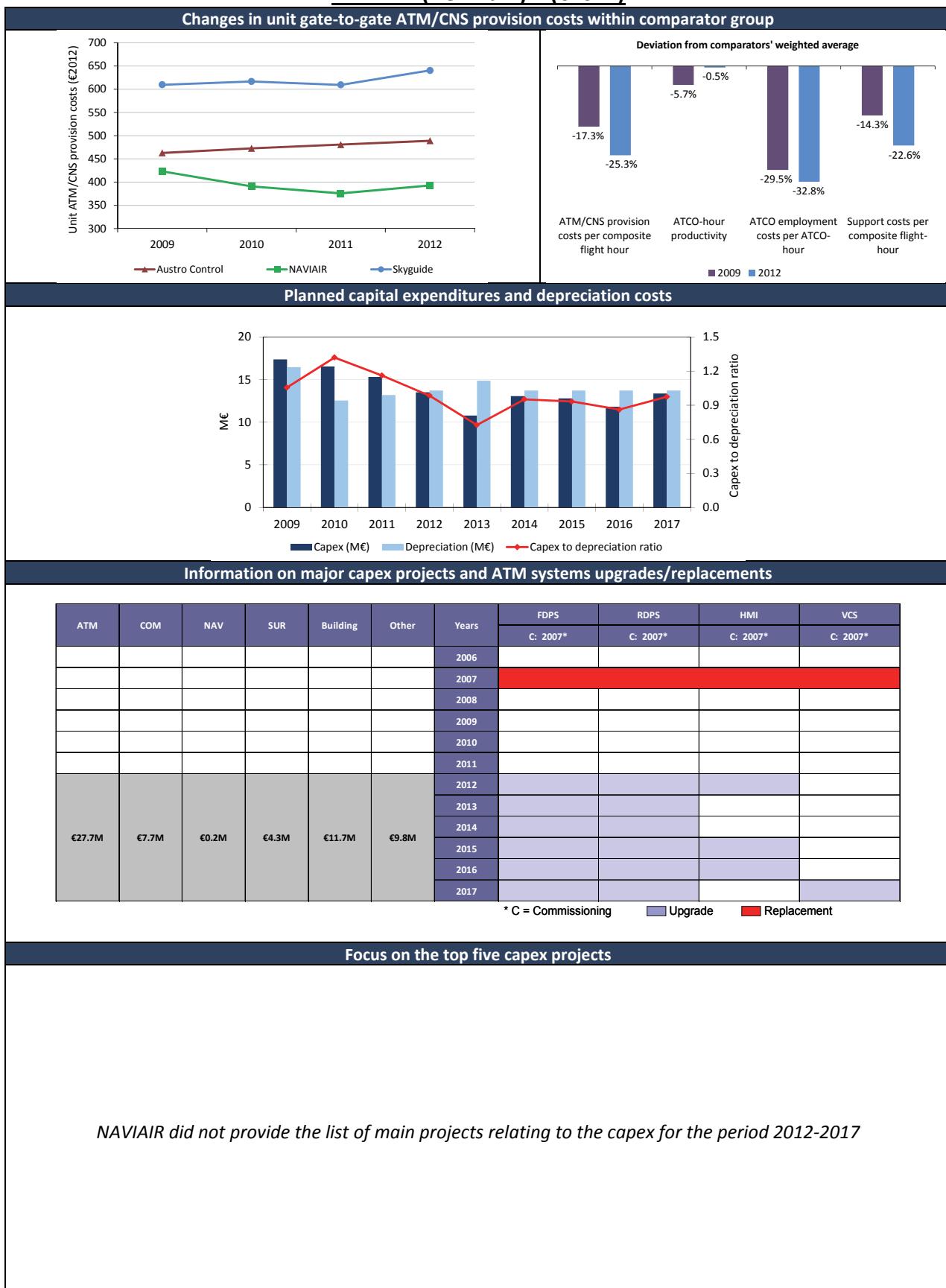
Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	ATM systems program (mainly including the evolution of the LISATM system into LISATM-ITEC)	ATM	55.5	2011	2016
2	SURVEILLANCE program (mainly including New MLAT equipment FIR Lisboa and Santa Maria, new MSSRs, replacement of Lisboa radar)	SUR	16.1	2011	2016
3	Building program (mainly including new Tower Centre in Horta)	Building	7.6	2011	2016
4	Communication program (mainly including new VCS system and purchase or tape recorders)	COM	7.1	2011	2016
5	NAVAIDS program (mainly including new DMEs and PRNAV, Replacement of VORs, TACAN and DMEs, precision approach system in Oporto and Faro and GBAS)	NAV	6.9	2011	2016

NAVIAIR (Denmark) – Cost-effectiveness KPIs (€2012)



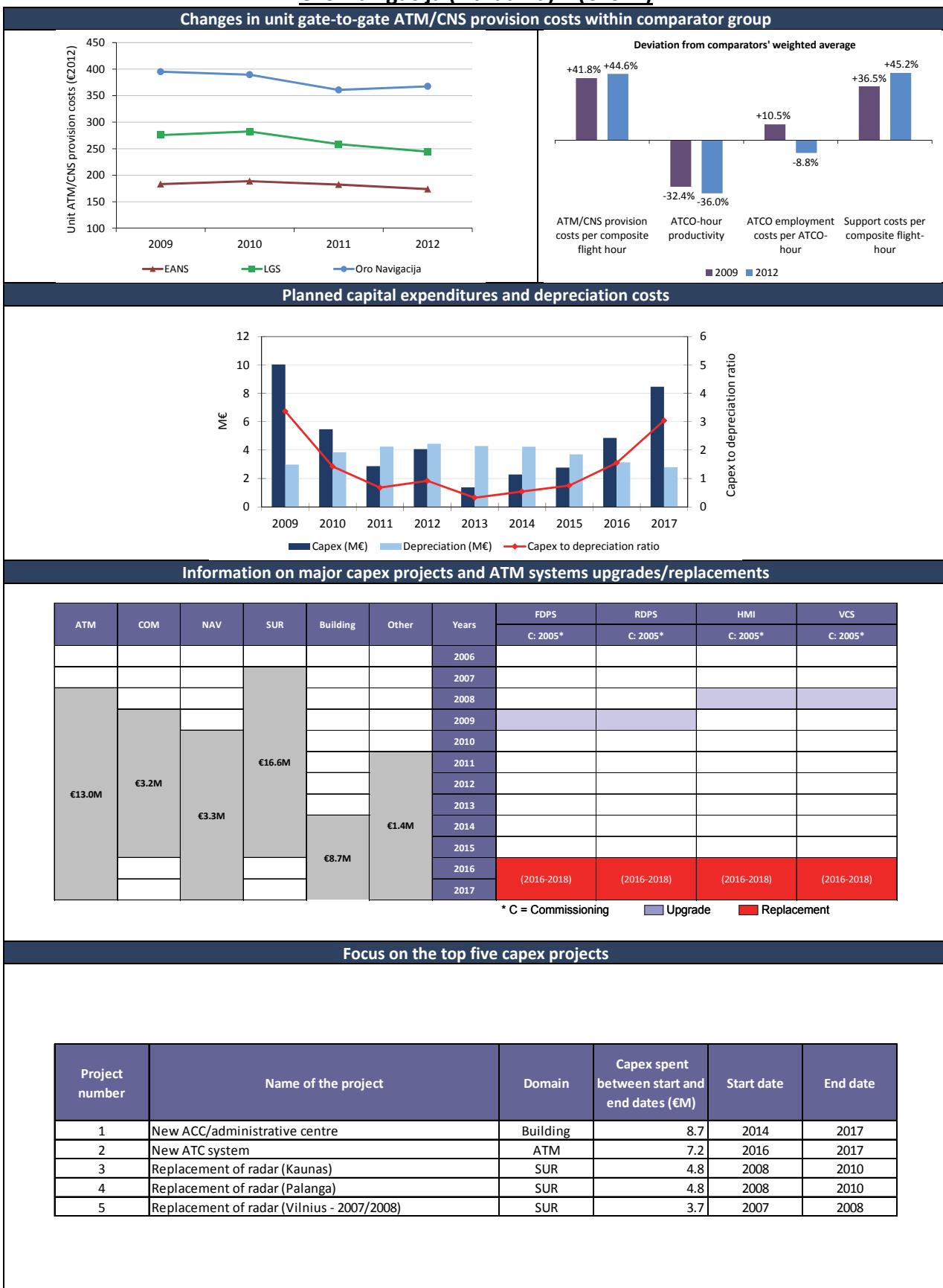
NAVAIR (Denmark) – (€2012)



Oro Navigacija (Lithuania) – Cost-effectiveness KPIs (€2012)



Oro Navigacija (Lithuania) – (€2012)



PANSA (Poland) – Cost-effectiveness KPIs (€2012)



PANSA (Poland) – (€2012)

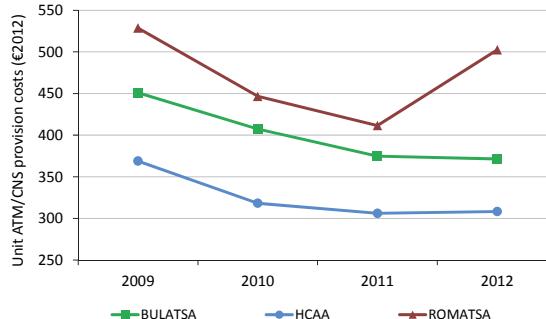


ROMATSA (Romania) – Cost-effectiveness KPIs (€2012)

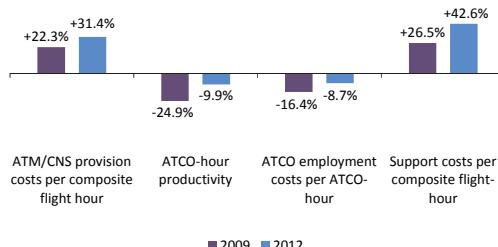


ROMATSA (Romania) – (€2012)

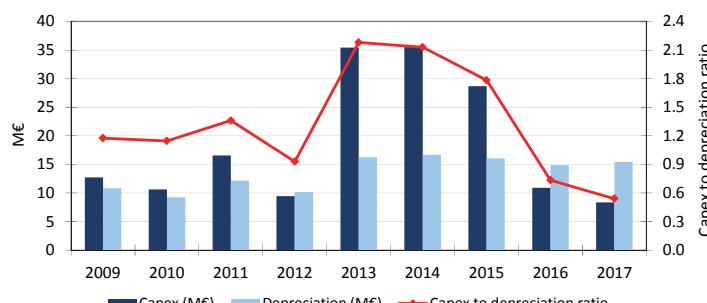
Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Deviation from comparators' weighted average



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2003*	C: 2003*	C: 2003*	C: 2004*
						2006				
						2007				
						2008				
€64.4M (2008-2020)	€8.3M	€1.2M	€17.3M	€0.4M	€3.4M	2009				
						2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				
						2017				

* C = Commissioning Upgrade Replacement

Focus on the top five capex projects

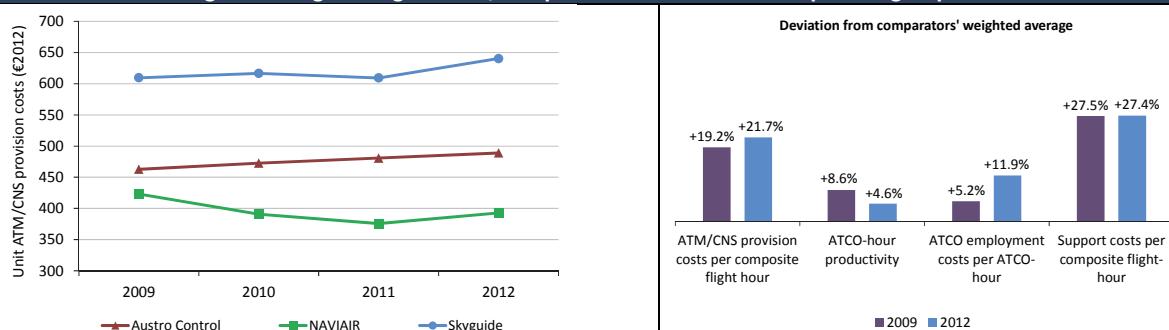
Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	ATM System ROMATSA 2015+ Phase I	ATM	35.8	2011	2015
2	ATM System ROMATSA 2015+ Phase II	ATM	15.8	2015	2018
3	ATM System ROMATSA 2015+ Phase III	ATM	10.5	2017	2020
4	Mode S radars installation	SUR	7.5	2011	2015
5	VCSS Replacement	COM	6.5	2012	2014

Skyguide (Switzerland) – Cost-effectiveness KPIs (€2012)

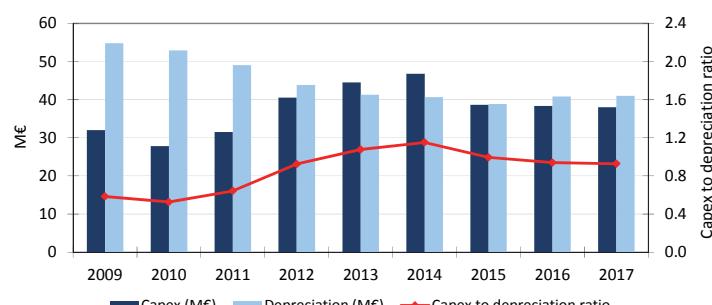


Skyguide (Switzerland) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPs	RDPS	HMI	VCS	
							C: 1999 (Geneva) 2007 (Zurich)*	C: 2004 (All ACCs)*	C: 2003/06 (All ACCs)*	C: 2004/05 (All ACCs)*	
€58.7M (2005-2013)	€9.0M (2005-2013)					2006	Geneva		All ACCs		
						2007	Zurich				
						2008					
						2009					
						2010					
						2011					
						2012	All ACCs	All ACCs	All ACCs	All ACCs	
						2013					
						2014					
						2015			All ACCs		
						2016					
						2017					

**Expenses relating to AIS

* C = Commissioning

■ Upgrade

■ Replacement

Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	Implementation of stripless environment	ATM	30.8	2011	2017
2	TACO (Tower – Approach – Communication) system integration into the new FDP in Zurich	ATM	18.8	2008	2014
3	Realisation of web Portal IBS	Other	6.4	2010	2013
4	MESANGE (implementation of Aeronautical Message Handling Service)	COM	4.5	2005	2010
5	Implementation of LINK2K+/CPDLC (Controller Pilot Data Link Communications)	COM	4.5	2011	2013

Slovenia Control (Slovenia) – Cost-effectiveness KPIs (€2012)



Slovenia Control (Slovenia) – (€2012)

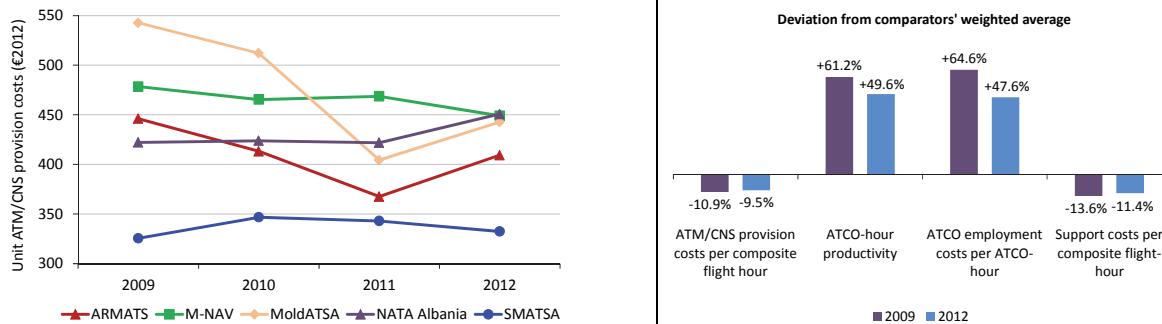


SMATSA (Serbia and Montenegro) – Cost-effectiveness KPIs (€2012)

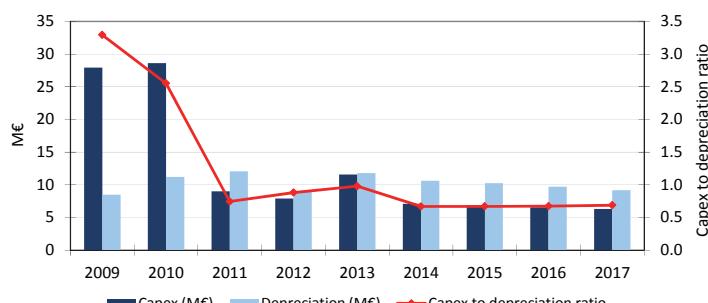


SMATSA (Serbia and Montenegro) – (€2012)

Changes in unit gate-to-gate ATM/CNS provision costs within comparator group



Planned capital expenditures and depreciation costs



Information on major capex projects and ATM systems upgrades/replacements

ATM	COM	NAV	SUR	Building	Other	Years	FDPS	RDPS	HMI	VCS
							C: 2011	C: 2011	C: 2011	C: 2011
						2006				
						2007				
€44.3M	€8.5M					2008				
						2009				
						2010				
						2011				
						2012				
						2013				
						2014				
						2015				
						2016				

* C = Commissioning Upgrade Replacement

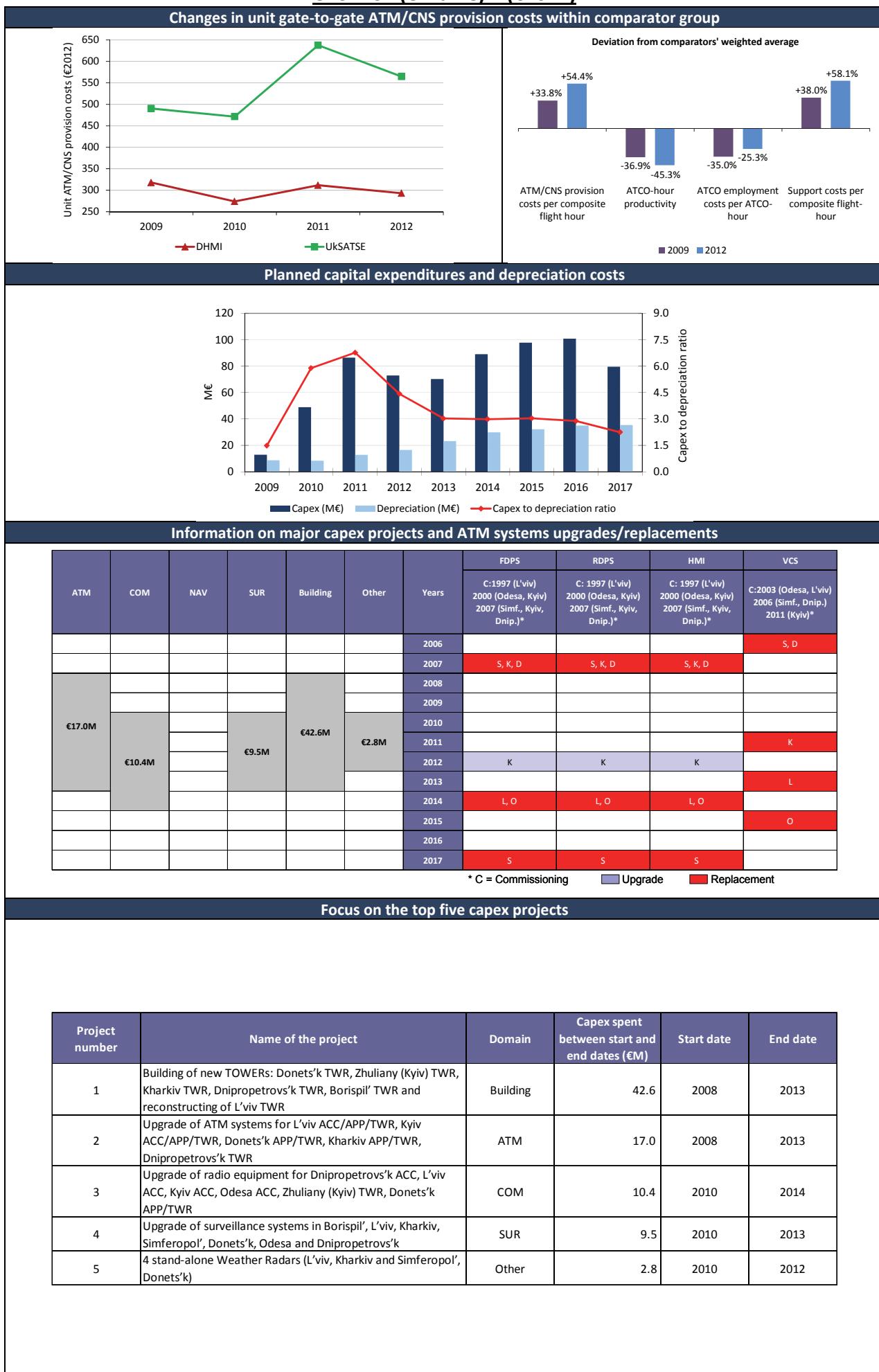
Focus on the top five capex projects

Project number	Name of the project	Domain	Capex spent between start and end dates (€M)	Start date	End date
1	New ATM System for Belgrade ACC and SMATSA communications network	ATM	30.9	2009	2011
2	New ATCC in Belgrade	Building	17.6	2009	2010
3	Aircraft equipped with Automatic Flight Inspection System	ATM	10.0	2008	2010
4	VHF and UHF radio system for air-ground communication	COM	4.9	2008	2010
5	Procurement and installation of VHF/UHF ground-air	COM	3.3	2012	2015

UkSATSE (Ukraine) – Cost-effectiveness KPIs (€2012)



UkSATSE (Ukraine) – (€2012)



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ANNEX 1 – STATUS OF ANSPs YEAR 2012 ANNUAL REPORTS

	Availability of a public Annual Report (AR)	Availability of Management Report	Availability of Annual Accounts	Independent audited accounts	Separate disclosure of en-route and terminal ANS costs	Information provided in English	PRU comments
Aena	✓	✓	✓	✓	No	✓	
ANS CR	✓	✓	✓	✓	No	✓	
ARMATS	No	No	No	No	No	No	PRU received an extract of the financial statements comprising an Income and a Balance Sheet statement.
Austro Control	✓	✓	✓	✓	No	✓	
Avinor	✓	✓	✓	✓	No	✓	
Belgocontrol	✓	✓	✓	✓	No	✓	Audit performed by the “board of auditors”. No cash flow statement.
BULATSA	✓	✓	✓	✓	No	✓	
Croatia Control	✓	✓	✓	✓	No	✓	
DCAC Cyprus	No	No	No	No	No	No	DCAC annually discloses a report which includes some financial information from Route Charges Document but not Financial Statements.
DFS	✓	✓	✓	✓	No	✓	Separate accounts are used for internal reporting purposes and charges calculation.
DHMi	✓	✓	✓	✓	No	✓	Includes airport activities.
DSNA	No	No	No	No	No	No	At the time of writing this report, DSNA had not yet released its Annual Report comprising the financial statements for the year 2012.
EANS	✓	✓	✓	✓	No	✓	
ENAV	✓	✓	✓	✓	No	✓	
Finavia	✓	✓	✓	✓	No	✓	Detailed accounts only available for total Finavia.
HCAA	No	No	No	No	No	No	
HungaroControl	✓	✓	✓	✓	No	✓	
IAA	✓	✓	✓	✓	No	✓	
LFV	✓	✓	✓	✓	No	✓	
LGS	✓	✓	✓	✓	No	✓	
LPS	✓	✓	✓	✓	No	✓	
LVNL	✓	✓	✓	✓	✓	No	Separate Income Statement for en-route and terminal ANS
MATS	✓	✓	✓	✓	✓	✓	Separate Income Statement for en-route and terminal ANS.
M-NAV	No	No	No	No	No	No	
MoldATSA	No	No	No	No	No	No	PRU received an extract of the Financial Statements.
MUAC	✓	✓	✓	✓	n/appl	✓	
NATA Albania	No	No	✓	✓	No	✓	At the time of writing this report, NATA Albania had only released a document comprising its Financial Statements, but not a Management Report for the year 2012.
NATS	✓	✓	✓	✓	✓	✓	Several ARs for individual group companies.
NAV Portugal	✓	✓	✓	✓	✓	No	Separate disclosure of aggregated revenues and costs for en-route and terminal ANS.
NAVIAIR	✓	✓	✓	✓	✓	✓	
Oro Navigacija	✓	✓	✓	✓	✓	✓	Total revenues and costs provided for both en-route and terminal ANS.
PANSA	✓	✓	✓	✓	No	✓	
ROMATSA	✓	✓	✓	✓	No	✓	
Skyguide	✓	✓	✓	✓	✓	✓	Separate accounts for en-route, terminal and military OAT services.
Slovenia Control	✓	✓	✓	✓	No	✓	
SMATSA	✓	✓	✓	✓	No	✓	
UkSATSE	✓	✓	✓	✓	No	✓	Annual Report does not include a Financial Statements. UkSATSE provided a separate document which comprises Financial Statements.

Annex 1 - Table 0.1: Status on ANSP's 2012 Annual Reports

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ANNEX 2 – PERFORMANCE INDICATORS USED FOR THE COMPARISON OF ANSPs

The output measures for ANS provision are, for en-route, the en-route flight-hours controlled²⁵ and, for terminal ANS, the number of IFR airport movements controlled. In addition to those output metrics, it is important to consider a "gate-to-gate" perspective, because the boundaries used to allocate costs between en-route and terminal ANS vary between ANSPs and might introduce a bias in the cost-effectiveness analysis²⁶.

For this reason, an indicator combining the two separate output measures for en-route and terminal ANS provision has been calculated. The "composite gate-to-gate flight-hours" are determined by weighting the output measures by their respective average cost of the service for the whole Pan-European system. This average weighting factor is based on the total monetary value of the outputs over the period 2002-2012 and amounts to 0.27.

The composite gate-to-gate flight-hours are consequently defined as:

Composite gate-to-gate flight-hours	=	En-route flight-hours	+	(0.27 x IFR airport movements)
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In the ACE 2001-2006 Reports, two different weighting factors were used to compute ANSPs cost-effectiveness: one for the year under study and another to examine changes in performance across time. As the ACE data sample became larger in terms of years, the difference between these two weighting factors became insignificant. For the sake of simplicity, it was therefore proposed in the ACE 2007 Benchmarking Report to use only one weighting factor to analyse ANSPs performance for the year and to examine historical changes in cost-effectiveness.

Although the composite gate-to-gate output metric does not fully reflect all aspects of the complexity of the services provided, it is nevertheless the best metric currently available for the analysis of gate-to-gate cost-effectiveness²⁷.

The quality of service provided by ANSPs has an impact on the efficiency of aircraft operations, which carry with them additional costs that need to be taken into consideration for a full economic assessment of ANSP performance. In this ACE Benchmarking Report, an indicator of "economic" cost-effectiveness is computed at ANSP and Pan-European system levels by adding the ATM/CNS provision costs and the costs of ATFM ground delay, all expressed per composite flight-hour. This computation is shown in the Table below (see column 10).

²⁵ Controlled flight-hours are calculated by the Network Manager (NM) as the difference between the exit time and entry time of any given flight in the controlled airspace of an operational unit. Three types of flight-hours are currently computed by the NM (filed model, regulated model and current model). The data used for the cost-effectiveness analysis is based on the current model (Model III or CFTM) and includes flight-hours controlled in the ACC, APP and FIS operational units which are described in the NM environment.

²⁶ See also working paper on "*Cost-effectiveness and Productivity Key Performance Indicators*", available on the PRC web site at www.eurocontrol.int/prc.

²⁷ Further details on the theoretical background to producing composite indicators can be found in a working paper on "Total Factor Productivity of European ANSPs: basic concepts and application" (Sept. 2005).

ANSPs	(1) Gate-to-gate ATM/CNS provision costs (in €'000)	(2) En-route ATFM delays ('000 minutes)	(3) Airport ATFM delays ('000 minutes)	(4)=(2)+(3)	(5) % share in European system ATFM delays	(6)=(4)×€85	(7) Costs of ATFM delays (in €'000)	(8)=(1)/(7)	(9)=(6)/(7)	(10)=(8)+(9) Economic cost per composite flight-hour
Aena	897 063	802	337	1 139	10.7%	96 807	1 721	521	56	577
ANS CR	115 303	2	2	5	0.0%	401	263	438	2	440
ARMATS	8 041	0	0	0	0.0%	0	20	409	0	409
BULATSA	73 948	0	3	3	0.0%	268	199	371	1	373
Austro Control	182 771	118	152	270	2.5%	22 946	374	489	61	550
Avinor (Continental)	207 082	164	165	328	3.1%	27 905	527	393	53	446
Belgocontrol	150 490	15	79	94	0.9%	8 006	206	732	39	771
Croatia Control	78 159	129	1	130	1.2%	11 046	215	363	51	414
DCAC Cyprus	37 981	428	15	444	4.2%	37 729	143	265	264	529
DFS	1 055 191	1 411	796	2 207	20.8%	187 587	1 912	552	98	650
DHMI	352 411	145	489	634	6.0%	53 881	1 203	293	45	338
DSNA	1 164 622	1 535	520	2 055	19.4%	174 675	2 628	443	66	510
EANS	13 573	20	0	20	0.2%	1 687	78	174	22	196
ENAV	638 374	0	103	104	1.0%	8 804	1 322	483	7	489
Finavia	63 052	3	43	46	0.4%	3 925	181	349	22	371
HCAA	154 296	97	110	206	1.9%	17 530	501	308	35	343
HungaroControl	91 324	1	0	1	0.0%	97	209	438	0	438
IAA	112 881	0	8	8	0.1%	707	319	354	2	356
LFV	245 432	27	50	77	0.7%	6 538	554	443	12	455
LGS	22 232	0	0	0	0.0%	21	91	245	0	245
LPS	55 738	0	0	0	0.0%	0	92	609	0	609
LVNL	163 460	92	307	399	3.8%	33 939	278	588	122	710
MATS	13 504	0	0	0	0.0%	9	70	193	0	193
M-NAV	9 389	0	0	0	0.0%	0	21	449	0	449
MoldATSA	9 145	0	0	0	0.0%	0	21	443	0	443
MUAC	141 228	59	n/appl	59	0.6%	5 016	560	252	9	261
NATA Albania	20 934	12	0	12	0.1%	1 003	46	451	22	472
NATS (Continental)	760 374	155	829	984	9.3%	83 605	1 752	434	48	482
NAV Portugal (Continental)	127 260	281	108	390	3.7%	33 110	356	357	93	450
NAVIAR	113 103	0	10	10	0.1%	824	288	393	3	396
Oro Navigacija	23 202	0	0	0	0.0%	0	63	368	0	368
PANSA	147 243	352	2	355	3.3%	30 141	488	302	62	363
ROMATSA	165 091	0	1	1	0.0%	57	329	502	0	503
Skyguide	292 730	172	448	620	5.8%	52 662	457	640	115	755
Slovenia Control	28 166	0	0	0	0.0%	30	56	499	1	499
SMATSA	75 420	1	0	1	0.0%	79	227	332	0	333
UkSATSE	248 611	0	10	10	0.1%	823	440	565	2	566
Total European System	8 058 826	6 022	4 589	10 610	100%	901 858	18 210	443	50	492

Annex 2 - Table 0.1: Economic cost-effectiveness indicator, 2012

The cost of ATFM delay is based on the findings of the study “European airline delay cost reference values” by the University of Westminster in March 2011. The cost of ground ATFM delays amounts to €85 per minute in 2012 (applicable to all ATFM delays), which is close to the €83 used in the ACE 2011 report²⁸.

²⁸ Note that the cost of one minute of ATFM delays has been adjusted to reflect prices inflation in 2012 (+2.6% for the European Union according to EUROSTAT).

ANNEX 3 – PERFORMANCE RATIOS

The table below summarises the relationship between the three multiplicative components of financial cost-effectiveness (ATCO-hour productivity, employment costs per ATCO-hour and support cost ratio) and the two complementary components (ATCO employment costs per composite flight-hour and the support cost per composite flight-hour), described in Chapter 2. To facilitate the interpretation of the results, the concept of the “performance ratio” has been introduced.

The **performance ratios** represent the relationship between the value for an ANSP of an indicator and the value of that indicator for the Pan-European system as a whole. Performance ratios are defined such that a value **greater than one** implies a performance **better** than the European average, in terms of the positive contribution it makes to cost effectiveness. An ANSP with the **same** performance as the Pan-European system will have a performance ratio of **one**.

ANSPs	Country	Financial cost-effectiveness KPI indexes*	Performance ratios			Performance ratios	
			ATCO-hour productivity	ATCO employment costs per ATCO-hour*	Support cost ratio*	ATCO employment costs per composite flight-hour*	Support costs per composite flight-hour*
Aena	ES	0.85	0.98	0.66	1.31	0.65	0.98
ANS CR	CZ	1.01	1.12	1.31	0.69	1.46	0.89
ARMATS	AM	1.08	0.24	9.92	0.46	2.38	0.88
Austro Control	AT	0.91	1.17	0.66	1.16	0.78	0.97
Avinor (Continental)	NO	1.13	1.05	0.81	1.33	0.85	1.31
Belgocontrol	BE	0.60	0.85	0.79	0.91	0.67	0.58
BULATSA	BG	1.19	0.83	1.91	0.75	1.58	1.08
Croatia Control	HR	1.22	0.84	1.30	1.11	1.10	1.28
DCAC Cyprus	CY	1.67	1.05	1.60	0.99	1.69	1.66
DFS	DE	0.80	1.29	0.61	1.01	0.79	0.81
DHMI	TR	1.51	1.12	2.17	0.62	2.43	1.30
DSNA	FR	1.00	0.95	1.09	0.97	1.03	0.99
EANS	EE	2.54	1.27	1.99	1.01	2.52	2.55
ENAV	IT	0.92	0.87	0.98	1.08	0.85	0.95
Finavia	FI	1.27	0.79	1.45	1.11	1.14	1.33
HCAA	GR	1.44	0.89	1.34	1.20	1.19	1.57
HungaroControl	HU	1.01	0.99	1.19	0.86	1.17	0.95
IAA	IE	1.25	1.28	1.02	0.95	1.31	1.22
LFV	SE	1.00	0.84	1.12	1.07	0.93	1.03
LGS	LV	1.81	1.11	2.67	0.61	2.96	1.55
LPS	SK	0.73	0.82	1.34	0.66	1.09	0.64
LVNL	NL	0.75	1.11	0.65	1.04	0.73	0.77
MATS	MT	2.30	0.84	4.31	0.63	3.64	1.98
M-NAV	MK	0.99	0.30	3.27	1.00	0.99	0.98
MoldATSA	MD	1.00	0.30	7.38	0.45	2.22	0.81
MUAC		1.76	2.43	0.54	1.34	1.31	2.06
NATA Albania	AL	0.98	0.66	3.74	0.40	2.47	0.78
NATS (Continental)	UK	1.02	1.24	0.88	0.93	1.09	0.99
NAV Portugal (Continental)	PT	1.24	1.15	0.70	1.54	0.80	1.61
NAVIAIR	DK	1.13	1.23	1.10	0.84	1.35	1.05
Oro Navigacija	LT	1.20	0.60	2.72	0.74	1.62	1.08
PANSA	PL	1.47	1.22	1.10	1.10	1.34	1.53
ROMATSA	RO	0.88	0.74	1.69	0.70	1.26	0.78
Skyguide	CH	0.69	1.29	0.66	0.81	0.85	0.64
Slovenia Control	SI	0.89	0.56	1.33	1.19	0.75	0.96
SMATSA	RS/ME	1.33	0.94	2.07	0.68	1.95	1.17
UKSATSE	UA	0.78	0.43	3.62	0.51	1.54	0.65
Total European System		1.00	1.00	1.00	1.00	1.00	1.00

Annex 3 - Table 0.1: The components of gate-to-gate cost-effectiveness, 2012²⁹

²⁹ For the ATCO employment costs per ATCO-hour, the support costs ratio, the ATCO employment costs per composite flight-hour and the support costs per composite flight-hour (asterisked in the Table above),

ANSPs for which a given component makes a particularly positive contribution to its cost-effectiveness (more than 1.30) are highlighted in green – those where a given component makes a particularly low contribution (less than 1/1.30) are in orange.

Some ANSPs more than make up for a relatively low contribution from one component by a relatively high contribution from another and, as a result, are more cost-effective than the average (cost-effectiveness index greater than 1).

On the left-hand-side the three ratios are multiplicative; the product of the ratios for each of the components equals the performance ratio for overall financial cost-effectiveness (see financial cost-effectiveness index). The following example for Aena illustrates the interpretation of the performance ratios:

0.85	Aena's gate-to-gate ATM/CNS costs per composite flight-hour are +18% higher ($1/0.85 - 1$) than the European average.
= 0.98	ATCO-hour productivity is -2% lower than the European average.
X 0.66	The ATCO employment costs per ATCO-hour of Aena are +51% higher ($1/0.66 - 1$) than the European average.
X 1.31	Support cost ratio is -23% lower ($1/1.31 - 1$) than the European average.

On the right-hand-side, the two complementary performance ratios are normalised using the European average (note that these ratios are neither multiplicative nor additive):

0.65	Aena's ATCOs in OPS employment costs per composite flight-hour are +54% higher ($1/0.65 - 1$) than the European average, while
0.98	the support costs per composite flight-hour are +2% higher ($1/0.98 - 1$) than the European average.

the inverse ratio is used, since **higher** unit employment costs and **higher** support costs imply **lower** cost-effectiveness.

ANNEX 4 – TRAFFIC COMPLEXITY AND TRAFFIC VARIABILITY INDICATORS

	[1]	[2]	[3]	[4]	[5] = [2]+[3]+[4]	[6] = [1]x[5]
ANSPs	Adjusted density	Vertical interactions	Horizontal interactions	Speed interactions	Structural complexity indicator	Aggregated complexity score
Skyguide	10.70	0.28	0.61	0.23	1.12	11.97
DFS	10.28	0.28	0.56	0.25	1.09	11.19
NATS (Continental)	9.81	0.37	0.44	0.30	1.11	10.92
Belgocontrol	7.36	0.41	0.56	0.45	1.42	10.45
MUAC	9.93	0.26	0.54	0.17	0.97	9.68
LVNL	9.80	0.18	0.43	0.36	0.97	9.47
Austro Control	8.23	0.19	0.51	0.20	0.91	7.48
ANS CR	8.54	0.15	0.53	0.19	0.87	7.43
Slovenia Control	9.21	0.12	0.54	0.11	0.77	7.08
DSNA	9.80	0.15	0.42	0.14	0.71	6.93
ENAV	5.20	0.27	0.59	0.18	1.04	5.41
SMATSA	8.58	0.04	0.49	0.07	0.60	5.14
LPS	6.92	0.10	0.48	0.15	0.73	5.08
DHMI	7.49	0.16	0.34	0.15	0.64	4.76
HungaroControl	7.18	0.07	0.45	0.13	0.65	4.67
Croatia Control	7.48	0.05	0.48	0.07	0.61	4.55
Aena	6.54	0.16	0.37	0.13	0.67	4.35
PANSA	4.74	0.14	0.52	0.24	0.90	4.26
NAVIAIR	3.49	0.18	0.57	0.21	0.96	3.36
ROMATSA	5.44	0.05	0.40	0.12	0.58	3.17
LFV	3.05	0.22	0.49	0.25	0.96	2.93
BULATSA	6.70	0.06	0.30	0.06	0.42	2.80
NATA Albania	6.28	0.05	0.35	0.04	0.45	2.80
DCAC Cyprus	4.36	0.14	0.36	0.11	0.61	2.67
M-NAV	4.49	0.10	0.41	0.06	0.57	2.56
EANS	3.69	0.15	0.30	0.24	0.69	2.55
HCAA	4.31	0.10	0.38	0.08	0.56	2.41
LGS	3.23	0.09	0.46	0.18	0.73	2.34
Avinor (Continental)	2.12	0.29	0.48	0.26	1.04	2.20
NAV Portugal (Continental)	3.61	0.16	0.37	0.08	0.61	2.20
Oro Navigacija	3.08	0.07	0.43	0.19	0.69	2.13
UkSATSE	3.22	0.06	0.39	0.19	0.64	2.06
Finavia	1.76	0.27	0.35	0.38	1.01	1.78
IAA	4.18	0.07	0.23	0.11	0.40	1.68
MoldATSA	2.13	0.03	0.40	0.22	0.65	1.39
MATS	1.43	0.08	0.37	0.15	0.59	0.85
ARMATS	1.37	0.08	0.39	0.15	0.62	0.84
Average	7.31	0.20	0.46	0.18	0.84	6.16

Annex 4 - Table 0.1: Traffic complexity indicators at ANSP level, 2012

ANSPs	ACC name	[1] Adjusted density	[2] Vertical interactions	[3] Horizontal interactions	[4] Speed interactions	[5] = [2]+[3]+[4] Structural complexity	[6] = [1]x[5] Aggregated complexity score	Average used flight level
NATS (Continental)	London TC	25.1	0.46	0.52	0.31	1.29	32.5	148
DFS	Langen	10.2	0.39	0.55	0.39	1.33	13.5	175
DFS	Rhein	12.1	0.20	0.60	0.17	0.97	11.7	349
Skyguide	Zurich	9.5	0.31	0.60	0.26	1.17	11.1	284
Skyguide	Geneva	11.1	0.22	0.60	0.18	1.00	11.1	311
Belgocontrol	Brussels	7.4	0.41	0.56	0.45	1.42	10.5	178
DFS	Munchen	9.5	0.31	0.50	0.29	1.10	10.4	270
MUAC	Maastricht	9.9	0.26	0.54	0.17	0.97	9.7	343
LVNL	Amsterdam	9.8	0.18	0.43	0.36	0.97	9.5	167
DSNA	Paris	10.6	0.24	0.34	0.28	0.87	9.3	233
DSNA	Reims	11.0	0.19	0.48	0.15	0.82	9.1	334
NATS (Continental)	London AC	8.7	0.30	0.37	0.24	0.91	7.9	309
ENAV	Milano	5.4	0.45	0.63	0.39	1.47	7.9	213
ANS CR	Praha	8.6	0.14	0.53	0.18	0.86	7.4	326
ENAV	Padova	6.5	0.27	0.66	0.18	1.11	7.3	309
Austro Control	Wien	8.5	0.17	0.51	0.17	0.85	7.2	327
Slovenia Control	Ljubljana	9.2	0.12	0.54	0.11	0.77	7.1	324
DSNA	Bordeaux	10.8	0.11	0.39	0.08	0.58	6.2	338
Aena	Palma	6.6	0.24	0.40	0.27	0.91	6.0	166
DSNA	Brest	9.8	0.08	0.45	0.08	0.61	5.9	351
IAA	Dublin	5.3	0.30	0.40	0.42	1.12	5.9	163
DSNA	Marseille	8.3	0.16	0.42	0.11	0.70	5.8	322
DFS	Bremen	4.1	0.31	0.55	0.41	1.27	5.3	182
NATS (Continental)	Prestwick	4.4	0.34	0.44	0.42	1.20	5.2	258
SMATSA	Beograd	8.8	0.04	0.49	0.07	0.59	5.2	348
LPS	Bratislava	7.0	0.10	0.48	0.15	0.73	5.1	329
Aena	Barcelona	6.6	0.20	0.41	0.12	0.73	4.8	307
HungaroControl	Budapest	7.3	0.06	0.45	0.12	0.64	4.7	339
ENAV	Roma	5.1	0.23	0.54	0.13	0.91	4.6	311
Croatia Control	Zagreb	7.7	0.05	0.48	0.07	0.60	4.6	346
Aena	Madrid	7.4	0.10	0.35	0.07	0.52	3.9	338
PANSA	Warszawa	4.6	0.10	0.53	0.19	0.82	3.8	340
DHMI	Ankara	6.2	0.10	0.35	0.13	0.57	3.5	346
DHMI	Istanbul	5.8	0.18	0.24	0.13	0.55	3.2	297
ROMATSA	Bucuresti	5.5	0.05	0.40	0.12	0.58	3.2	342
NAVIAIR	Kobenhavn	3.3	0.17	0.57	0.19	0.93	3.1	320
LFV	Malmo	3.4	0.17	0.51	0.17	0.85	2.9	326
BULATSA	Sofia	6.8	0.06	0.30	0.06	0.41	2.8	348
NATA Albania	Tirana	6.3	0.05	0.35	0.04	0.45	2.8	342
DCAC Cyprus	Nicosia	4.4	0.14	0.36	0.11	0.61	2.7	314
M-NAV	Skopje	4.6	0.10	0.41	0.06	0.57	2.6	329
Aena	Sevilla	4.5	0.17	0.31	0.09	0.57	2.6	311
EANS	Tallinn	3.7	0.15	0.30	0.24	0.69	2.6	309
LFV	Stockholm	2.1	0.35	0.41	0.39	1.16	2.4	244
UkSATSE	L'viv	3.1	0.02	0.52	0.22	0.76	2.4	348
LGS	Riga	3.2	0.09	0.46	0.18	0.73	2.3	323
ENAV	Brindisi	3.0	0.15	0.50	0.11	0.76	2.3	316
HCAA	Athinai+Macedonia	4.4	0.08	0.38	0.06	0.52	2.3	331
NAV Portugal (Continental)	Lisboa	3.7	0.16	0.37	0.07	0.60	2.2	324
UkSATSE	Simferopol	4.1	0.02	0.36	0.15	0.53	2.2	350
Oro Navigacija	Vilnius	3.1	0.07	0.43	0.19	0.69	2.1	312
UkSATSE	Kyiv	2.9	0.11	0.35	0.23	0.68	2.0	330
Avinor (Continental)	Oslo	2.0	0.27	0.41	0.20	0.88	1.8	273
UkSATSE	Dnipropetrov's'k	3.4	0.05	0.33	0.15	0.52	1.8	343
Aena	Canarias	2.6	0.17	0.26	0.13	0.56	1.5	294
MoldATSA	Chisinau	2.1	0.03	0.40	0.22	0.65	1.4	329
Finavia	Tampere	1.4	0.29	0.31	0.36	0.95	1.3	260
IAA	Shannon	4.1	0.04	0.21	0.07	0.32	1.3	346
UkSATSE	Odesa	2.0	0.04	0.44	0.14	0.63	1.3	337
Avinor (Continental)	Bodo	1.3	0.24	0.41	0.19	0.85	1.1	258
Avinor (Continental)	Stavanger	1.1	0.26	0.44	0.27	0.97	1.1	279
ARMATS	Yerevan	1.4	0.07	0.40	0.15	0.61	0.9	324
MATS	Malta	1.4	0.06	0.38	0.14	0.58	0.8	332
European system average		7.3	0.2	0.5	0.2	0.8	6.0	311

Annex 4 - Table 0.2: Traffic complexity indicators at ACC level, 2012

ANSPs	Traffic variability indicators		
	Variability based on three months periods (2012)	Peak month / Average month (2012)	Peak week / Average week (2012)
Aena	1.20	1.23	1.24
ANS CR	1.17	1.20	1.21
ARMATS	1.05	1.07	1.09
Austro Control	1.21	1.22	1.23
Avinor (Continental)	1.04	1.10	1.13
Belgocontrol	1.10	1.12	1.18
BULATSA	1.38	1.43	1.44
Croatia Control	1.40	1.46	1.47
DCAC Cyprus	1.16	1.20	1.26
DFS	1.11	1.13	1.14
DHMI	1.23	1.24	1.26
DSNA	1.17	1.20	1.21
EANS	1.11	1.15	1.16
ENAV	1.26	1.29	1.30
Finavia	1.06	1.08	1.12
HCAA	1.45	1.53	1.55
HungaroControl	1.30	1.35	1.36
IAA	1.12	1.15	1.17
LFV	1.05	1.09	1.15
LGS	1.13	1.16	1.18
LPS	1.33	1.38	1.39
LVNL	1.09	1.10	1.12
MATS	1.24	1.28	1.36
M-NAV	1.54	1.61	1.67
MoldATSA	1.29	1.31	1.38
MUAC	1.10	1.12	1.13
NATA Albania	1.39	1.46	1.48
NATS (Continental)	1.12	1.14	1.15
NAV Portugal (Continental)	1.11	1.13	1.15
NAVAIR	1.04	1.09	1.13
Oro Navigacija	1.13	1.15	1.16
PANSA	1.16	1.21	1.24
ROMATSA	1.30	1.35	1.36
Skyguide	1.13	1.15	1.17
Slovenia Control	1.34	1.39	1.41
SMATSA	1.38	1.43	1.44
UKSATSE	1.24	1.26	1.32

Annex 4 - Table 0.3: Traffic variability indicators at ANSP level, 2012

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ANNEX 5 – COST OF CAPITAL REPORTED BY ANSPS

ANSPs	Comments
Aena	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 8.38% for en-route ANS and 9.21% for terminal ANS.
ANS CR	Gross cost of capital computed as the product of an average rate of 7.0% and an asset base comprising the NBV of fixed assets and net current assets.
ARMATS	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 12.0%.
Austro Control	Corresponds to the product of an asset base comprising the NBV of fixed assets (excluding assets under construction, land and financial assets) with an average rate of 4.5% for en-route ANS and 1.49% for terminal ANS.
Avinor	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets (only for en-route) with a weighted average cost of capital of 7.6%.
Belgocontrol	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets (only for en-route) with an average rate of 5.73% for en-route ANS and 3.0% for terminal ANS.
BULATSA	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 7.0%.
Croatia Control	Corresponds to the product of the asset base comprising the NBV of fixed assets and current assets with an average rate of 5.2%.
DCAC Cyprus	Corresponds to the product of the asset base comprising the NBV of fixed assets and current assets with an average rate of 6.0%.
DFS	Corresponds to the product of an asset base with an average rate of 5.26% for en-route ANS and 4.25% for terminal ANS.
DHMi	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 5.7%.
DSNA	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 4.66% for en-route ANS and 2.58% for terminal ANS.
EANS	Computed as the product of an asset base comprising the NBV of fixed assets with an average rate of 8.9%.
ENAV	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 2.70% for en-route ANS and 2.31% for terminal ANS.
Finavia	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 3.7%.
HCAA	Corresponds to the product of an asset base with an average rate of 3.2%.
HungaroControl	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with a return on equity of 10.5% for en-route ANS and 5.8% for terminal ANS.
IAA	Corresponds to the product of an asset base comprising the NBV of fixed assets with an average rate of 7.9%.
LFV	Corresponds to the product of an asset base comprising the NBV of fixed assets with an average rate of 5.4%.
LGS	Corresponds to the product of an asset base comprising the NBV of fixed assets and current assets with an average rate of 6.6%.
LPS	Corresponds to the product of an asset base comprising the NBV of fixed assets and current assets with an average rate of 6.3%.
LVNL	Corresponds to the product of an asset base comprising the NBV of fixed assets and current assets with an average rate of 4.5%.
MATS	Corresponds to the product of an asset base comprising the NBV of fixed assets and the net current assets with an average rate of 5.2%.
M-NAV	Corresponds to the product of an asset base comprising the NBV of fixed assets with an average rate of 5.5%.
MoldATSA	Corresponds to the product of an asset base comprising the NBV of fixed assets and current assets with an average rate of 12.1%, plus a part of the capital expenditures spent during the year.
MUAC	Corresponds to the product of the actual interest paid by EUROCONTROL to the banks (0.6%) with the proportion of EUROCONTROL NBV assets belonging to MUAC.
NATA Albania	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 4.3%.
NATS	Economic cost of capital computed as the product of the regulatory rate of return (6.76%) with the average regulatory asset base for en-route ANS and with the average capital employed for terminal ANS.

NAV Portugal (FIR Lisboa)	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 6.76%.
NAVIAIR	Corresponds to the product of an asset base comprising the NBV of fixed assets and current assets with an average rate of 5.5%.
Oro Navigacija	Corresponds to the product of an asset base comprising the average NBV of fixed assets and average current assets (including "stocks, prepayments and contract in progress" and "amounts receivable within one year") with an average rate of 3.0%.
PANSA	Corresponds to the product of an asset base comprising long-term assets and net current assets with an average rate of 3.5% for en-route ANS and 5.04% for terminal ANS.
ROMATSA	Corresponds to the product of an average rate of 8.0% with an asset base comprising the average NBV of fixed assets and average net current assets, excluding interest bearing accounts.
Skyguide	Corresponds to the product of an asset base comprising the NBV of fixed assets with an average WACC capped at 2.5%.
Slovenia Control	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 6.0%.
SMATSA	Corresponds to the product of an asset base comprising the NBV of fixed assets and net current assets with an average rate of 9.57%.
UkSATSE	Includes the amount of capital expenditure spent in 2012.

Annex 5 - Table 0.1: Comments on cost of capital reported by ANSPs, 2012

ANNEX 6 – EXCHANGE RATES, INFLATION RATES AND PURCHASING POWER PARITIES (PPPs) 2012 DATA

ANSPs	Countries	2012 Exchange rate (1 €=)	2012 Inflation rate (%)	2012 PPPs	Comments
Aena	Spain	1	2.4	0.91	
ANS CR	Czech Republic	25.1	3.5	17.70	
ARMATS	Armenia	515.3	2.5	253.77	PPPs from IMF database
Austro Control	Austria	1	2.6	1.10	
Avinor (Continental)	Norway	7.5	0.4	11.67	
Belgocontrol	Belgium	1	2.6	1.11	
BULATSA	Bulgaria	2.0	2.4	0.88	
Croatia Control	Croatia	7.5	3.4	4.92	
DCAC Cyprus	Cyprus	1	3.1	0.88	
DFS	Germany	1	2.1	1.03	
DHMI	Turkey	2.3	9.0	1.37	
DSNA	France	1	2.2	1.12	
EANS	Estonia	1	4.2	0.71	
ENAV	Italy	1	3.3	1.00	
Finavia	Finland	1	3.2	1.21	
HCAA	Greece	1	1.0	0.89	
HungaroControl	Hungary	288.9	5.7	166.34	
IAA	Ireland	1	1.9	1.09	
LFV	Sweden	8.7	0.9	11.58	
LGS	Latvia	0.7	2.3	0.66	
LPS	Slovak Republic	1	3.7	0.68	
LVNL	Netherlands	1	2.8	1.10	
MATS	Malta	1	3.2	0.75	
M-NAV	F.Y.R. Macedonia	61.2	3.3	24.60	
MoldATSA	Moldova	15.5	4.6	9.04	PPPs from IMF database
MUAC		1	2.8	1.10	Netherlands PPPs and inflation rate used for MUAC
NATA Albania	Albania	139.8	2.0	61.28	
NATS (Continental)	United Kingdom	0.8	2.8	0.92	
NAV Portugal (Continental)	Portugal	1	2.8	0.81	
NAVIAIR	Denmark	7.4	2.4	10.16	
Oro Navigacija	Lithuania	3.5	3.2	2.08	
PANSA	Poland	4.2	3.7	2.42	
ROMATSA	Romania	4.5	3.4	2.16	
Skyguide	Switzerland	1.2	-0.7	1.85	
Slovenia Control	Slovenia	1	2.8	0.80	
SMATSA	Serbia and Montenegro	113.0	7.3	51.46	Data for Serbia only since ACE data is provided in Serbian Dinar
UkSATSE	Ukraine	10.3	0.6	5.24	PPPs from IMF database

Annex 6 - Table 0.1: 2012 Exchange rates, inflation rates and PPPs data

Presentation and comparison of historical series of financial data from different countries poses problems, especially when different currencies are involved, and inflation rates differ. There is a danger that time-series comparisons can be distorted by transient variations in exchange rates.

For this reason, the following approach has been adopted in this Report for allowing for inflation and exchange rate variation. The financial elements of performance are assessed, for each year, in national currency. They are then converted to national currency in 2012 prices using national inflation rates. Finally, for comparison purposes in 2012, all national currencies are converted to Euros using the 2012 exchange rate.

This approach has the virtue that an ANSP's performance time series is not distorted by transient changes in exchange rates over the period. It does mean, however, that the performance figures for any ANSP in a given year prior to 2011 are not the same as the figures in that year's ACE report, and cannot legitimately be compared with another ANSP's figures for the same year. Cross-sectional comparison using the figures in this report is only appropriate for 2012 data.

The exchange rates used in this Report to convert the 2012 data in Euros are those provided by the ANSPs in their ACE data submission.

The historical inflation figures used in this analysis were obtained from EUROSTAT³⁰ or from the International Monetary Fund³¹ when the information was not available in EUROSTAT website. For the projections (2013-2017), the ANSPs' own assumptions concerning inflation rates were used.

Purchasing Power Parities (PPPs) are currency conversion rates that are applied to convert economic indicators in national currency to an artificial common currency (Purchasing Power Standard (PPS) for EUROSTAT statistics). The PPPs data used to adjust most of the ANSPs employment costs in Chapter 2 of this report was extracted from EUROSTAT.

For three countries (Armenia, Moldova and Ukraine), PPP data was not available in the EUROSTAT database. In these cases, the IMF database was used. Since in the IMF database, the PPPs are expressed in local currency per **international Dollar** rather than **PPS**, an adjustment has been made so that the figures used for Armenia, MoldATSA and UkSATSE are as consistent as possible with the data used for the rest of the ANSPs. The assumption underlying this adjustment is that the difference in PPPs between two countries shall be the same in the EUROSTAT and in the IMF databases.

According to the IMF database, there is a factor of 4.68 between the PPPs for Ukraine (4.248 UAH per international dollar in 2012) and the PPPs for France (0.908 Euro per international Dollar). This factor is applied to the PPPs for France as disclosed in the EUROSTAT database (i.e. 1.12) to express the PPPs for Ukraine in PPS ($5.24 = 1.12 \times 4.68$). A similar methodology is used to express Moldova and Armenia PPPs in PPS.

³⁰ Latest EUROSTAT database available at:
<http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home>

³¹ IMF April 2014 database available at:
<http://www.imf.org/external/pubs/ft/weo/2014/01/weodata/index.aspx>

ANNEX 7 – KEY DATA

Period		Financial Performance Indicators									
		Revenue Stream A					Revenue Stream B				
Metric Type	Key Indicator	Revenue Stream A		Revenue Stream B		Revenue Stream A		Revenue Stream B		Revenue Stream A	
		Revenue	Variance	Revenue	Variance	Revenue	Variance	Revenue	Variance	Revenue	Variance
Revenue Stream A	Total Revenues	120000	+5%	80000	+3%	50000	+2%	30000	+1%	10000	+0.5%
Revenue Stream A	Flight Revenue	70000	+4%	50000	+2%	35000	+1.5%	20000	+0.8%	8000	+0.4%
Revenue Stream A	Airport Operator Income	40000	+3%	30000	+2%	20000	+1.5%	12000	+0.7%	5000	+0.3%
Revenue Stream A	Other Income	10000	+2%	8000	+1.5%	5000	+1%	3000	+0.5%	1000	+0.2%
Revenue Stream A	Financial Income	20000	+6%	15000	+4%	10000	+3%	6000	+2%	3000	+1.5%
Revenue Stream A	Exceptional Items	5000	+1%	4000	+0.5%	3000	+0.8%	2000	+0.3%	1000	+0.1%
Revenue Stream B	Total Revenues	100000	+4%	70000	+3%	40000	+2.5%	25000	+1.5%	8000	+0.8%
Revenue Stream B	Flight Revenue	60000	+3.5%	45000	+2.5%	30000	+2%	18000	+1.2%	6000	+0.6%
Revenue Stream B	Airport Operator Income	35000	+3%	25000	+2.5%	18000	+1.8%	12000	+1.2%	5000	+0.5%
Revenue Stream B	Other Income	8000	+2%	6000	+1.5%	4000	+1.2%	2500	+0.8%	1000	+0.3%
Revenue Stream B	Financial Income	18000	+5%	13000	+4%	9000	+3.5%	5500	+2.5%	2000	+1.5%
Revenue Stream B	Exceptional Items	4000	+1%	3000	+0.5%	2000	+0.8%	1500	+0.5%	800	+0.2%
Overall	Total Revenues	220000	+4.5%	150000	+3.5%	90000	+2.8%	55000	+1.8%	18000	+0.9%
Overall	Flight Revenue	130000	+3.8%	95000	+3%	65000	+2.8%	43000	+1.8%	14000	+0.9%
Overall	Airport Operator Income	75000	+3.5%	55000	+2.8%	38000	+2.5%	25000	+1.5%	8000	+0.8%
Overall	Other Income	18000	+2.5%	13000	+1.8%	9000	+1.5%	5500	+1.2%	2000	+0.5%
Overall	Financial Income	38000	+6.5%	28000	+5%	19000	+4.5%	12000	+3.5%	4000	+2.5%
Overall	Exceptional Items	7000	+1.5%	5000	+1%	3500	+1.2%	2200	+0.8%	1000	+0.3%

Annex 7 - Table 0.1: Breakdown of total ANS revenues (en-route, terminal and gate-to-gate), 2012

Annex 7 - Table 0.2: Breakdown of total ANS costs (en-route, terminal and gate-to-gate), 2012

	En-route ANS costs (in €'000)		Terminal ANS costs (in €'000)		Gate-to-gate ANS costs (in €'000)	
	ATM/CNS provision costs	MET costs	ATM/CNS provision costs	MET costs	ATM/CNS provision costs	MET costs
ANSPs						
Aena	660 685	35 085	7 544	15 880	51 843	0
ANSER	93 034	2 219	386	0	6 677	0
ARMATS	4 291	0	0	287	0	4 577
Astro Control	149 247	16 716	458	0	11 460	0
Avior (Continental)	93 237	0	318	0	7 347	0
Belegcontrol	97 674	7 309	1 334	0	11 622	44 592
BULATSA	63 849	5 304	472	0	4 175	0
Croatia Control	69 272	4 303	0	0	0	0
DCAC Cyprus	33 204	4 101	8 053	0	2 488	0
DTS	827 762	32 647	0	0	0	0
DHMI	269 333	22 294	2 527	0	18 107	0
DSNA	926 092	62 782	7 300	0	79 661	48 731
EANS	12 170	109	0	0	0	0
ENAV	525 795	37 539	3 158	0	48 588	0
Finavia	37 409	3 115	179	0	213	0
HCAA	135 113	8 581	0	11 071	0	0
HungaroControl	75 691	2 596	1 487	0	5 489	0
IAA	91 989	6 541	1 636	2 216	7 595	0
LFV	210 480	7 769	463	0	0	0
LGS	16 917	824	1 059	0	1 197	0
LPS	50 511	1 549	1 083	0	3 212	0
LVNL	113 648	7 368	1 734	0	15 903	31 889
MATS	11 290	0	449	0	704	0
M-NAV	8 318	687	100	0	0	0
MoldATSA	7 204	688	79	0	414	0
MUIC	141 228	0	0	0	0	0
NATA Albania	17 612	392	719	0	854	0
NATS (Continental)	583 338	3	5 309	0	784	0
NAV Portugal (Continental)	100 440	5 161	620	3 987	7 854	0
NAVAIR	81 481	0	1 381	0	0	0
Oro navigacija	19 335	513	307	0	1 244	0
PANSA	125 702	4 104	1 458	0	8 579	740
ROMATSA	140 030	7 243	2 864	0	8 697	0
Skyguide	194 519	9 516	0	9 673	0	0
Slovenia Control	24 452	1 241	441	0	0	0
SMATSA	62 412	4 566	0	3 296	0	0
UnSATSE	195 991	2 533	1 933	0	8 678	0

	Payments for delegation of other services	Errecoverable value added tax (VAT)	ANS	Payments for delegation of other services	Errecoverable value added tax (VAT)	ANS
Aena	660 685	35 085	7 544	15 880	51 843	0
ANSER	93 034	2 219	386	0	6 677	0
ARMATS	4 291	0	0	287	0	4 577
Astro Control	149 247	16 716	458	0	11 460	0
Avior (Continental)	93 237	0	318	0	7 347	0
Belegcontrol	97 674	7 309	1 334	0	11 622	44 592
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Croatia Control	69 272	4 303	0	0	0	0
DCAC Cyprus	33 204	4 101	8 053	0	2 488	0
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DHMI	269 333	22 294	2 527	0	18 107	0
DSNA	926 092	62 782	7 300	0	79 661	48 731
EANS	12 170	109	0	0	0	0
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Skyguide	194 519	9 516	0	9 673	0	0
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SMATSA	62 412	4 566	0	3 296	0	0
UnSATSE	195 991	2 533	1 933	0	8 678	0

	Payments for delegation of other services	Errecoverable value added tax (VAT)	ANS	Payments for delegation of other services	Errecoverable value added tax (VAT)	ANS
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ANSER	93 034	2 219	386	0	6 677	0
ARMATS	4 291	0	0	287	0	4 577
Astro Control	149 247	16 716	458	0	11 460	0
Avior (Continental)	93 237	0	318	0	7 347	0
Belegcontrol	97 674	7 309	1 334	0	11 622	44 592
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EANS	12 170	109	0	0	0	0
ENAV	525 795	37 539	3 158	0	48 588	0
Finavia	37 409	3 115	179	0	213	0
HCAA	135 113	8 581	0	11 071	0	0
HungaroControl	75 691	2 596	1 487	0	5 489	0
IAA	91 989	6 541	1 636	2 216	7 595	0
LFV	210 480	7 769	463	0	0	0
LGS	16 917	824	1 059	0	1 197	0
LPS	50 511	1 549	1 083	0	3 212	0
LVNL	113 648	7 368	1 734	0	15 903	31 889
MATS	11 290	0	449	0	704	0
M-NAV	8 318	687	100	0	0	0
MoldATSA	7 204	688	79	0	414	0
MUIC	141 228	0	0	0	0	0
NATA Albania	17 612	392	719	0	854	0
NATS (Continental)	583 338	3	5 309	0	784	0
NAV Portugal (Continental)	100 440	5 161	620	3 987	7 854	0
NAVAIR	81 481	0	1 381	0	0	0
Oro navigacija	19 335	513	307	0	1 244	0
PANSA	125 702	4 104	1 458	0	8 579	740
ROMATSA	140 030	7 243	2 864	0	8 697	0
Skyguide	194 519	9 516	0	9 673	0	0
Slovenia Control	24 452	1 241	441	0	0	0
SMATSA	62 412	4 566	0	3 296	0	0
UnSATSE	195 991	2 533	1 933	0	8 678	0

		En-route ATM/CNS costs (in €'000)						Terminal ATM/CNS costs (in €'000)						Gate-to-gate ATM/CNS costs (in €'000)						
		Staff costs			Non-staff operating costs			Staff costs			Non-staff operating costs			Staff costs			Non-staff operating costs			
ANSPs		Cost of capital			Excepditional items			Cost of capital			Excepditional items			Cost of capital			Excepditional items			
		Depreciation costs	Staff costs	Non-staff operating costs	Depreciation costs	Staff costs	Non-staff operating costs	Depreciation costs	Staff costs	Non-staff operating costs	Depreciation costs	Staff costs	Non-staff operating costs	Depreciation costs	Staff costs	Non-staff operating costs	Depreciation costs	Staff costs	Non-staff operating costs	
404 694	87 925	106 353	55 687	6 026	660 685	179 942	23 128	20 105	111 295	1 907	236 378	584 636	111 053	126 459	66 992	7 933	897 063	584 636	111 053	126 459
51 985	14 226	17 234	9 589	0	93 034	14 461	2 924	3 060	1 825	0	22 269	66 446	17 150	20 294	11 414	0	115 303	66 446	17 150	20 294
2 315	857	500	619	0	4 291	1 958	784	426	583	0	7 571	4 273	1 641	926	1 202	0	8 041	4 273	1 641	926
109 151	20 491	15 599	4 006	0	149 247	23 181	4 091	5 781	471	0	33 524	132 332	24 582	21 380	4 477	0	182 771	132 332	24 582	21 380
66 929	15 909	6 031	4 368	0	93 237	86 689	21 672	4 381	1 103	0	113 846	153 618	37 581	10 412	5 471	0	207 082	153 618	37 581	10 412
70 957	9 585	11 198	5 915	18	97 674	40 001	4 475	6 858	1 479	3	52 816	110 058	14 060	18 056	7 394	22	150 490	110 058	14 060	18 056
6 665	8 914	7 166	0	63 849	7330	1 094	1 161	515	0	10 099	48 433	7 759	10 075	7 681	0	73 948	48 433	7 759	10 075	
11 716	8 962	4 024	0	69 272	5 756	944	1 144	1 043	0	8 887	50 226	12 660	10 105	5 067	0	78 195	50 226	12 660	10 105	
13 020	13 095	4 840	2 249	0	33 204	2 220	1 512	664	380	0	4 777	15 241	14 667	5 504	2 629	0	37 981	15 241	14 667	5 504
568 999	84 246	74 016	66 944	33 556	827 762	153 434	31 336	18 909	13 989	9 760	227 429	722 334	115 582	92 926	80 933	43 316	1 055 191	722 334	115 582	92 926
129 035	81 295	28 306	30 697	0	269 333	39 064	22 414	14 560	7 040	0	83 078	168 099	103 709	42 866	37 738	0	352 411	168 099	103 709	42 866
630 659	176 582	86 941	31 876	0	926 092	162 302	47 158	24 189	4 882	0	238 530	792 995	223 740	111 130	36 758	0	1 164 622	792 995	223 740	111 130
7 183	2 621	1 438	927	0	12 170	381	247	371	405	0	1 403	7564	2 868	1 809	1 332	0	13 573	7564	2 868	1 809
290 209	109 538	97 326	28 090	632	525 795	53 539	29 419	24 732	4 652	238	112 579	343 748	138 957	122 057	32 742	871	638 374	343 748	138 957	122 057
23 240	8 863	4 203	1 103	0	37 409	16 678	5 407	2 834	724	0	25 643	39 918	14 270	7 037	1 827	0	63 052	39 918	14 270	7 037
67 772	20 026	6 907	3 409	0	135 113	9 378	1 374	1 266	765	0	19 173	117 946	24 004	8 173	4 174	0	154 296	117 946	24 004	8 173
42 356	22 525	8 141	2 660	0	75 691	10 455	3 212	1 430	536	0	52 820	25 737	9 572	3 196	0	91 324	52 820	25 737	9 572	
55 107	20 364	9 995	6 523	0	91 989	9 569	4 164	4 350	2 769	0	20 892	64 676	24 528	14 385	9 292	0	112 881	64 676	24 528	14 385
109 257	46 732	16 772	4 246	33 472	210 480	30 200	4 752	0	0	0	34 952	139 558	51 484	16 772	4 246	33 472	245 432	139 558	51 484	16 772
9 842	2 723	3 172	1 180	0	16 917	2 782	542	1 467	525	0	12 624	3 265	4 639	1 705	0	22 232	3 265	4 639	1 705	
27 745	13 043	6 512	3 211	0	50 519	3 219	992	686	339	0	5 316	14 0364	14 025	7 193	5 551	0	55 738	14 0364	14 025	7 193
81 124	22 673	6 706	3 027	0	113 648	35 609	9 937	2 939	1 327	0	49 812	116 851	32 610	9 645	4 354	0	163 460	116 851	32 610	9 645
4 510	4 740	1 400	581	0	11 290	1 202	505	267	240	0	2 214	5 772	5 245	1 666	821	0	13 504	5 772	5 245	1 666
6 410	9 488	564	337	0	8 318	783	185	72	30	0	1 070	7 253	1 132	636	367	0	9 389	7 253	1 132	636
3 483	1 598	855	1 268	0	7 204	743	490	339	368	0	1 941	4 227	2 088	1 194	1 636	0	9 145	4 227	2 088	1 194
118 067	12 791	9 669	701	0	141 228	n/a/ppl	n/a/ppl	n/a/ppl	n/a/ppl	0	118 067	12 791	9 669	701	0	141 228	12 791	9 669	701	
4 641	6 639	3 877	2 455	0	17 612	2 116	754	289	163	0	3 322	6 757	7 333	4 166	2 617	0	20 934	6 757	7 333	4 166
302 003	94 565	97 169	84 012	5 589	583 338	123 849	44 337	5 706	3 229	85	177 036	425 852	138 902	102 874	87 242	5 504	760 374	425 852	138 902	102 874
85 550	7 165	5 202	2 523	0	100 440	23 345	1 205	1 675	595	0	26 819	108 895	8 370	6 877	3 118	0	127 260	108 895	8 370	6 877
49 650	12 256	11 461	8 074	0	81 481	20 506	4 301	2 262	4 553	0	31 622	70 196	13 723	12 627	1 131 103	0	113 103	70 196	13 723	12 627
32 557	13 911	7 337	8 473	134	62 412	2 642	1 631	2 268	28	13 008	38 978	16 571	8 968	10 741	161	75 420	16 571	8 968	10 741	
109 867	26 991	13 096	45 937	100	195 991	30 826	6 930	3 385	11 446	33	52 621	140 693	33 920	16 481	57 383	133	248 611	140 693	33 920	16 481
3 940 924	1 035 402	734 245	454 374	105 809	6 207 574	1 209 241	305 197	174 209	84 611	14 814	5 150 165	1 340 559	908 454	538 985	120 623	8 058 826	5 150 165	1 340 559	908 454	

Annex 7 - Table 0.3: Breakdown of ATM/CNS provision costs (en-route, terminal and gate-to-gate), 2012

ANSP BALANCE SHEET in (€'000)						
ANSPs	Current assets			Long-term financial assets		Total liabilities
	NBV fixed assets in operation	NBV fixed assets under construction	NBV fixed assets in operation	Capital and reserves	Long-term liabilities	
Aena	663 063	176 912	133 422	237 712	1 211 109	582 246
ANS CR	118 859	20 090	11 573	58 666	209 198	10 752
ARMATS	9 036	985	18	2 225	12 265	867
Austro Control	202 137	36 852	31 092	85 373	355 454	73 555
Avinor (Continental)	82 527	17 048	0	0	99 575	215 433
Belfocontrol	143 682	7 210	487	82 234	233 613	147 732
BULATSA	88 736	4 851	1 292	91 971	186 851	150 630
Croatia Control	48 092	34 685	5 444	29 441	117 662	60 044
DCAC Cyprus	21 610	7 713	0	16 228	45 551	22 725
DFS	692 307	53 253	176 635	910 904	1 833 099	623 148
DHMI	530 195	100 457	1 141	55 937	687 730	622 668
DSNA	590 802	247 557	0	0	838 359	
EANS	17 985	36	0	7 974	25 995	14 801
ENAV	845 731	477 093	114 699	699 902	2 137 425	1 288 897
Finavia	48 715	4 485	0	33 677	86 877	39 790
HCAA	130 459	0	0	130 469		
HungaroControl	73 304	1 056	13 427	65 031	152 818	83 081
IAA	85 504	6 057	0	121 064	213 143	49 763
LFV	116 095	42 989	83 105	338 284	600 474	67 358
LGS	16 315	5 363	11	8 893	30 582	26 833
LPS	61 111	2 213	0	35 676	99 000	62 747
LVNL	78 394	28 169	0	38 621	145 184	5 201
MATS	5 194	1 508	0	9 737	16 438	5 119
M-NAV	7 301	61	0	6 822	14 184	12 385
MoldATSA	7 322	1 379	44	6 091	14 836	14 225
MUAC	68 623	6 585	0	45 466	120 675	0
NATA Albania	40 829	2 012	73	19 124	62 039	40 605
NATS (Continental)	839 321	273 814	487 443	590 489	2 191 066	815 707
NAV Portugal (Continental)	56 074	9 441	89 822	133 597	288 933	85 131
NAV AIR	150 814	9 398	11	71 453	231 675	106 456
Oro navigacija	30 584	3 068	2 027	13 643	49 322	45 047
PANSA	134 437	16 373	14 557	77 216	242 584	22 287
ROMATSA	131 432	10 401	943	128 558	271 334	193 446
Skyguide	263 681	40 113	60 984	142 694	507 472	269 861
Slovenia Control	8 656	26 782	327	3 957	39 721	8 286
SMATSA	112 945	7 989	0	31 699	152 633	80 753
UKSATSE	196 181	70 137	3 871	102 891	373 079	340 800
Total	6 718 070	1 754 655	1 232 448	4 323 249	14 028 422	6 285 964
						4 325 127
						2 348 930
						12 960 021

Annex 7 - Table 0.4: Balance Sheet data at ANSP level, 2012

Annex 7 - Table 0.5: Total staff and ATCOs in OPS data, 2012

ANSPs	ATCOs in OPS	ATCOs on other duties	AB-initio trainees	On-the-job trainees	ATC assistants	OPS support (non-ATCO)	Technical support staff for maintenance	Administrative	Staff for ancillary services	Other	Total staff	ACC ATCO-hours on duty	APPS+TWRS ATCOs in OPS	APPS+TWRS ATCO-hours on duty	ATCOs in OPS	Employee costs for ATCOs in OPS (€'000)	ATCOs in OPS	
Aena	1.810	292	0	0	196	53	568	395	533	25	130	4.002	1.064	1.280	888	746	918.546	351.136
ANS CR	197	17	11	17	96	42	118	29	267	32	70	896	93	138	942	104	155.646	23.831
ARMATS	70	0	14	8	19	15	166	0	54	28	87	461	22	32	296	48	70.464	1.098
Austro Control	287	22	47	23	35	73	108	98	87	107	0	887	123	158	670	164	240.096	63.642
Aviato (Continental)	401	86	25	30	139	0	173	25	35	31	17	961	157	244	444	244	385.624	82.360
Belgocontrol	221	28	2	15	0	64	186	31	156	90	60	853	85	112	880	136	191.488	41.029
BULATS A	234	35	0	5	42	37	403	8	170	115	76	1.125	102	130	356	132	171.072	16.721
Croatia Control	230	23	14	10	43	25	106	24	150	118	0	743	90	120	060	140	200.620	26.071
DCAC Cyprus	84	10	0	0	39	0	0	0	35	27	0	195	57	114	057	27	55.944	11.257
DFS	1.717	132	206	215	385	550	941	527	468	110	367	5.618	1.320	1.383	430	397	469.234	319.500
DHMI	977	39	55	36	35	265	1.320	17	1.102	453	1.108	5.407	475	723.90	502	620.472	65.618	
DSNA	2.766	397	184	227	117	1.091	1.318	409	1.174	243	0	7.926	1.417	1.782	453	1.349	1.696.915	338.384
EANS	46	19	0	0	5	1	28	11	20	26	0	156	24	40	128	22	36.754	4.102
ENAV	1.439	164	44	50	23	16	110	103	527	374	117	2.967	903	1.169	149	536	744.800	206.097
FInavia	192	32	0	1	19	0	72	10	36	68	0	429	53	77	098	139	209.776	20.984
HCAA	480	110	0	0	48	470	88	90	0	500	500	1.786	215	316	050	265	389.550	55.688
HungaroControl	166	8	11	35	50	131	23	180	66	29	710	89	143	178	77	121.438	23.569	
IAA	204	33	32	22	23	22	35	20	74	15	1	481	141	214	743	63	96.579	32.196
LFV	509	82	0	25	33	128	84	34	137	31	0	1.063	229	380	140	280	448.560	78.751
LGS	81	0	12	2	0	38	105	2	94	27	1	362	56	70	616	25	32.075	4.071
LPS	94	25	3	6	47	22	116	11	117	29	0	469	49	69	677	45	70.612	11.109
LVNL	198	31	21	29	61	153	115	81	179	15	0	885	68	106	569	131	205.877	50.869
MATTS	48	0	8	0	0	0	40	0	24	18	7	145	32	72	000	16	31.936	2.557
M-NAV	61	21	0	9	8	8	45	0	47	50	24	273	38	53	770	23	32.545	2.801
MoldATS A	57	8	1	3	5	2	68	7	54	48	69	322	35	52	710	22	33.198	1.234
MUAC	247	34	27	3	52	87	132	0	56	0	8	646	247	288	523	n/app	56.779	
NATA Albania	56	6	0	7	0	24	82	0	71	36	44	309	39	60	216	17	2.495	
NATS (Continental)	1.423	271	64	28	435	330	841	199	822	13	0	4.426	928	1.155	727	496	617.754	212.448
NAV Portugal (Continental)	214	40	0	3	26	61	89	65	170	43	10	721	88	156	640	126	230.580	58.788
NAVIAIR	195	80	2	12	106	37	104	37	86	15	0	673	86	129	657	109	164.399	28.395
Oro navigacija	85	11	0	0	24	66	8	75	28	0	296	33	51	978	52	80.633	5.170	
PANSA	442	7	36	31	89	267	341	64	325	110	0	1.712	128	140	890	314	359.875	48.435
ROMATS A	441	97	8	21	0	0	366	0	390	196	0	1.519	221	270	283	220	282.920	34.671
Skyguide	362	62	21	56	97	219	132	150	195	69	17	1.378	221	277	812	141	166.526	71.482
Slovenia Control	89	14	0	1	11	5	27	10	33	25	0	215	50	71	576	38	53.983	10.020
SMATSA	246	60	12	29	33	30	103	106	82	154	0	855	155	189	720	91	111.384	15.429
UKSATE	994	347	0	55	104	126	2	787	39	748	710	6.131	577	718	365	417	572.938	37.839
Total	17.362	2.642	860	990	3.890	2.364	11.896	2.630	8.864	3.055	3.451	58.003	9.709	12.499	592	7.653	10.298.734	2.416.625

Annex 7 - Table 0.6: Operational data (ANSP and State level), 2012

ANSPs	Size of controlled airspace	Number of ACC operational units	Number of TWR operational units	Number of ATC operational units	Number of AFIs	Total flight-hours controlled by the ANSP		IFR Airports moved by the ANSP		Composite flight-hours controlled by the ANSP	
						Total IFR flights controlled by the ANSP	Total IFR km controlled by the ANSP	Total flight-hours controlled by the ANSP	IFR Airports moved by the ANSP	Composite flight-hours controlled by the ANSP	
Aena	2 190 000	5	17	30	0	1 657 310	884 308 817	1 275 470	1 676 940	1 721 418	
ANS CR	77 100	1	4	4	0	662 571	165 529 734	224 495	144 781	262 997	
ARMATS	29 800	1	2	2	2	55 536	10 551 929	13 988	21 292	19 650	
Astro Control	79 500	1	6	6	0	888 751	189 085 681	279 393	355 141	373 825	
Avinor (Continental)	724 000	3	17	19	28	589 211	182 961 669	347 816	674 187	527 103	
Belgocontrol	39 500	1	4	5	0	557 312	54 196 085	108 640	364 616	205 602	
BULATSA	146 000	1	3	5	0	540 138	140 982 268	179 176	75 208	199 176	
Croatia Control	158 000	1	9	10	0	495 911	150 026 175	193 518	82 229	215 385	
DCAC Cyprus	174 000	1	2	2	0	269 752	98 562 577	126 759	61 560	143 130	
DFS	388 000	4	0	16	0	2 784 011	886 817 210	1 379 454	2 000 877	1 911 546	
DHMI	982 000	2	31	40	0	1 032 651	698 377 510	947 628	959 739	1 202 851	
DSNA	1 010 000	5	12	81	0	2 809 461	1 498 353 372	2 117 415	1 921 795	2 628 477	
EANS	77 102	1	2	2	0	187 192	47 492 607	65 567	46 851	78 026	
ENAV	733 000	4	23	12	11	1 556 741	714 021 778	1 028 353	1 106 027	1 322 479	
Finavia	411 000	1	7	19	6	239 486	68 124 159	114 641	247 712	180 515	
HCAA	537 000	1	16	18	15	633 008	345 635 936	460 892	149 448	500 627	
HungaroControl	93 000	1	1	2	1	589 203	141 356 495	185 247	87 905	208 623	
IAA	457 000	2	3	3	0	520 650	204 679 262	263 793	207 192	318 891	
LFV	626 000	2	26	31	1	691 404	277 823 554	418 354	509 001	553 712	
LGS	95 300	1	2	1	1	231 937	53 117 277	72 741	68 360	90 920	
LPS	48 700	1	2	5	0	380 017	65 036 077	83 776	29 293	91 566	
LVNL	52 200	1	3	4	0	554 281	68 363 413	149 594	483 300	278 118	
MATS	231 000	1	2	1	1	96 948	44 026 709	61 297	33 119	70 104	
M-NAV	24 700	1	2	1	1	112 549	14 021 583	17 983	11 008	20 910	
MoldATSA	33 900	1	0	4	3	63 856	12 504 665	16 453	15 806	20 656	
MUAC	260 000	1	0	0	0	1 605 505	458 152 079	560 102	n/a/pl	560 102	
NATA/Albania	36 000	1	1	1	1	195 230	32 493 453	40 982	20 543	46 445	
NATS (Continental)	882 000	3	16	16	0	2 160 176	791 250 167	1 291 693	1 730 568	1 751 902	
NAV Portugal (Continental)	665 000	1	4	6	0	437 599	212 926 614	284 669	269 288	356 283	
NAVIAIR	158 000	1	7	6	1	615 460	133 597 013	201 374	325 816	288 018	
Oro navigacija	74 700	1	3	4	0	204 400	34 453 334	51 981	41 903	63 124	
PANSA	334 000	1	4	13	0	672 073	291 563 045	401 752	324 379	488 014	
ROMATSA	254 000	1	3	16	0	487 189	224 563 906	289 097	148 395	328 560	
Skyguide	69 700	2	4	7	0	1 181 800	210 329 634	326 811	490 676	457 296	
Slovenia Control	20 400	1	3	3	0	533 087	35 303 906	48 086	31 619	56 494	
SMATSA	145 566	1	8	7	0	271 661	164 902 941	208 537	68 908	226 862	
UKSATSE	776 442	5	11	22	9	466 104	293 700 687	383 542	213 668	440 362	
Total		63	260	425	81		9 899 193 320	14 221 070	14 999 130	18 209 781	

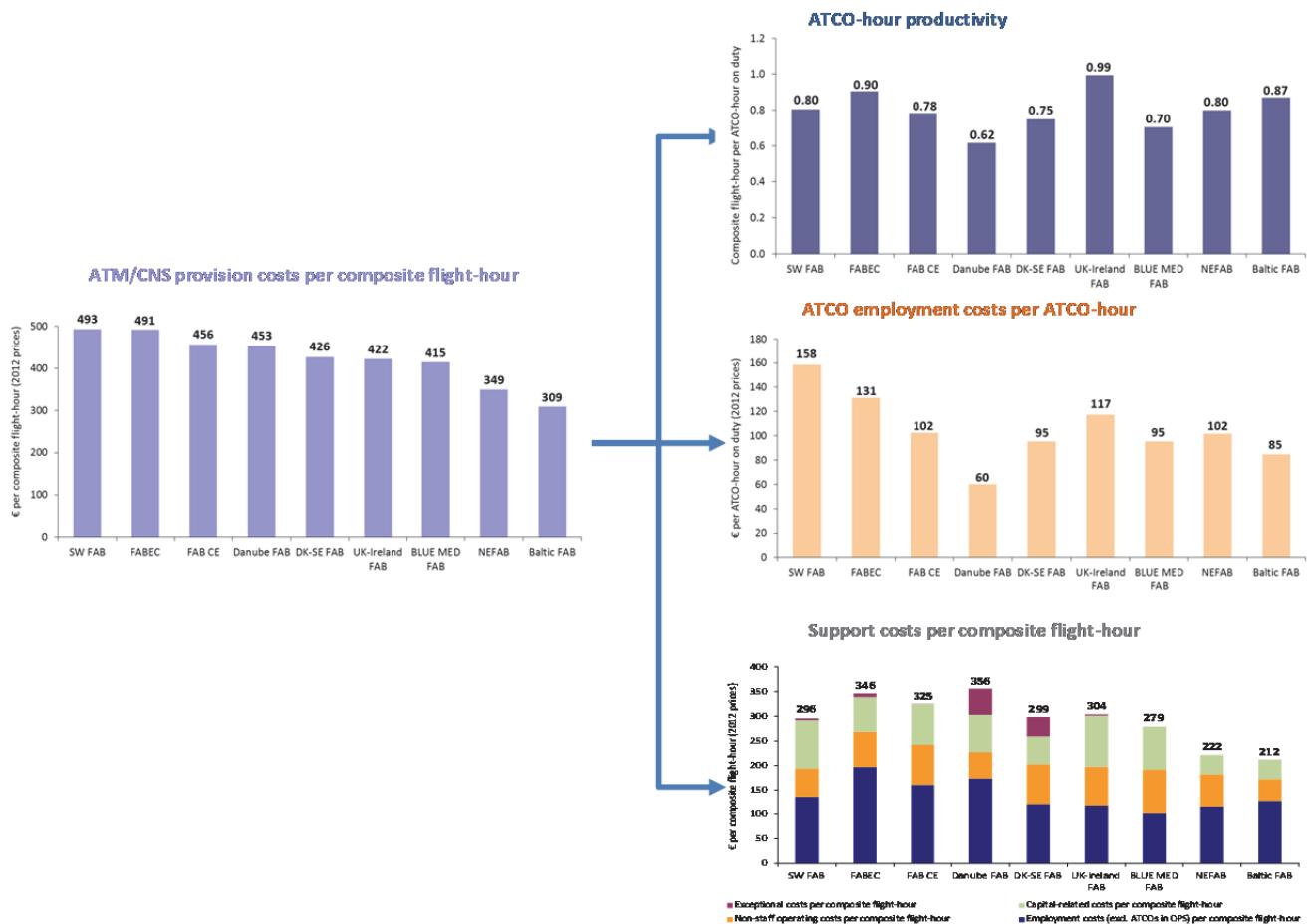
ANSPs	ACC Code	Flight-hours controlled	ATCO-hours on duty	ATCO-hour productivity	Average transit time in minutes	IFR ACC Movements	Size of the controlled area	ATCOs In OPS	Size of OPS room area (m ²)	Number of sectors	Sum of sector-hours
Aena	Canarias	163 563	161 303	1.01	36	274 155	1 370 000	130	624	8	45 904
Aena	Barcelona	309 587	330 019	0.94	25	736 671	267 000	261	1 395	18	90 164
Aena	Madrid	505 158	520 924	0.97	33	914 991	439 000	441	1 013	25	152 577
Aena	Palma	64 312	120 931	0.53	15	249 445	51 400	109	783	7	35 544
Aena	Sevilla	141 537	147 710	0.96	26	327 204	179 000	123	574	7	40 737
ANS CR	Praha	198 685	138 942	1.43	18	656 262	77 100	93	950	8	29 904
ARMATS	Yerevan	10 974	32 296	0.34	12	52 697	29 800	22	70	1	8 784
Austro Control	Wien	200 796	158 670	1.27	17	717 690	79 500	123	900	12	36 454
Avinor (Continental)	Bodo	72 821	54 217	1.34	22	203 092	403 000	35	328	5	29 000
Avinor (Continental)	Oslo	116 613	144 579	0.81	21	328 712	115 000	93	605	15	73 326
Avinor (Continental)	Stavanger	75 371	45 648	1.65	20	228 774	205 000	29	270	3	21 800
Belgocontrol	Brussels	74 234	112 880	0.66	8	550 174	39 500	85	1 054	7	24 512
BULATSA	Sofia	165 397	130 356	1.27	19	520 304	145 000	102	1 183	7	24 893
Croatia Control	Zagreb	177 628	120 060	1.48	23	470 630	158 000	90	800	9	29 000
DCAC Cyprus	Nicosia	119 199	114 057	1.05	27	269 752	174 000	57	250	4	20 155
DFS	Karlsruhe	442 299	360 170	1.23	19	1 429 223	200 000	339	1 850	28	107 246
DFS	Langen	368 259	429 884	0.86	18	1 235 488	108 000	423	1 689	36	139 480
DFS	Munchen	388 697	336 207	1.16	16	1 431 461	116 000	327	1 262	33	118 990
DFS	Bremen	180 199	257 170	0.70	18	612 539	174 000	231	1 050	20	91 854
DHMI	Ankara	569 900	393 192	1.45	48	705 662	776 000	258	295	11	83 220
DHMI	Istanbul	328 589	330 708	0.99	26	750 139	236 800	217	420	11	96 360
DSNA	Bordeaux	422 520	353 472	1.20	31	830 222	212 000	281	1 295	19	116 825
DSNA	Reims	217 520	265 418	0.82	16	795 741	93 300	211	1 040	17	72 571
DSNA	Paris	439 976	455 362	0.97	22	1 200 794	165 000	362	1 250	19	117 657
DSNA	Marseille	369 438	389 951	0.95	22	999 610	298 000	310	1 310	28	116 343
DSNA	Brest	427 761	318 250	1.34	30	854 665	400 000	253	850	17	88 874
EANS	Tallinn	59 457	40 128	1.48	20	179 415	77 102	24	269	3	10 710
ENAV	Brindisi	102 037	129 295	0.79	21	295 559	244 000	101	550	6	22 585
ENAV	Milano	172 993	316 131	0.55	17	607 107	73 300	238	593	17	44 633
ENAV	Padova	192 044	287 378	0.67	17	674 879	94 600	211	375	12	48 254
ENAV	Roma	486 168	436 346	1.11	31	945 491	502 000	354	1 600	26	91 644
Finavia	Tampere	75 024	77 098	0.97	25	177 395	415 000	53	550	5	24 820
HCAA	Athinai+Macedonia	404 716	316 050	1.28	40	612 302	537 000	215	1 000	12	59 400
HungaroControl	Budapest	169 054	143 178	1.18	18	558 620	93 000	89	700	7	20 912
IAA	Dublin	29 720	54 828	0.54	10	179 675	23 500	36	441	2	13 542
IAA	Shannon	218 857	159 915	1.37	33	393 484	449 000	105	576	9	49 410
LFV	Malmo	212 255	209 160	1.01	26	497 424	225 000	126	841	11	44 348
LFV	Stockholm	129 184	170 980	0.76	20	388 674	479 000	103	828	11	46 720
LGS	Riga	72 687	70 616	1.03	17	231 910	95 600	56	169	4	18 402
LPS	Bratislava	79 050	69 677	1.13	13	367 589	48 700	49	335	5	13 336
LVNL	Amsterdam	72 030	106 650	0.68	8	509 994	52 200	68	1 800	5	29 493
MATS	Malta	53 188	72 000	0.74	33	96 948	231 000	32	121	2	11 680
M-NAV	Skopje	16 548	53 770	0.31	9	112 106	24 800	38	202	3	10 144
MoldATSA	Chisinau	14 928	52 710	0.28	14	62 738	33 700	35	144	2	17 520
MUAC	Maastricht	560 102	288 523	1.94	21	1 605 505	260 000	247	1 050	20	65 808
NATA Albania	Tirana	40 982	60 216	0.68	13	195 230	36 000	39	36	4	15 054
NATS (Continental)	Prestwick	338 375	316 334	1.07	23	870 967	631 000	254	918	24	108 563
NATS (Continental)	London AC	506 646	454 616	1.11	17	1 791 217	287 000	365	2 000	19	79 799
NATS (Continental)	London TC	269 949	384 777	0.70	13	1 239 303	40 600	309	766	30	175 158
NAV Portugal (Continental)	Lisboa	243 854	156 640	1.56	35	421 666	665 000	88	663	7	53 746
NAVAIR	Kobenhavn	149 532	129 657	1.15	17	515 716	158 000	86	600	7	31 208
Oro Navigacija	Vilnius	46 005	51 978	0.89	14	199 203	74 700	33	336	3	19 520
PANSA	Warszawa	314 865	140 890	2.23	30	630 754	331 000	128	1 300	8	34 005
ROMATSA	Bucuresti	270 210	270 283	1.00	34	478 684	254 000	221	1 391	11	59 220
Skyguide	Geneva	110 796	138 170	0.80	11	605 410	30 000	110	1 113	9	29 486
Skyguide	Zurich	133 167	139 642	0.95	11	743 175	39 800	111	960	10	39 874
Slovenia Control	Ljubljana	45 937	71 576	0.64	10	268 923	20 400	50	200	4	16 048
SMATSA	Beograd	195 256	189 720	1.03	22	525 343	145 566	155	744	9	39 377
UKSATSE	Kyiv	113 040	236 550	0.48	29	230 847	185 834	190	883	12	55 240
UKSATSE	Dnipropetrov's'k	63 452	119 520	0.53	24	156 127	165 444	96	415	5	43 920
UKSATSE	Simferopol	95 024	175 545	0.54	29	197 797	209 505	141	358	7	44 510
UKSATSE	L'vev	72 887	94 620	0.77	25	177 473	133 901	76	202	5	35 800
UKSATSE	Odesa	29 160	92 130	0.32	18	98 252	81 582	74	235	5	27 180
Total		12 710 213	12 499 672	1.02	22	35 188 999	13 959 234	9 709		716	3 363 242

Annex 7 - Table 0.7: Operational data at ACC level, 2012

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ANNEX 8 – PERFORMANCE INDICATORS AT FAB LEVEL

This Annex shows the financial cost-effectiveness indicator computed at FAB level for the year 2012 and broken down into its three main components: ATCO-hour productivity, ATCO employment costs per ATCO-hour and support costs per composite flight-hour. The figures shown at FAB level in the Figure below have been computed taking into account the ANSPs participating to the ACE analysis in 2012 and which were formally part of a FAB initiative.



Annex 8 - Table 0.1: Breakdown of cost-effectiveness at FAB level, 2012

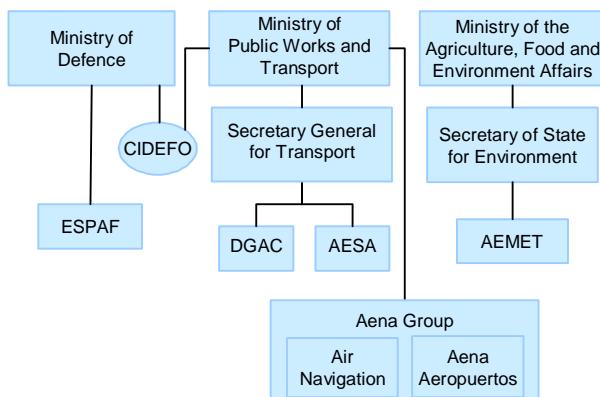
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ANNEX 9 – INDIVIDUAL ANSP FACT SHEETS

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Institutional arrangements and links (2014)



Status (2014)

- Business Public Entity attached to Ministry of Development
- A company with specific status (governed by Private Law, except when acting in its administrative capacity)
- 100% State-owned

National Supervisory Authority (NSA):

- AESA (Spanish Aviation Safety State Agency) (for AENA)
- Spanish Air Force Staff (for MIL)
- Secretary of State for Environment (for MET)

Body responsible for:

Safety Regulation

Spanish Civil Aviation Authority - Government
AESA - Government

Airspace Regulation

Spanish Civil Aviation Authority - Government
AESA - Government

Economic Regulation

Government

Corporate governance structure (2014)

BOARD OF DIRECTORS
Chairman + 12 members + Secretary
Chairman is the CEO

MANAGEMENT COMMITTEE
Chairman + 7 members
Chairman is the CEO

Aena (2014)

CHAIRMAN OF THE BOARD OF DIRECTORS:
José Manuel Vargas Gómez

DIRECTOR GENERAL (CEO):
José Manuel Vargas Gómez

DIRECTOR OF AIR NAVIGATION:
Ignacio González Sánchez

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

Operational ATS units:

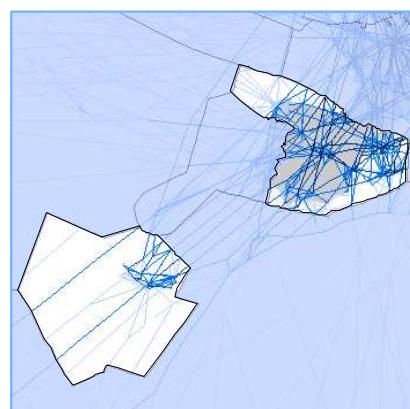
5 ACCs (Madrid, Barcelona, Canary Islands, Palma, Sevilla)
17 APPs (3 stand-alone APPs + 14 APPs co-located with TWR units)
30 TWRs

Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	953
Gate-to-gate total costs (M€)	1 010
Gate-to-gate ATM/CNS provision costs (M€)	897
Gate-to-gate total ATM/CNS assets(M€)	807
Gate-to-gate ANS total capex (M€)	128
ATCOs in OPS	1 810
Gate-to-gate total staff	4 002
Total IFR flight-hours controlled by ANSP ('000)	1 275
IFR airport movements controlled by ANSP ('000)	1 677
En-route sectors	65
Minutes of ATFM delays ('000)	1 139

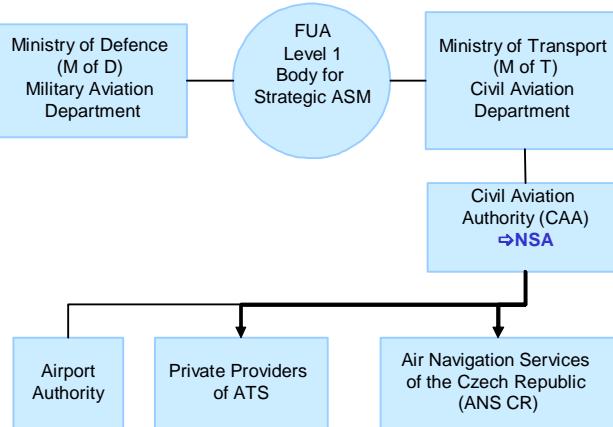
Size

Size of controlled airspace: 2 190 000 km²





Institutional arrangements and links (2014)



Status (2014)

- State-enterprise founded under the State Enterprise Act in 1995
- 100% State-owned

National Supervisory Authority (NSA):
Civil Aviation Authority (CAA)

Body responsible for:

Safety Regulation
Civil Aviation Authority

Airspace Regulation
Body for Strategic ASM

Economic Regulation
Ministry of Transport

Corporate governance structure (2014)

SUPERVISORY BOARD (6 members)

Chairman + 5 members
Members appointed by:
4 M of T
2 ANS CR employees

DIRECTOR GENERAL appointed by the M of T

ANS CR (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:
Lukáš Hampl

DIRECTOR GENERAL (CEO):
Jan Klas

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

Operational ATS units:

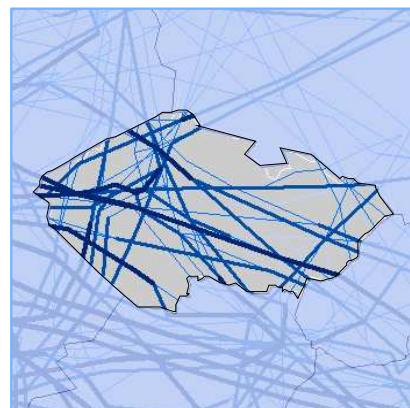
1 ACC (Praha)
4 APPs (Praha, Karlovy Vary, Brno, Ostrava)
4 TWRs (Praha, Karlovy Vary, Brno, Ostrava)
1 AFIS (located in Praha ACC)

Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	123
Gate-to-gate total costs (M€)	125
Gate-to-gate ATM/CNS provision costs (M€)	115
Gate-to-gate total ATM/CNS assets(M€)	131
Gate-to-gate ANS total capex (M€)	17
ATCOs in OPS	197
Gate-to-gate total staff	896
Total IFR flight-hours controlled by ANSP ('000)	224
IFR airport movements controlled by ANSP ('000)	145
En-route sectors	8
Minutes of ATFM delays ('000)	5

Size

Size of controlled airspace: 77 100 km²

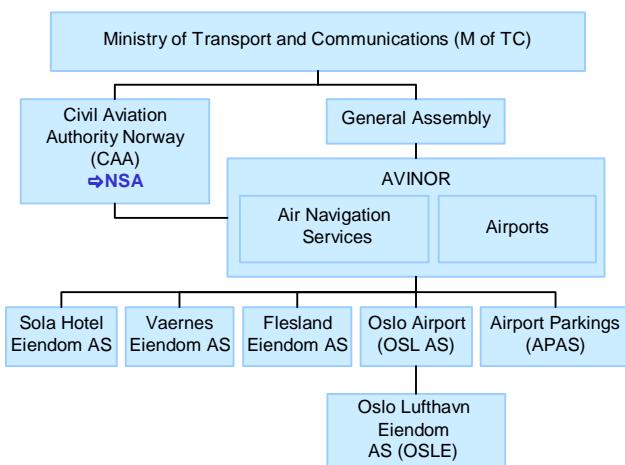




<p>Institutional arrangements and links (2014)</p>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Joint-stock company as of 1997 - 100% State-owned <p>National Supervisory Authority (NSA): General Department of Civil Aviation (GDCA)</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u>: General Department of Civil Aviation (GDCA) <u>Airspace Regulation</u>: General Department of Civil Aviation (GDCA) and Ministry of Defence <u>Economic Regulation</u>: Tax Authorities 																						
<p>Corporate governance structure (2014)</p>	<p>ARMATS (2014)</p> <p>CHAIRMAN OF THE SUPERVISORY BOARD: Artyom Movsesyan</p> <p>CHAIRMAN OF THE EXECUTIVE BODY: Artur Gasparyan</p> <p>DIRECTOR OF AIR TRAFFIC SERVICES: Artur Papoyan</p>																						
<p>Scope of services</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;"><input checked="" type="checkbox"/> GAT</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> Upper Airspace</td> <td style="padding: 2px;"><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> OAT</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> Lower Airspace</td> <td style="padding: 2px;"><input type="checkbox"/> MET</td> </tr> </table>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET	<p>Operational ATS units:</p> <ul style="list-style-type: none"> 1 ACC (Yerevan) 2 APPs (Yerevan, Gyumri) 2 TWRs (Shirak, Zvartnots) 																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS																					
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET																					
<p>Key financial and operational figures (ACE 2012)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Gate-to-gate total revenues (M€)</td> <td style="text-align: right;">8</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td style="text-align: right;">8</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td style="text-align: right;">8</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td style="text-align: right;">10</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td style="text-align: right;">2</td> </tr> <tr> <td>ATCOs in OPS</td> <td style="text-align: right;">70</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td style="text-align: right;">461</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td style="text-align: right;">14</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td style="text-align: right;">21</td> </tr> <tr> <td>En-route sectors</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td style="text-align: right;">0</td> </tr> </table>	Gate-to-gate total revenues (M€)	8	Gate-to-gate total costs (M€)	8	Gate-to-gate ATM/CNS provision costs (M€)	8	Gate-to-gate total ATM/CNS assets(M€)	10	Gate-to-gate ANS total capex (M€)	2	ATCOs in OPS	70	Gate-to-gate total staff	461	Total IFR flight-hours controlled by ANSP ('000)	14	IFR airport movements controlled by ANSP ('000)	21	En-route sectors	1	Minutes of ATFM delays ('000)	0	<p>Size</p> <p>Size of controlled airspace: 29 800 km²</p>
Gate-to-gate total revenues (M€)	8																						
Gate-to-gate total costs (M€)	8																						
Gate-to-gate ATM/CNS provision costs (M€)	8																						
Gate-to-gate total ATM/CNS assets(M€)	10																						
Gate-to-gate ANS total capex (M€)	2																						
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IFR airport movements controlled by ANSP ('000)	21																						
En-route sectors	1																						
Minutes of ATFM delays ('000)	0																						

<p>Institutional arrangements and links (2014)</p> <pre> graph TD MD["Federal Ministry of Defence (M of D)"] --- AD["Air Division"] MD --- CAA["Federal Ministry of Transport, Innovation and Technology as supreme CAA (M of TIT) ⇒ NSA"] AD --- AC["AUSTRO CONTROL"] CAA --> AC </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Private limited company as of 1994 - 100% State-owned (Law makes provision for Austrian Airports to own up to 49 %) <p>National Supervisory Authority (NSA): Federal Ministry of Transport, Innovation and Technology (M of TIT)</p> <p>Body responsible for:</p> <p>Safety Regulation The power for regulatory decisions including safety oversight lies within the M of TIT</p> <p>Airspace Regulation M of TIT, normally on basis of proposals of Austro Control</p> <p>Economic Regulation Covered by the National Supervisory Authority</p>																						
<p>Corporate governance structure (2014)</p> <pre> graph TD GA["GENERAL ASSEMBLY - M of TIT"] --- SB["SUPERVISORY BOARD (9 members) Chairman + 8 members All members are appointed by M of TIT. Members represent: 1 from M of Finance, 1 from M of TIT, 1 from the field of aviation, 1 from the field of consulting, 1 from the field of transport, 3 from works council."] SB --- MB["MANAGING BOARD 2 members Members appointed by M of TIT."] </pre>	<p>Austro Control (2014)</p> <p>CHAIRMAN OF THE SUPERVISORY BOARD: Dr. Christoph Matznetter</p> <p>MANAGING BOARD: Dr. Heinz Sommerbauer Thomas Hoffmann, MSc</p>																						
<p>Scope of services</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/> GAT</td> <td><input checked="" type="checkbox"/> Upper Airspace</td> <td><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input checked="" type="checkbox"/> MET</td> </tr> </table>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET	<p>Operational ATS units:</p> <ul style="list-style-type: none"> 1 ACC (Wien) 6 APPs (Wien, Graz, Innsbruck, Klagenfurt, Linz, Salzburg) 6 TWRs 																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS																					
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET																					
<p>Key financial and operational figures (ACE 2012)</p> <table> <tbody> <tr> <td>Gate-to-gate total revenues (M€)</td> <td>214</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td>215</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td>183</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td>184</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td>31</td> </tr> <tr> <td>ATCOs in OPS</td> <td>287</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td>887</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td>279</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td>355</td> </tr> <tr> <td>En-route sectors</td> <td>12</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td>270</td> </tr> </tbody> </table>	Gate-to-gate total revenues (M€)	214	Gate-to-gate total costs (M€)	215	Gate-to-gate ATM/CNS provision costs (M€)	183	Gate-to-gate total ATM/CNS assets(M€)	184	Gate-to-gate ANS total capex (M€)	31	ATCOs in OPS	287	Gate-to-gate total staff	887	Total IFR flight-hours controlled by ANSP ('000)	279	IFR airport movements controlled by ANSP ('000)	355	En-route sectors	12	Minutes of ATFM delays ('000)	270	<p>Size Size of controlled airspace: 79 500 km²</p>
Gate-to-gate total revenues (M€)	214																						
Gate-to-gate total costs (M€)	215																						
Gate-to-gate ATM/CNS provision costs (M€)	183																						
Gate-to-gate total ATM/CNS assets(M€)	184																						
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Total IFR flight-hours controlled by ANSP ('000)	279																						
IFR airport movements controlled by ANSP ('000)	355																						
En-route sectors	12																						
Minutes of ATFM delays ('000)	270																						

Institutional arrangements and links (2014)



Status (2014)

- State owned limited company.
- Civil ANSP and airport owner/ operator
- Independent of CAA

National Supervisory Authority (NSA):

Civil Aviation Authority Norway (CAA)

Body responsible for:

Safety Regulation

Civil Aviation Authority Norway

Airspace Regulation

Civil Aviation Authority Norway

Economic Regulation

Aeronautic charges are set annually by the Ministry of Transport and Communications

Corporate governance structure (2014)

SUPERVISORY BOARD (10 members)
Chairman + 9 members
Members represent: 6 M of TC, 4 staff

EXECUTIVE BOARD (10 members)
CEO + 9 members
CEO appointed by Supervisory Board

Avinor (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:
Ola Mørkved Rinnan

CHIEF EXECUTIVE OFFICER:
Dag Falk-Petersen

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input checked="" type="checkbox"/> Oceanic ANS
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- AVINOR owns and operates 46 airports, 12 in association with Armed Forces

Operational ATS units:

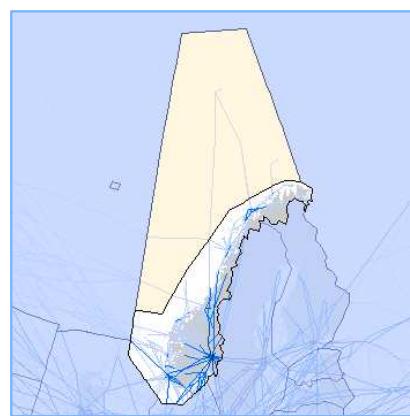
3 ACCs Oslo (ACC + APP), Stavanger (ACC), Bodø (ACC + APP + Oceanic)
17 APPs (1 APP combined with Oslo ACC + 16 TWRs/APPs)
17 TWRs
28 AFISs

Key financial and operational figures (ACE 2012)

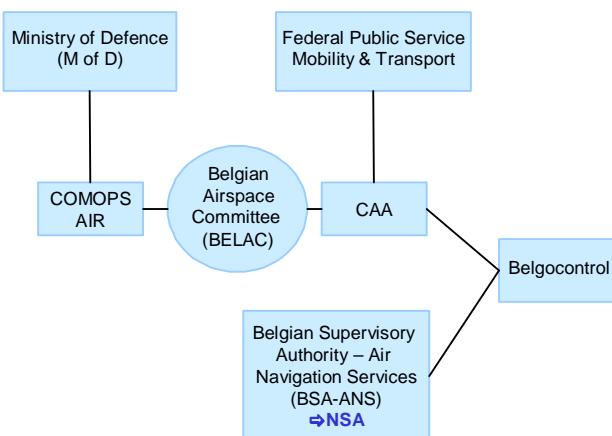
Gate-to-gate total revenues (M€)	217
Gate-to-gate total costs (M€)	218
Gate-to-gate ATM/CNS provision costs (M€)	207
Gate-to-gate total ATM/CNS assets(M€)	98
Gate-to-gate ANS total capex (M€)	10
ATCOs in OPS	401
Gate-to-gate total staff	961
Total IFR flight-hours controlled by ANSP ('000)	348
IFR airport movements controlled by ANSP ('000)	674
En-route sectors	23
Minutes of ATFM delays ('000)	328

Size

Size of controlled airspace: 2 174 000 km²



Institutional arrangements and links (2014)



Status (2014)

- Public Autonomous Enterprise as of 1998 under a management contract
- 100% State-owned

National Supervisory Authority (NSA):

Belgian Supervisory Authority - Air Navigation Services (BSA-ANS)

Body responsible for:

Safety Regulation

Civil Aviation Authority

Airspace Regulation

Belgian Airspace Committee

Economic Regulation

Federal Public Service of Mobility and Transport

Corporate governance structure (2014)

SUPERVISORY BOARD (10 members)
Chairman + CEO + 8 members
Members appointed by Ministry of Mobility
CEO represents staff.

EXECUTIVE BOARD (6 members)
CEO + 5 members

Belgocontrol (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:
Renaud Lorand

DIRECTOR GENERAL (CEO):
Johan Decuyper

Scope of services

<input checked="" type="checkbox"/> GAT	<input type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET

- Belgocontrol controls lower airspace up to FL 245, including Luxembourg airspace above FL 145/165
- Upper airspace (> FL 245) is controlled by Maastricht UAC

Operational ATS units:

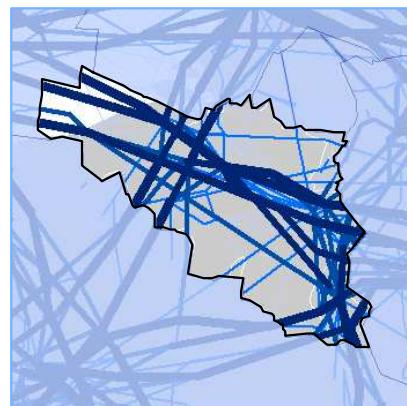
- 1 ACC (Brussels)
- 4 APPs (Brussels, Liege, Charleroi, Oostende)
- 5 TWRs (Brussels, Antwerp, Liege, Charleroi, Oostende)

Key financial and operational figures (ACE 2012)

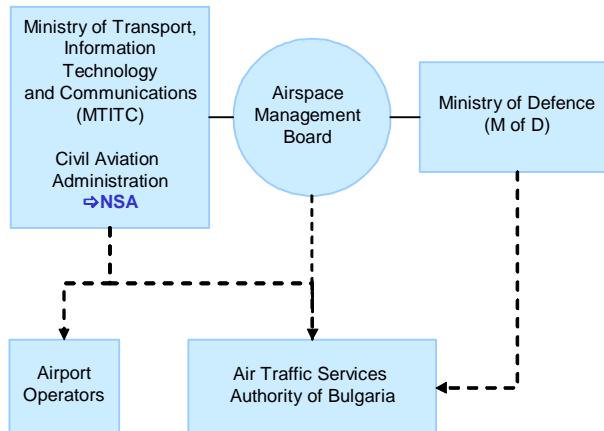
Gate-to-gate total revenues (M€)	209
Gate-to-gate total costs (M€)	220
Gate-to-gate ATM/CNS provision costs (M€)	150
Gate-to-gate total ATM/CNS assets(M€)	142
Gate-to-gate ANS total capex (M€)	6
ATCOs in OPS	221
Gate-to-gate total staff	853
Total IFR flight-hours controlled by ANSP ('000)	109
IFR airport movements controlled by ANSP ('000)	365
En-route sectors	7
Minutes of ATFM delays ('000)	94

Size

Size of controlled airspace: 39 500 km²



Institutional arrangements and links (2014)



Status (2014)

- State enterprise as of April 2001 (Art 53 §1 of the Civil Aviation Law)
- 100% State-owned

National Supervisory Authority (NSA):

Civil Aviation Administration

Body responsible for:

Safety Regulation

Civil Aviation Administration (Ministry of Transport, Information Technology and Communications (MTITC))

Airspace Regulation

Airspace Management Board

Economic Regulation

Ministry of Transport, Information Technology and Communications (MTITC)

Corporate governance structure (2014)

MANAGEMENT BOARD (3 members)
DG + 2 members

All members appointed by the MTITC.

BULATSA (2014)

CHAIRMAN OF THE MANAGEMENT BOARD:

Anton Djadjev

DIRECTOR GENERAL (CEO):

Tzvetan Dilov

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET

- Training of ATCOs

Operational ATS units:

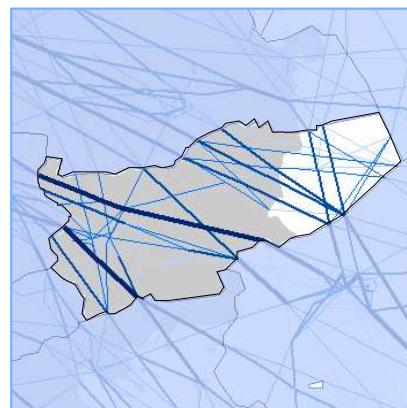
1 ACCs (Sofia)
3 APPs (Sofia, Varna, Burgas)
5 TWRs (Sofia, Varna, Burgas, Gorna Oriahovitsa, Plovdiv)

Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	84
Gate-to-gate total costs (M€)	85
Gate-to-gate ATM/CNS provision costs (M€)	74
Gate-to-gate total ATM/CNS assets(M€)	91
Gate-to-gate ANS total capex (M€)	11
ATCOs in OPS	234
Gate-to-gate total staff	1 125
Total IFR flight-hours controlled by ANSP ('000)	179
IFR airport movements controlled by ANSP ('000)	75
En-route sectors	7
Minutes of ATFM delays ('000)	3

Size

Size of controlled airspace: 146 000 km²



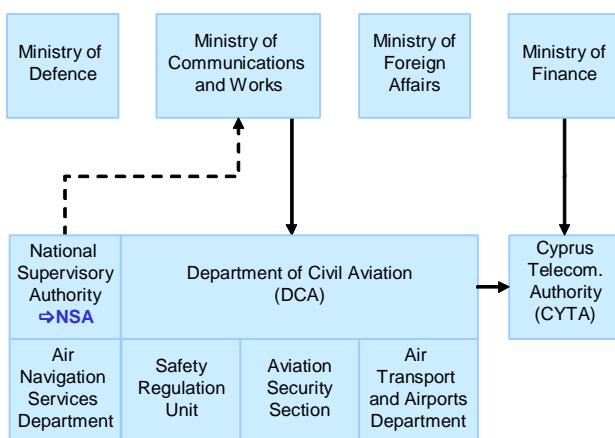
118 000 km² plus 28 000 km² over the Black Sea.



<p>Institutional arrangements and links (2014)</p> <pre> graph TD MofSTI[Ministry of Sea Transport and Infrastructure (M of STI)] --- DGCA[Directorate General for Civil Aviation] MofSTI --- CCAA[Croatian Civil Aviation Agency ⇒ NSA] MofSTI --- AIA[Accident Investigation Agency] MofD[Ministry of Defence (M of D)] --- NPPR[National Protection and Rescue Directorate (NPPR)] CCAA --- CC[CCroatia Control Ltd] </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Limited liability company as of 1st January 2000 - 100% State-owned - Integrated civil/military ANSP <p>National Supervisory Authority (NSA): Croatian Civil Aviation Agency (CCAA)</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u>: Directorate General for Civil Aviation <u>Airspace Regulation</u>: M of STI <u>Economic Regulation</u>: State Law and Croatia Control Ltd 																						
<p>Corporate governance structure (2014)</p> <p>ASSEMBLY (3 members) The President represents Ministry of STI (Minister), the other Two members represent M of D (Minister) and M of F (Minister).</p> <p>SUPERVISORY BOARD (5 members) The Chairman + 4 members The members represent the M of STI, M of D, M of F, and employees. They are appointed for a 4-year period. The member representing the employees is elected and appointed pursuant to the Company Statute and Labour Relations Act.</p> <p>MANAGEMENT Director General The DG is appointed by the Supervisory Board for a 5-year period, following an open competition and under the conditions stipulated by the Company Statute.</p>	<p>Croatia Control (2014)</p> <p>CHAIRMAN OF THE SUPERVISORY BOARD: Darko Prebežac</p> <p>DIRECTOR GENERAL: Dragan Bilač</p>																						
<p>Scope of services</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/> GAT</td> <td><input checked="" type="checkbox"/> Upper Airspace</td> <td><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input checked="" type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input checked="" type="checkbox"/> MET</td> </tr> </table> <p>- ATS provision within entire Sarajevo FIR (Bosnia & Herzegovina) from FL 100 to FL 285 and within western part of Sarajevo FIR (west of the line: GUBOK-DER-BOSNA-VRANA-VELIT) from FL 285 to FL 660</p>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET	<p>Operational ATS units:</p> <p>1 ACC (Zagreb) 1 APP (Zagreb) 8 APPs/TWRs (Osijek, Rijeka, Pula, Zadar, Split, Dubrovnik, Brač, Lošinj) 2 TWRs (Lučko, Zagreb)</p>																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS																					
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET																					
<p>Key financial and operational figures (ACE 2012)</p> <table> <tbody> <tr> <td>Gate-to-gate total revenues (M€)</td> <td>75</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td>82</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td>78</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td>81</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td>24</td> </tr> <tr> <td>ATCOs in OPS</td> <td>230</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td>743</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td>194</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td>82</td> </tr> <tr> <td>En-route sectors</td> <td>9</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td>130</td> </tr> </tbody> </table>	Gate-to-gate total revenues (M€)	75	Gate-to-gate total costs (M€)	82	Gate-to-gate ATM/CNS provision costs (M€)	78	Gate-to-gate total ATM/CNS assets(M€)	81	Gate-to-gate ANS total capex (M€)	24	ATCOs in OPS	230	Gate-to-gate total staff	743	Total IFR flight-hours controlled by ANSP ('000)	194	IFR airport movements controlled by ANSP ('000)	82	En-route sectors	9	Minutes of ATFM delays ('000)	130	<p>Size</p> <p>Size of controlled airspace: 158 000 km²</p>
Gate-to-gate total revenues (M€)	75																						
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En-route sectors	9																						
Minutes of ATFM delays ('000)	130																						



Institutional arrangements and links (2014)



Status (2014)

- State body
- 100% State-owned

National Supervisory Authority (NSA):

Department of Civil Aviation

Body responsible for:

Safety Regulation

Department of Civil Aviation of Cyprus

Airspace Regulation

Department of Civil Aviation of Cyprus

Economic Regulation

Ministry of Finance

Corporate governance structure (2014)

Minister of Communications and Works

Director DCAC, Head of ANS Section,
Head of T&A Section, Head of Aviation Security Section
and Head of Safety Regulation Unit are nominated by the Civil
Service. The Head of the NSA is nominated by the Council of
Ministers.

DCAC Cyprus (2014)

DIRECTOR OF DCAC:

Iacovos Demetriou (up to April 2014)

ACTING HEAD OF NSA:

Panayiota Demetrou

HEAD OF ANS SECTION (COO):

Nicos Nicolaou (ACC, Airspace, ATFM)

Persephone Papadopoulou (APPs, TWRs, AIS, Training)

ACTING HEAD OF TRANSPORT AND AIRPORTS SECTION:

Antonis Lemesianos

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- DCAC Cyprus owns and operates 2 airports

Operational ATS units:

1 ACC (Nicosia)

2 APPs (Larnaca, Paphos)

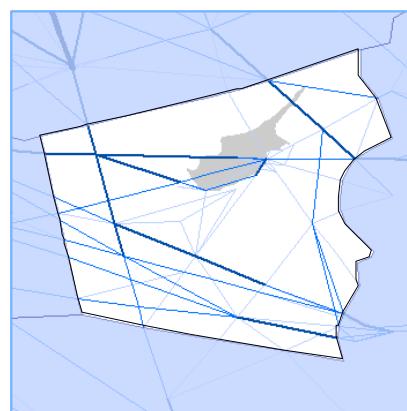
2 TWRs (Larnaca, Paphos)

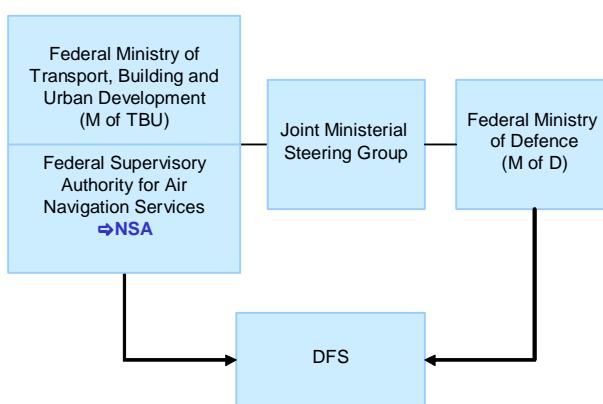
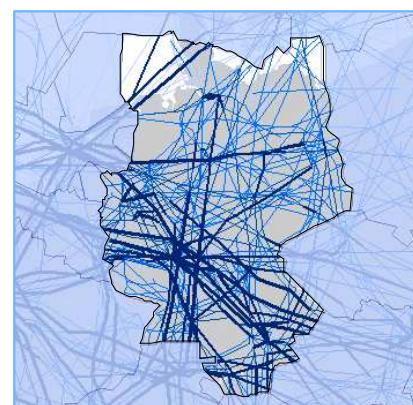
Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	55
Gate-to-gate total costs (M€)	55
Gate-to-gate ATM/CNS provision costs (M€)	38
Gate-to-gate total ATM/CNS assets(M€)	29
Gate-to-gate ANS total capex (M€)	4
ATCOs in OPS	84
Gate-to-gate total staff	195
Total IFR flight-hours controlled by ANSP ('000)	127
IFR airport movements controlled by ANSP ('000)	62
En-route sectors	4
Minutes of ATFM delays ('000)	444

Size

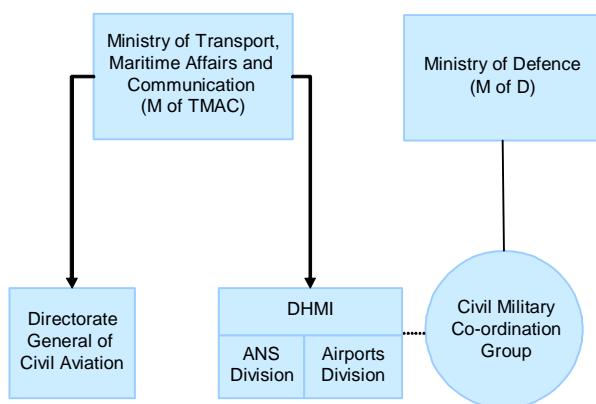
Size of controlled airspace: 174 000 km²



<h3>Institutional arrangements and links (2014)</h3> 	<h3>Status (2014)</h3> <ul style="list-style-type: none"> - Limited liability company as of 1993, governed by Private Company Law - 100% State-owned - Integrated civil/military ANSP <p>National Supervisory Authority (NSA): Federal Supervisory Authority for Air Navigation Services</p> <p>Body responsible for:</p> <p><i>Safety Regulation</i> Federal Supervisory Authority for Air Navigation Services (NSA)</p> <p><i>Airspace Regulation</i> Federal Supervisory Authority for Air Navigation Services (NSA)</p> <p><i>Economic Regulation</i> Federal Supervisory Authority for Air Navigation Services (NSA)</p>																						
<h3>Corporate governance structure (2014)</h3>  <p>* KFW = KFW-Bankengruppe</p>	<h3>DFS (2014)</h3> <p>CHAIRMAN OF THE SUPERVISORY BOARD: Sts. Michael Odenwald</p> <p>CHAIRMAN OF THE EXECUTIVE BOARD: Prof. Klaus-Dieter Scheurle</p>																						
<h3>Scope of services</h3> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><input checked="" type="checkbox"/> GAT</td> <td><input checked="" type="checkbox"/> Upper Airspace</td> <td><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input checked="" type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input type="checkbox"/> MET</td> </tr> </table> <p>- DFS controls both upper and lower airspace, except GAT for the upper airspace in North-Western Germany - Other ANS - Consulting, training, engineering & maintenance services</p>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET	<h3>Operational ATS units:</h3> <ul style="list-style-type: none"> 1 UAC (Karlsruhe) 1 ACC/UAC/APP (München) 2 ACCs/APPs (Bremen, Langen) 1 ACC (co-located with Maastricht UAC) for OAT in upper airspace in North-Western Germany 16 TWRs (Berlin Tempelhof closed in Nov.08) 																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS																					
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<h3>Key financial and operational figures (ACE 2012)</h3> <table border="0"> <tr> <td>Gate-to-gate total revenues (M€)</td> <td>1 039</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td>1 056</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td>1 055</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td>656</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td>95</td> </tr> <tr> <td>ATCOs in OPS</td> <td>1 717</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td>5 618</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td>1 379</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td>2 001</td> </tr> <tr> <td>En-route sectors</td> <td>117</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td>2 207</td> </tr> </table>	Gate-to-gate total revenues (M€)	1 039	Gate-to-gate total costs (M€)	1 056	Gate-to-gate ATM/CNS provision costs (M€)	1 055	Gate-to-gate total ATM/CNS assets(M€)	656	Gate-to-gate ANS total capex (M€)	95	ATCOs in OPS	1 717	Gate-to-gate total staff	5 618	Total IFR flight-hours controlled by ANSP ('000)	1 379	IFR airport movements controlled by ANSP ('000)	2 001	En-route sectors	117	Minutes of ATFM delays ('000)	2 207	<h3>Size</h3> <p>Size of controlled airspace: 388 000 km²</p> 
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Minutes of ATFM delays ('000)	2 207																						



Institutional arrangements and links (2014)



Status (2014)

- Autonomous State body
- 100% State-owned

National Supervisory Authority (NSA):

Not applicable since Turkey is not bound by SES Regulations

Body responsible for:

Safety Regulation

Directorate General of Civil Aviation

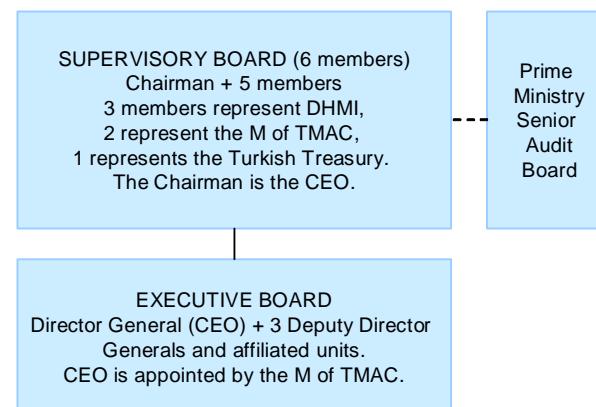
Airspace Regulation

General Directorate of DHMI

Economic Regulation

General Directorate of DHMI

Corporate governance structure (2014)



DHMI (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:

Mr. Orhan Birdal

DIRECTOR GENERAL (CEO):

Mr. Orhan Birdal

DIRECTOR ANS DIVISION:

Mr. Mustafa Kılıç

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- DHMI is responsible for the administration of 47 State Airports. ATS services are provided by DHMI in 52 Airports

Operational ATS units:

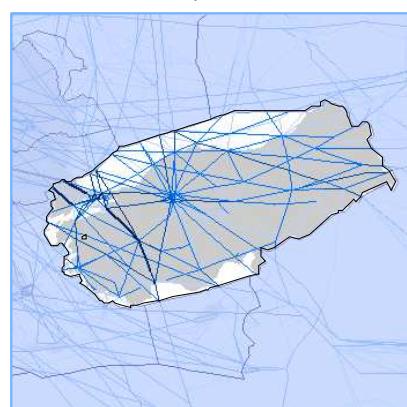
2 ACCs (Ankara, Istanbul)
31 APPs
40 TWRs
2 FICs/RCCs
45 AIS/ARO
43 SAR sub-center units

Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	398
Gate-to-gate total costs (M€)	395
Gate-to-gate ATM/CNS provision costs (M€)	352
Gate-to-gate total ATM/CNS assets(M€)	631
Gate-to-gate ANS total capex (M€)	51
ATCOs in OPS	977
Gate-to-gate total staff	5 407
Total IFR flight-hours controlled by ANSP ('000)	948
IFR airport movements controlled by ANSP ('000)	960
En-route sectors	22
Minutes of ATFM delays ('000)	634

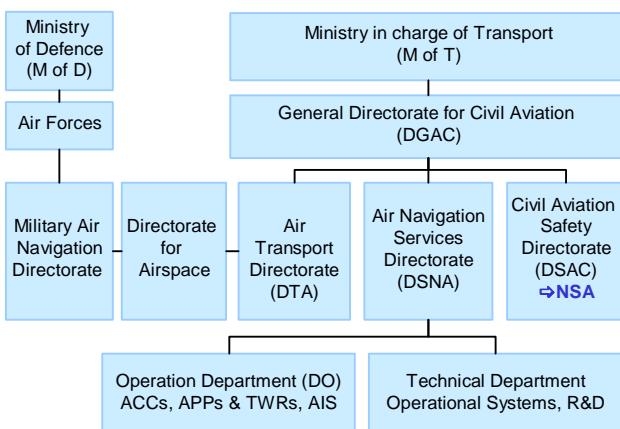
Size

Size of controlled airspace: 982 000 km²





Institutional arrangements and links (2014)



Status (2014)

- DSNA is a division of DGAC
- 100% State-owned

National Supervisory Authority (NSA):

Directorate for Civil Aviation Safety (DSAC)

Body responsible for:

Safety Regulation

Air Transport Directorate (DTA)

Airspace Regulation

Air Transport Directorate (DTA)

Direction de la circulation aérienne militaire (DIRCAM)

Economic Regulation

Air Transport Directorate (DTA)

Corporate governance structure (2014)



DSNA (2014)

DIRECTOR OF DSNA:

M. Georges

DIRECTOR OF OPERATION DEPARTEMENT (DO):

M. Bruneau

DIRECTOR OF TECHNICAL DEPARTEMENT (DTI):

P. Planchon

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- Delegation of airspace to Skyguide and Jersey

Operational ATS units:

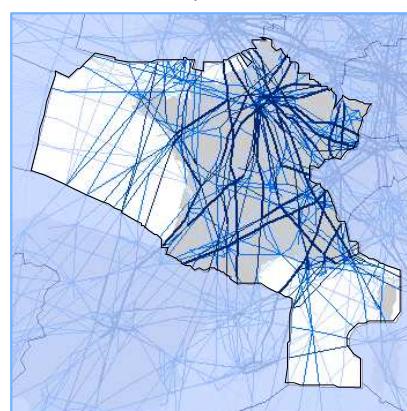
5 ACCs
12 APPs/TWRs (i.e. Paris Orly, Paris CDG, Marseille, Lyon, Nice, Bordeaux, Toulouse, Clermont Ferrand, Montpellier, Strasbourg, Bâle-Mulhouse, Nantes)
69 TWRs

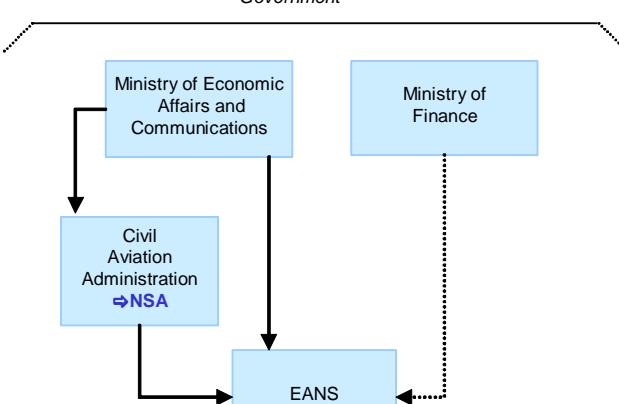
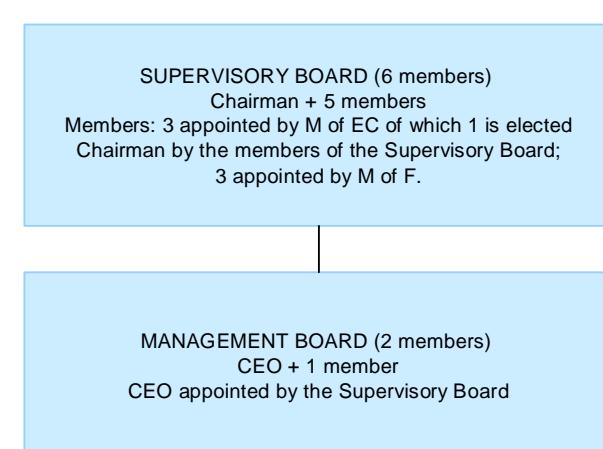
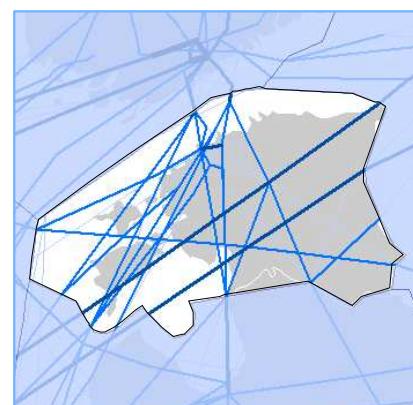
Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	1 433
Gate-to-gate total costs (M€)	1 435
Gate-to-gate ATM/CNS provision costs (M€)	1 165
Gate-to-gate total ATM/CNS assets(M€)	754
Gate-to-gate ANS total capex (M€)	146
ATCOs in OPS	2 766
Gate-to-gate total staff	7 926
Total IFR flight-hours controlled by ANSP ('000)	2 117
IFR airport movements controlled by ANSP ('000)	1 922
En-route sectors	100
Minutes of ATFM delays ('000)	2 055

Size

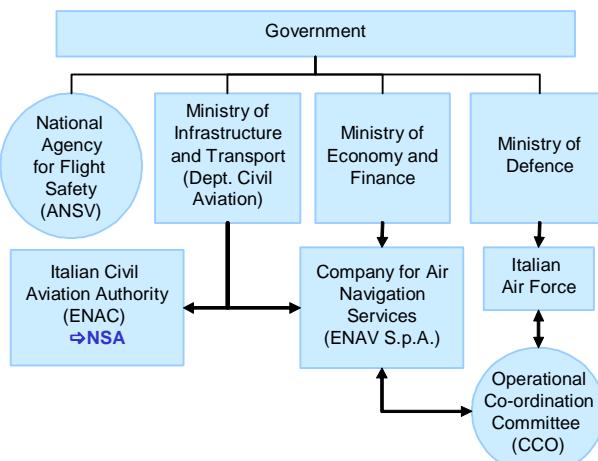
Size of controlled airspace: 1 010 000 km²



<u>Institutional arrangements and links (2014)</u> 	<u>Status (2014)</u> <ul style="list-style-type: none"> - Joint-stock company as of 1998 - 100% State-owned <p>National Supervisory Authority (NSA): Civil Aviation Administration</p> <p>Body responsible for: <u>Safety Regulation</u> Government of the Republic of Estonia Safety Supervision is done by the Civil Aviation Administration (CAA)</p> <p><u>Airspace Regulation</u> Government of the Republic of Estonia</p> <p><u>Economic Regulation</u> Government of the Republic of Estonia (Ministry of Economic Affairs and Communications & Ministry of Finance)</p>																						
<u>Corporate governance structure (2014)</u>  <p>SUPERVISORY BOARD (6 members) Chairman + 5 members Members: 3 appointed by M of EC of which 1 is elected Chairman by the members of the Supervisory Board; 3 appointed by M of F.</p> <p>MANAGEMENT BOARD (2 members) CEO + 1 member CEO appointed by the Supervisory Board</p>	<p>EANS (2014)</p> <p>CHAIRMAN OF THE SUPERVISORY BOARD: Andres Uusma</p> <p>CHAIRMAN OF THE MANAGEMENT BOARD & CEO: Tanel Rautits</p>																						
<u>Scope of services</u> <table border="1" data-bbox="158 1392 761 1482"> <tr> <td><input checked="" type="checkbox"/> GAT</td> <td><input checked="" type="checkbox"/> Upper Airspace</td> <td><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input type="checkbox"/> MET</td> </tr> </table> <ul style="list-style-type: none"> - Tech. serv. (NAV/COMM/SUR), Aeronautical info serv. - Consultancy services - Control Tallinn Aerodrome - Estonia is not member of EUROCONTROL - Estonia belongs to IFPS zone 	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET	<u>Operational ATS units:</u> 1 ACC (Tallinn) 2 APPs/TWRs (Tallinn, Tartu)																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS																					
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET																					
<u>Key financial and operational figures (ACE 2012)</u> <table border="1" data-bbox="158 1662 761 2111"> <tr><td>Gate-to-gate total revenues (M€)</td><td>18</td></tr> <tr><td>Gate-to-gate total costs (M€)</td><td>14</td></tr> <tr><td>Gate-to-gate ATM/CNS provision costs (M€)</td><td>14</td></tr> <tr><td>Gate-to-gate total ATM/CNS assets(M€)</td><td>18</td></tr> <tr><td>Gate-to-gate ANS total capex (M€)</td><td>2</td></tr> <tr><td>ATCOs in OPS</td><td>46</td></tr> <tr><td>Gate-to-gate total staff</td><td>156</td></tr> <tr><td>Total IFR flight-hours controlled by ANSP ('000)</td><td>66</td></tr> <tr><td>IFR airport movements controlled by ANSP ('000)</td><td>47</td></tr> <tr><td>En-route sectors</td><td>3</td></tr> <tr><td>Minutes of ATFM delays ('000)</td><td>20</td></tr> </table>	Gate-to-gate total revenues (M€)	18	Gate-to-gate total costs (M€)	14	Gate-to-gate ATM/CNS provision costs (M€)	14	Gate-to-gate total ATM/CNS assets(M€)	18	Gate-to-gate ANS total capex (M€)	2	ATCOs in OPS	46	Gate-to-gate total staff	156	Total IFR flight-hours controlled by ANSP ('000)	66	IFR airport movements controlled by ANSP ('000)	47	En-route sectors	3	Minutes of ATFM delays ('000)	20	<u>Size</u> Size of controlled airspace: 77 102 km ² 
Gate-to-gate total revenues (M€)	18																						
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En-route sectors	3																						
Minutes of ATFM delays ('000)	20																						



Institutional arrangements and links (2014)



Status (2014)

- Joint-Stock Company
- 100% State-owned by Ministry of Economy and Finance

National Supervisory Authority (NSA):

Italian Civil Aviation Authority (ENAC)

Body responsible for:

Safety Regulation

Italian Civil Aviation Authority (ENAC) and Ministry of Infrastructure and Transport (M of IT)

Airspace Regulation

Italian Civil Aviation Authority (ENAC)

Economic Regulation

Ministry of Infrastructure and Transport and ENAC review annually ANS charges in co-operation with Ministry of Economy and Finance and Ministry of Defence

Corporate governance structure (2014)

CHIEF EXECUTIVE OFFICER

The CEO has been appointed by the Ministry of Economy and Finance in consultation with the Ministry of Infrastructure and Transport.

Reciprocal obligations between the Ministry of Infrastructure and Transport and ENAV are regulated through programme contract and service contract.

ENAV (2014)

CHIEF EXECUTIVE OFFICER (CEO):

Massimo Garbini

DIRECTOR GENERAL:

Massimo Bellizzi

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET

- Aeronautical Information service
- Training and licensing of ATCO's
- R&D consultancy services
- Aerodrome weather services, ATM and CNS
- Flight inspection

Operational ATS units:

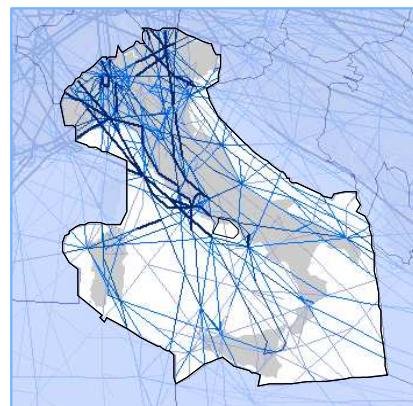
4 ACCs (Milan, Padua, Rome, Brindisi)
 18 APPs co-located within TWR units + 1 APP stand-alone + 4 APPs co-located within ACC units
 28 TWRS (including 16 low traffic airports which are not included in ACE data analysis)
 11 AFISs (low traffic airports not included in ACE data analysis)

Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	774
Gate-to-gate total costs (M€)	719
Gate-to-gate ATM/CNS provision costs (M€)	638
Gate-to-gate total ATM/CNS assets(M€)	1 008
Gate-to-gate ANS total capex (M€)	112
ATCOs in OPS	1 439
Gate-to-gate total staff	2 967
Total IFR flight-hours controlled by ANSP ('000)	1 028
IFR airport movements controlled by ANSP ('000)	1 106
En-route sectors	61
Minutes of ATFM delays ('000)	104

Size

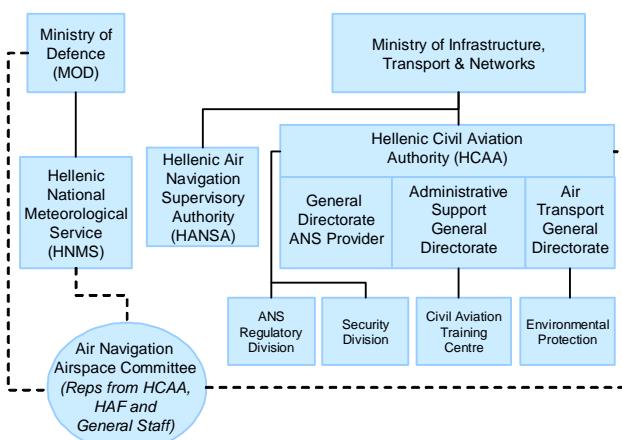
Size of controlled airspace: 733 000 km²



<p>Institutional arrangements and links (2014)</p> <pre> graph TD COUNCIL[COUNCIL of STATE (Government) Chaired by the Prime Minister] --> MTC[Ministry of Transport and Communication (M of TC)] MTC --> FINAVIA[Finavia] FINAVIA --- BA[Business areas] FINAVIA --- GS[Group Services] FINAVIA --- M[Marketing] FINAVIA --- HR[HR, Group Legal, Communications, Internal Audit] NSA[Finnish Transport Safety Agency ↔NSA] --- FINAVIA </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Public Limited Company - Integrated civil/military ANSP - 100% State-owned <p>National Supervisory Authority (NSA): Finnish Transport Safety Agency</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u>: Finnish Transport Safety Agency <u>Airspace Regulation</u>: Finnish Transport Safety Agency <u>Economic Regulation</u>: Finnish Transport Safety Agency 																						
<p>Corporate governance structure (2014)</p> <pre> graph TD BOARD[The BOARD (7 members) Chairman + 6 members (1 member represents staff) All members are appointed by the General Meeting of Shareholders. Chief Executive Officer of Finavia is not a member of the Board.] --- PRESIDENT[President and CEO] </pre>	<p>Finavia (2014)</p> <p>CHAIRMAN OF THE FINAVIA BOARD: Soili Suonoja</p> <p>PRESIDENT AND CEO: Kari Savolainen</p> <p>VICE PRESIDENT - AIR NAVIGATION SERVICES: Raine Luojus</p>																						
<p>Scope of services</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/> GAT</td> <td><input checked="" type="checkbox"/> Upper Airspace</td> <td><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input checked="" type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input type="checkbox"/> MET</td> </tr> </table> <p>- Finavia owns and operates 25 airports - Delegation of ATS in certain areas to LFV and Avinor - 195 ATCOs in OPS reported below do not include those providing services to military OAT flights</p>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET	<p>Operational ATS units:</p> <ul style="list-style-type: none"> 1 ACC (Tampere) 5 APPs/TWRs (Helsinki, Jyväskylä, Kuopio, Tampere-Pirkkala, Rovaniemi) 3 Mil-APPs/TWRs (Halli, Kauhava, Utti) 10 TWRs 1 General Aviation Airport (Malmi) 6 AFISs (Enontekiö, Kittilä, Kajaani, Savonlinna, Kuusamo, Varkaus) 																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS																					
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET																					
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Institutional arrangements and links (2014)



Status (2014)

- State body
- 100% State-owned

National Supervisory Authority (NSA):

Hellenic Air Navigation Supervisory Authority (HANSA)

Body responsible for:

Safety Regulation

Hellenic Civil Aviation Authority

Airspace Regulation

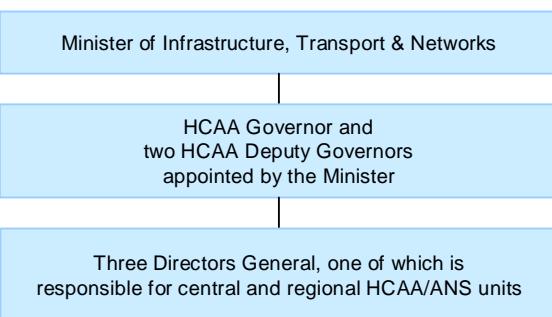
Air Navigation Airspace Committee

Economic Regulation

Ministry of Infrastructure, Transport & Networks and HCAA for charges

Ministry of Finance for HCAA Budget

Corporate governance structure (2014)



HCAA (2014)

GOVERNOR:

D. Koukis

DEPUTY GOVERNORS:

G. Nanidis
V. Alevras

DIRECTOR GENERAL OF AIR NAVIGATION:

G. Kontogiannis

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

Operational ATS units:

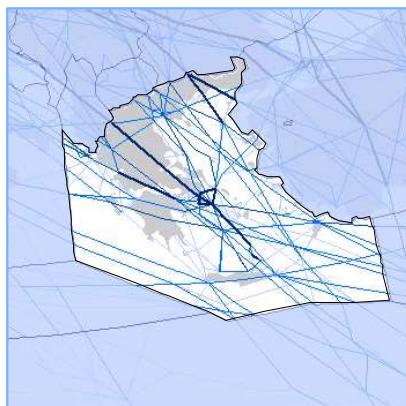
1 ACC
16 APPs
18 TWRs
15 AFISS

Key financial and operational figures (ACE 2012)

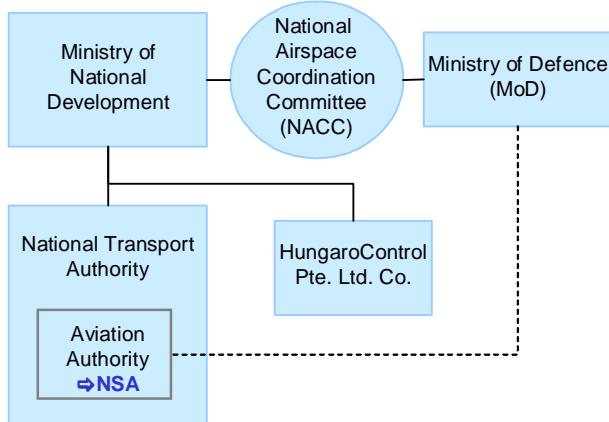
Gate-to-gate total revenues (M€)	177
Gate-to-gate total costs (M€)	174
Gate-to-gate ATM/CNS provision costs (M€)	154
Gate-to-gate total ATM/CNS assets(M€)	130
Gate-to-gate ANS total capex (M€)	1
ATCOs in OPS	480
Gate-to-gate total staff	1 786
Total IFR flight-hours controlled by ANSP ('000)	461
IFR airport movements controlled by ANSP ('000)	149
En-route sectors	12
Minutes of ATFM delays ('000)	206

Size

Size of controlled airspace: 537 000 km²



Institutional arrangements and links (2014)



Status (2014)

- HungaroControl was set up on January 1st 2002
- Registered as Private Limited Company as of 22 November 2006
- Operates as a Private Limited Company as of 1st January 2007
- 100% State-owned

National Supervisory Authority (NSA):

Aviation Authority

Body responsible for:

Safety Regulation

Ministry of National Development

Airspace Regulation

Govt., Ministry of National Development

Economic Regulation

Govt., Ministry of National Development

Corporate governance structure (2014)

SHAREHOLDER

The Minister responsible for transport exercises the rights of the shareholder on behalf of the State

CHIEF EXECUTIVE OFFICER

The CEO is appointed by the Minister responsible for transport

SUPERVISORY BOARD

President + 5 members

The President and all members are appointed by the Minister responsible for transport
2 members are representatives of the employees

HungaroControl (2014)

CHIEF EXECUTIVE OFFICER (CEO):

Kornél Szepessy

CHAIRMAN OF THE SUPERVISORY BOARD:

Zoltán Schváb

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET

- Entry Point Central Ltd. (49% HungaroControl owned company) provides training activities, e.g. initial ATM training courses, development training (OJTI, Assessor) courses, English language courses.
- HungaroControl provides ATM unit training.

Operational ATS units:

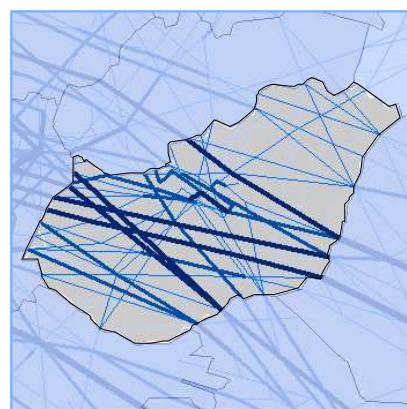
- 1 ACC (Budapest)
- 1 APP (Budapest)
- 1 TWR (Budapest)
- 2 AFISs (Sármellék/Balaton, Debrecen)

Key financial and operational figures (ACE 2012)

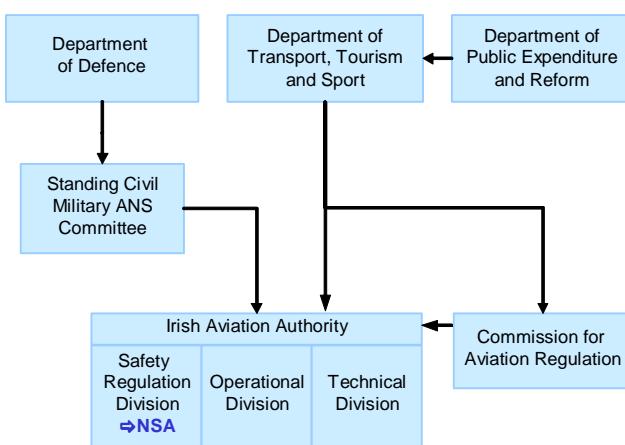
Gate-to-gate total revenues (M€)	111
Gate-to-gate total costs (M€)	102
Gate-to-gate ATM/CNS provision costs (M€)	91
Gate-to-gate total ATM/CNS assets(M€)	74
Gate-to-gate ANS total capex (M€)	21
ATCOs in OPS	166
Gate-to-gate total staff	710
Total IFR flight-hours controlled by ANSP ('000)	185
IFR airport movements controlled by ANSP ('000)	88
En-route sectors	7
Minutes of ATFM delays ('000)	1

Size

Size of controlled airspace: 93 000 km²



Institutional arrangements and links (2014)



Status (2014)

- Commercial company as of 1994 governed by Companies Acts, 1963 to 2009
- 100% State-owned (Department of Public Expenditure and Reform) - IAA receives no funding or loans from the exchequer

National Supervisory Authority (NSA):

Safety Regulation Division

Body responsible for:

Safety Regulation

IAA Safety Regulation Division

Airspace Regulation

IAA Safety Regulation Division

Economic Regulation

NSA responsible for Economic Regulation in the context of en-route charges

Commission for Aviation Regulation (established under the Aviation Regulation Act in 2001)

The Act requires the Commission to make a determination specifying the maximum levels of terminal navigation charges

Corporate governance structure (2014)

BOARD OF THE AUTHORITY (9 members)
Chairman + CEO + 7 members

EXECUTIVE BOARD (Senior Management Board)
(8 members)
CEO + 7 senior executives

IAA (2014)

CHAIRMAN OF THE BOARD OF AUTHORITY:

Anne Nolan

CHIEF EXECUTIVE OFFICER:

Eamonn Brennan

DIRECTOR OF OPERATIONS DIVISION:

Peter Kearney

DIRECTOR OF TECHNICAL DIVISION:

Philip Hughes

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input checked="" type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

Operational ATS units:

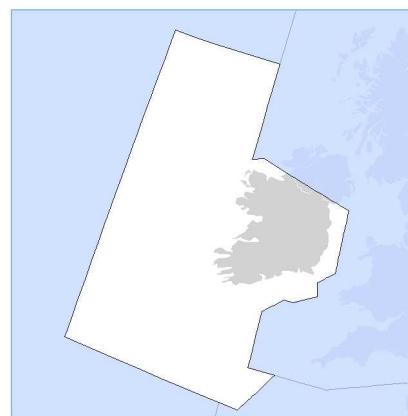
2 ACCs (Dublin, Shannon)
3 APPs (Dublin, Shannon, Cork)
3 TWRs (Dublin, Shannon, Cork)

Key financial and operational figures (ACE 2012)

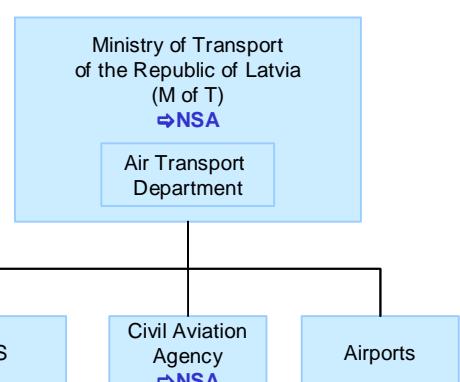
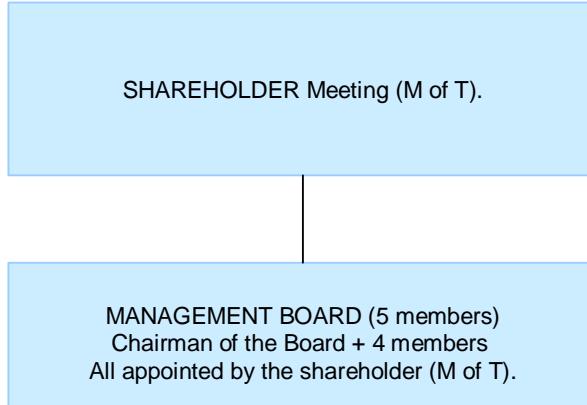
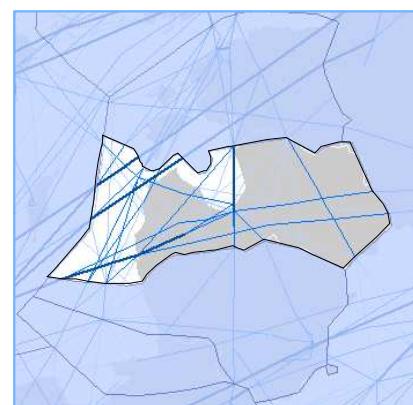
Gate-to-gate total revenues (M€)	136
Gate-to-gate total costs (M€)	133
Gate-to-gate ATM/CNS provision costs (M€)	113
Gate-to-gate total ATM/CNS assets(M€)	89
Gate-to-gate ANS total capex (M€)	6
ATCOs in OPS	204
Gate-to-gate total staff	481
Total IFR flight-hours controlled by ANSP ('000)	264
IFR airport movements controlled by ANSP ('000)	207
En-route sectors	11
Minutes of ATFM delays ('000)	8

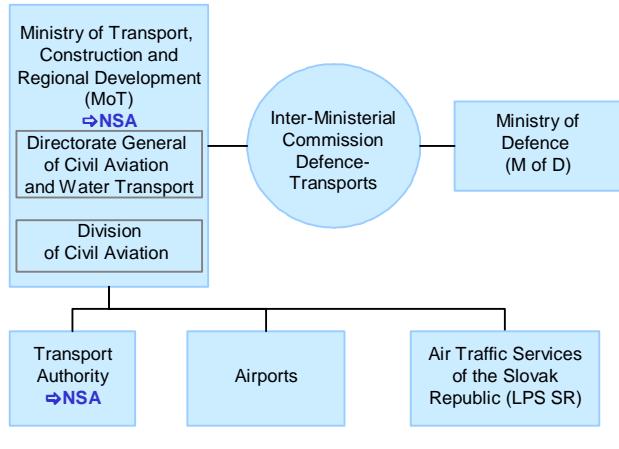
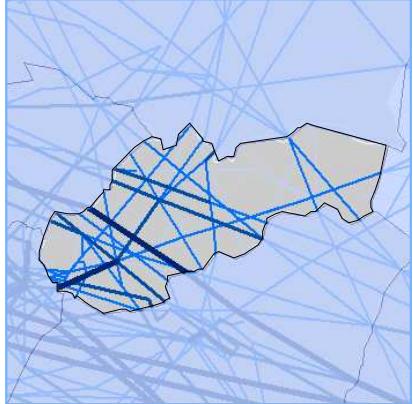
Size

Size of controlled airspace: 457 000 km²



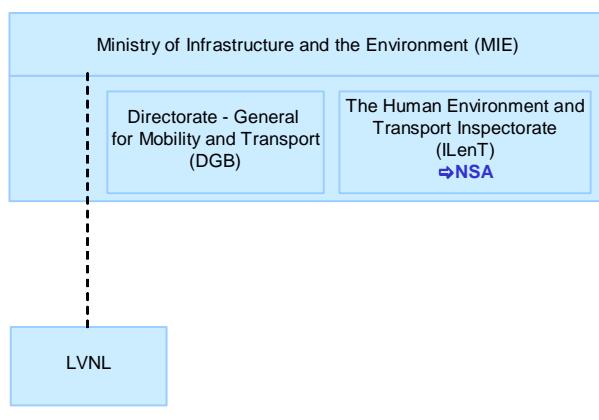
<p>Institutional arrangements and links (2014)</p> <pre> graph TD Parliament[Parliament] --> MinistryDefence[Ministry of Defence] MinistryDefence --> SwedishArmedForces[Swedish Armed Forces] MinistryDefence -.-> LFV[LFV] SwedishTransportAgency[Swedish Transport Agency ⇒ NSA] -.-> LFV MinistryEEC[Ministry of Enterprise, Energy and Communications (M of EEC)] --> LFV MinistryEEC --> Swedavia[Swedavia] LFV --> ProductionTerminal[Production Terminal] LFV --> ProductionEnroute[Production En-route] LFV --> ProductsServices[Products & Services] LFV --> BusinessSupport[Business Support] LFV --> LFVholding[LFV holding (Subsidiaries)] </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Public Enterprise - 100% State-owned <p>National Supervisory Authority (NSA): Swedish Transport Agency</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u> Swedish Transport Agency <u>Airspace Regulation</u> Swedish Transport Agency <u>Economic Regulation</u> Swedish Transport Agency 																						
<p>Corporate governance structure (2014)</p> <table border="1"> <tr> <td data-bbox="182 920 769 1089"> BOARD OF DIRECTORS (9 members) Chairman + DG + 7 members 7 members are appointed by the Government (Chairman + DG + 5 members); 2 members are appointed by Trade Unions. </td> </tr> <tr> <td data-bbox="182 1123 769 1313"> EXECUTIVE BOARD (9 members) DG + 8 members DG is appointed by the Government </td> </tr> </table>	BOARD OF DIRECTORS (9 members) Chairman + DG + 7 members 7 members are appointed by the Government (Chairman + DG + 5 members); 2 members are appointed by Trade Unions.	EXECUTIVE BOARD (9 members) DG + 8 members DG is appointed by the Government	<p>LFV (2014)</p> <p>CHAIRMAN OF THE BOARD OF DIRECTORS: Jan Olson</p> <p>DIRECTOR GENERAL: Olle Sundin</p>																				
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<p>Institutional arrangements and links (2014)</p>  <pre> graph TD MT[Ministry of Transport of the Republic of Latvia (M of T)] --> ATD[Air Transport Department] ATD --> LGS[LGS] ATD --> CAA[Civil Aviation Agency ⇒ NSA] ATD --> A[Airports] </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Joint-stock company since 1997 - 100% State-owned (Ministry of Transport) <p>National Supervisory Authority (NSA):</p> <ul style="list-style-type: none"> - MoT (for policy and economic issues) - Civil Aviation Agency (for safety, operational aspects, certification and licensing issues) <p>Body responsible for:</p> <p><i>Safety Regulation</i> Civil Aviation Agency</p> <p><i>Airspace Regulation</i> Civil Aviation Agency</p> <p><i>Economic Regulation</i> Air Transport Department and Cabinet of Ministers (Government)</p>																						
<p>Corporate governance structure (2014)</p>  <pre> graph TD SM[SHAREHOLDER Meeting (M of T).] --> MB[MANAGEMENT BOARD (5 members) Chairman of the Board + 4 members All appointed by the shareholder (M of T).] </pre>	<p>LGS (2014)</p> <p>SHAREHOLDER'S REPRESENTATIVE: Dzineta Innusa (Ministry of Transport, Deputy State Secretary for Legal and Administrative Affairs)</p> <p>CHAIRMAN OF THE BOARD: Davids Taurins</p>																						
<p>Scope of services</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/> GAT</td> <td><input checked="" type="checkbox"/> Upper Airspace</td> <td><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input checked="" type="checkbox"/> MET</td> </tr> </table> <p>- ATC services delegated to Latvia by Lithuania over a part of the Baltic Sea</p>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET	<p>Operational ATS units:</p> <ul style="list-style-type: none"> 1 ACC (Riga) 2 APPs (Riga, Liepaja) 2 TWRs (Riga, Liepaja) 1 AFIS/FIC* (Liepaja) <p>*FIC for western part of Riga FIR</p>																
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<p>Institutional arrangements and links (2014)</p> 	<p>Status (2014)</p> <ul style="list-style-type: none"> - State-owned enterprise as of January 2000 - 100% State-owned <p>National Supervisory Authority (NSA): Transport Authority</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u>: Ministry of Transport, Construction and Regional Development <u>Airspace Regulation</u>: Ministry of Transport, Construction and Regional Development <u>Economic Regulation</u>: Ministry of Transport, Construction and Regional Development and other State bodies 																						
<p>Corporate governance structure (2014)</p> <div style="background-color: #e0f2ff; padding: 10px;"> <p>SUPERVISORY BOARD (9 members) Chairman + 8 members Members represent: 5 MoT, 3 staff reps., 1 trade union association rep.</p> </div> <div style="background-color: #e0f2ff; padding: 10px; margin-top: 10px;"> <p>EXECUTIVE BOARD (10 members) CEO + 9 members The CEO is appointed by the MoT.</p> </div>	<p>LPS (2014)</p> <p>CHAIRPERSON OF THE SUPERVISORY BOARD: Martin Čatloš</p> <p>DIRECTOR GENERAL (CEO): Miroslav Bartoš</p>																						
<p>Scope of services</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;"><input checked="" type="checkbox"/> GAT</td> <td style="width: 33%;"><input checked="" type="checkbox"/> Upper Airspace</td> <td style="width: 33%;"><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input type="checkbox"/> MET</td> </tr> </table> <p>With effect from 10 February 2014, the OAT unit was shifted from LPS to the supervision of Ministry of Defence.</p>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET	<p>Operational ATS units:</p> <ul style="list-style-type: none"> 1 ACC (Bratislava) 2 APPs (Bratislava, Kosice) 5 TWRs (Bratislava, Kosice, Piestany, Poprad and Zilina) 1 Central ATS Reporting Office (Bratislava) 																
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En-route sectors	5																						
Minutes of ATFM delays ('000)	0																						



Institutional arrangements and links (2014)



Status (2014)

- Corporate Entity as of 1993 (by Air Traffic Law)
- 100% State-owned

National Supervisory Authority (NSA):

The Human Environment and Transport Inspectorate (ILenT)

Body responsible for:

Safety Regulation

Directorate-General for Mobility and Transport (DGB)

Airspace Regulation

Directorate-General for Mobility and Transport (DGB)

Economic Regulation

Directorate-General for Mobility and Transport (DGB)

Corporate governance structure (2014)

SUPERVISORY DIRECTORS BOARD (6 members)

Chairman + 5 members + 1 observer

Members comprise representatives from: Ministry of Defence, and members nominated by Dutch scheduled airlines (KLM), Dutch charter airlines (Transavia) and Dutch airports (Amsterdam Schiphol)

EXECUTIVE BOARD (2 members)

Chairman + 1 member

Executive Board of LVNL is appointed by the MIE, on the recommendation of the Supervisory Board.

LVNL (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:

G.J.N.H. Cerfontaine

CHAIRMAN OF THE EXECUTIVE BOARD (CEO):

Dr.ir. P. Riemens (CEO)

Scope of services

<input checked="" type="checkbox"/> GAT	<input type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- Controls lower airspace up to FL 245

Operational ATS units:

- 1 ACC (Amsterdam)
- 3 APPs (Schiphol, Eelde, Beek)
- 4 TWRs (Schiphol, Rotterdam, Eelde, Beek)

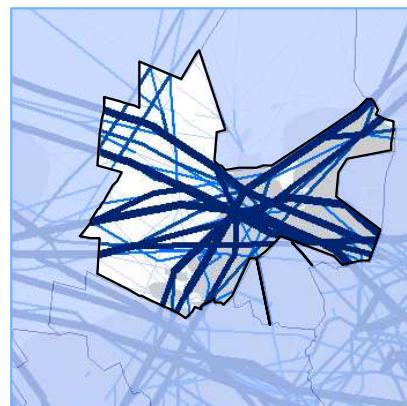
- New Millingen ACC (Military ACC) is not included in ACE data analysis
- Rotterdam APP has been located in Schiphol since 2002

Key financial and operational figures (ACE 2012)

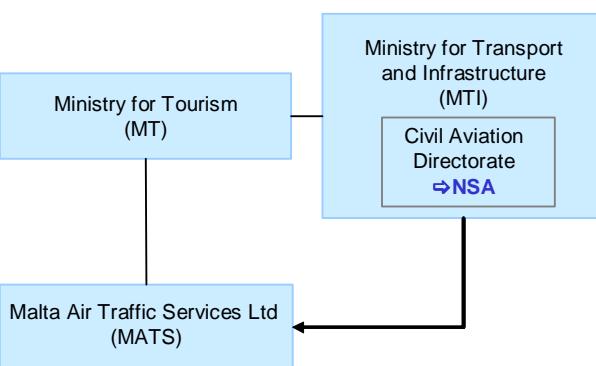
Gate-to-gate total revenues (M€)	233
Gate-to-gate total costs (M€)	215
Gate-to-gate ATM/CNS provision costs (M€)	163
Gate-to-gate total ATM/CNS assets(M€)	104
Gate-to-gate ANS total capex (M€)	17
ATCOs in OPS	198
Gate-to-gate total staff	885
Total IFR flight-hours controlled by ANSP ('000)	150
IFR airport movements controlled by ANSP ('000)	483
En-route sectors	5
Minutes of ATFM delays ('000)	399

Size

Size of controlled airspace: 52 200 km²



Institutional arrangements and links (2014)



Status (2014)

- Malta Air Traffic Services Ltd (Reg. no. C27965) is a fully Government owned company. MATS has been operating as the sole ANSP for Malta since the 1st January 2002

National Supervisory Authority (NSA):

Civil Aviation Directorate Malta (CADM)

Body responsible for:

Safety Regulation

Civil Aviation Directorate

Airspace Regulation

Civil Aviation Directorate

Economic Regulation

Civil Aviation Directorate

Corporate governance structure (2014)

BOARD of DIRECTORS (5 members)
Chairman + 4 Directors
Members are appointed by the Government,
representing the MT.

The Board of Directors appoints the CEO.

MATS (2014)

CHAIRMAN OF BOARD OF DIRECTORS:
Maj. Vanni Ganado

CEO:
Brig. Carmel Vassallo

HEAD OF ATS DIVISION:
Robert Sant

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- MATS controls portions of airspace delegated to Malta ACC by Rome ACC

Operational ATS units:

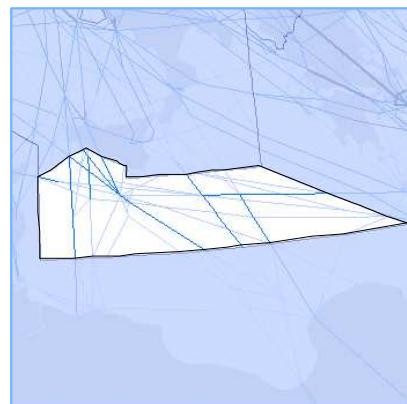
1 ACC/APP (Malta)
1 TWR/APP (Luqa)

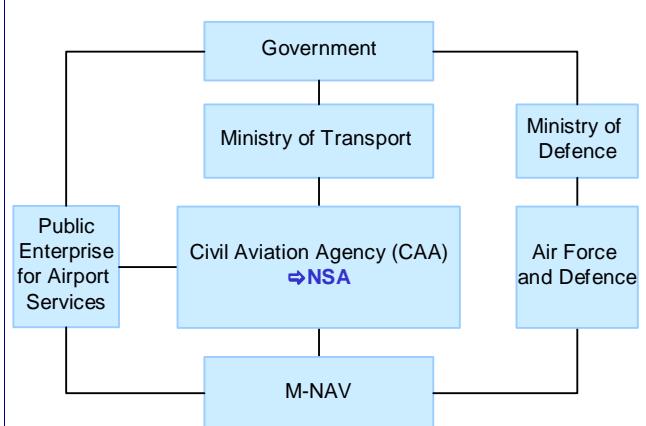
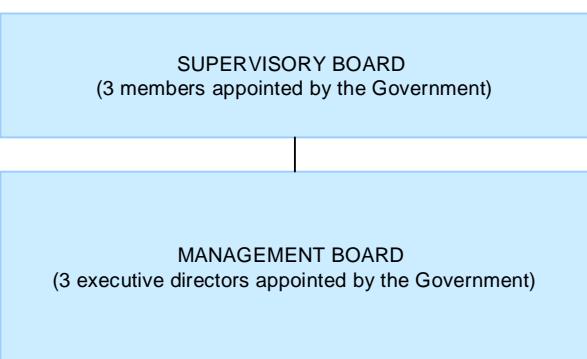
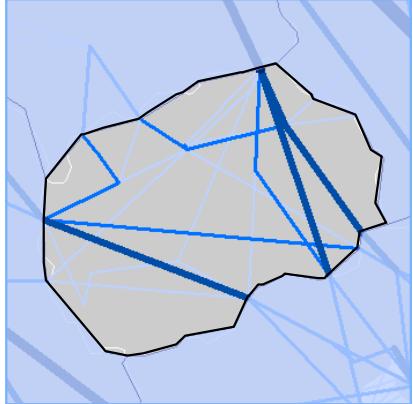
Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	19
Gate-to-gate total costs (M€)	15
Gate-to-gate ATM/CNS provision costs (M€)	14
Gate-to-gate total ATM/CNS assets(M€)	7
Gate-to-gate ANS total capex (M€)	2
ATCOs in OPS	48
Gate-to-gate total staff	145
Total IFR flight-hours controlled by ANSP ('000)	61
IFR airport movements controlled by ANSP ('000)	33
En-route sectors	2
Minutes of ATFM delays ('000)	0

Size

Size of controlled airspace: 231 000 km²



<p>Institutional arrangements and links (2014)</p>  <pre> graph TD Government[Government] --- MT[Ministry of Transport] Government --- MD[Ministry of Defence] MT --- CAA[Civil Aviation Agency (CAA) NSA] MD --- AFD[Air Force and Defence] CAA --- PEA[Public Enterprise for Airport Services] CAA --- MNAV[M-NAV] AFD --- MNAV </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Joint-stock company - 100% State-owned <p>National Supervisory Authority (NSA): Civil Aviation Agency (CAA)</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u>: Safety Dept. of Civil Aviation Agency <u>Airspace Regulation</u>: Civil-military Aviation Committee <u>Economic Regulation</u>: Government, Civil Aviation Agency 																						
<p>Corporate governance structure (2014)</p>  <pre> graph TD SB[SUPERVISORY BOARD (3 members appointed by the Government)] --- MB[MANAGEMENT BOARD (3 executive directors appointed by the Government)] </pre>	<p>M-NAV (2014)</p> <p>CHAIRMAN OF THE SUPERVISORY BOARD: Ilir Mehmedi</p> <p>DIRECTOR GENERAL OF CAA: Dejan Mojsoski</p> <p>DIRECTOR OF ANS DEPARTEMENT: Nikolet Tagarinski</p>																						
<p>Scope of services</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/> GAT</td> <td><input checked="" type="checkbox"/> Upper Airspace</td> <td><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td><input checked="" type="checkbox"/> OAT</td> <td><input checked="" type="checkbox"/> Lower Airspace</td> <td><input checked="" type="checkbox"/> MET</td> </tr> </table>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET	<p>Operational ATS units:</p> <ul style="list-style-type: none"> 1 ACC (Skopje) 2 APPs (Skopje and Ohrid) 2 TWRs (Skopje and Ohrid) 1 AFIS (Skopje) 																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS																					
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET																					
<p>Key financial and operational figures (ACE 2012)</p> <table> <tr> <td>Gate-to-gate total revenues (M€)</td> <td>10</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td>10</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td>9</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td>7</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td>0</td> </tr> <tr> <td>ATCOs in OPS</td> <td>61</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td>273</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td>18</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td>11</td> </tr> <tr> <td>En-route sectors</td> <td>3</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td>0</td> </tr> </table>	Gate-to-gate total revenues (M€)	10	Gate-to-gate total costs (M€)	10	Gate-to-gate ATM/CNS provision costs (M€)	9	Gate-to-gate total ATM/CNS assets(M€)	7	Gate-to-gate ANS total capex (M€)	0	ATCOs in OPS	61	Gate-to-gate total staff	273	Total IFR flight-hours controlled by ANSP ('000)	18	IFR airport movements controlled by ANSP ('000)	11	En-route sectors	3	Minutes of ATFM delays ('000)	0	<p>Size</p> <p>Size of controlled airspace: 24 700 km²</p> 
Gate-to-gate total revenues (M€)	10																						
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En-route sectors	3																						
Minutes of ATFM delays ('000)	0																						



Institutional arrangements and links (2014)

Government

Ministry of Economy

Ministry of Transport and Road Infrastructure

Ministry of Defence

Civil Aviation Administration (CAA)
⇒ NSA

Airport Operator

Aircraft Operator

MoldATSA

Status (2014)

- State enterprise since 1994 (by Government Regulation Nr.3 from 12.01.1994)
- 100% State-owned

National Supervisory Authority (NSA):

Civil Aviation Administration (CAA)

Body responsible for:

Safety Regulation

Ministry of Transport and Road Infrastructure

Airspace Regulation

Ministry of Transport and Road Infrastructure

Economic Regulation

Ministry of Transport and Road Infrastructure

Corporate governance structure (2014)

SUPERVISORY BOARD (7 members)

Chairman + 6 members

All members are appointed by the Ministry of Transport and Road Infrastructure

Members represent Ministry of Transport and Road Infrastructure (2), MoldATSA management (1), Ministry of Finance (2), Ministry of Economy (2)

Management Board:
Director General MoldATSA

MoldATSA (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:

Vladimir Cebotari

DIRECTOR GENERAL (CEO):

Petru Erhan

HEAD OF ATM DIVISION:

Sergei Fedoseev

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET

Operational ATS units:

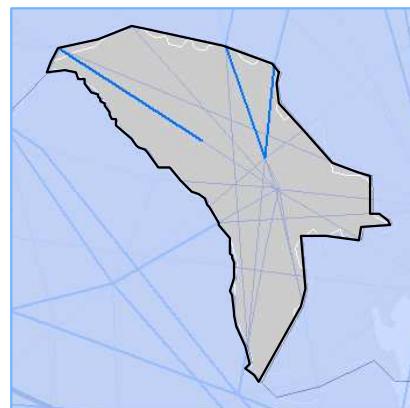
- 1 ACC (Chisinau)
- 1 APP (Chisinau)
- 4 TWRs (Chisinau, Balti, Cahul, Marculesti)

Key financial and operational figures (ACE 2012)

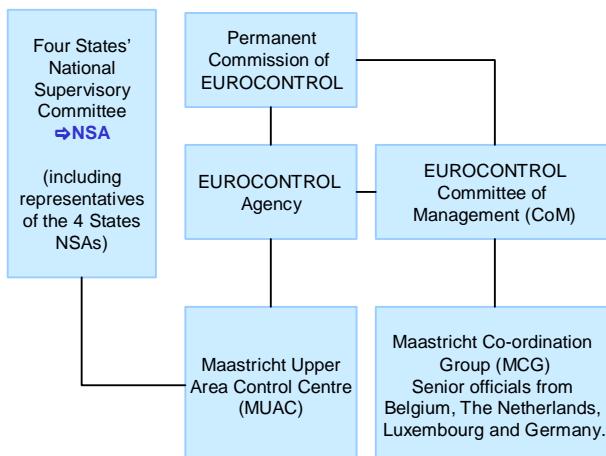
Gate-to-gate total revenues (M€)	11
Gate-to-gate total costs (M€)	11
Gate-to-gate ATM/CNS provision costs (M€)	9
Gate-to-gate total ATM/CNS assets(M€)	8
Gate-to-gate ANS total capex (M€)	2
ATCOs in OPS	57
Gate-to-gate total staff	322
Total IFR flight-hours controlled by ANSP ('000)	16
IFR airport movements controlled by ANSP ('000)	16
En-route sectors	2
Minutes of ATFM delays ('000)	0

Size

Size of controlled airspace: 33 900 km²



Institutional arrangements and links (2014)



Status (2014)

- EUROCONTROL: International Organisation established under the EUROCONTROL Convention of 13.12.1960 and amended on 12.2.1981. At the request of the Benelux States and Germany, MUAC is operated as a EUROCONTROL Agency's Service according to the Maastricht Agreements of 25.11.1986

National Supervisory Authority (NSA):

Four States' National Supervisory Committee

Body responsible for:

Safety Regulation

Maastricht Agreements Art. 1.2: each of the 4 States retains its competence and obligations in respect of regulations

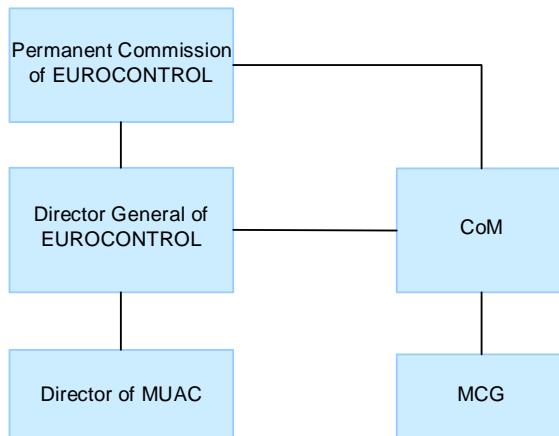
Airspace Regulation

The MCG determines a common position for the 4 States in all matters relating to the operation of ATS by MUAC concerning, inter alia, airspace organisation and sectorisation

Economic Regulation

Financial arrangements for the exploitation of MUAC are adopted by the Committee of Management. EUROCONTROL DG seeks approval of the budget, which contains a special budgetary Annex for MUAC, with the Permanent Commission

Corporate governance structure (2014)



MUAC (2014)

DIRECTOR GENERAL OF EUROCONTROL:
Frank Brenner

DIRECTOR OF MUAC:
Jac Jansen

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- Controls GAT in the upper airspace (>FL245) above Benelux and North-Western Germany
- A German ATC unit responsible for handling OAT above North-Western Germany and managed by the DFS is co-located at MUAC

Operational ATS units:

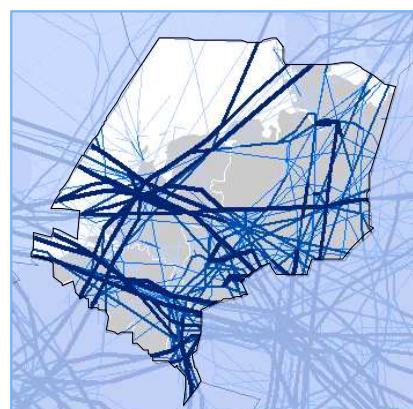
1 ACC (Maastricht)

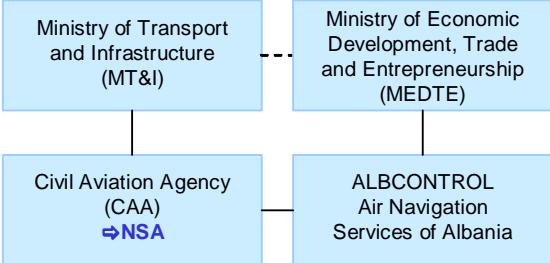
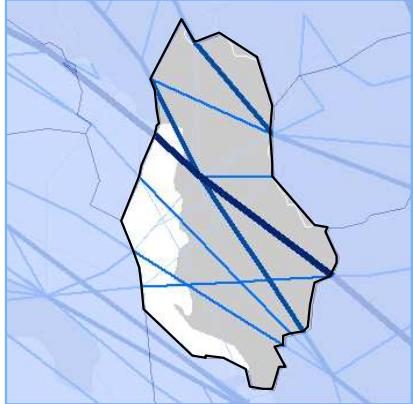
Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	
Gate-to-gate total costs (M€)	141
Gate-to-gate ATM/CNS provision costs (M€)	141
Gate-to-gate total ATM/CNS assets(M€)	69
Gate-to-gate ANS total capex (M€)	9
ATCOs in OPS	247
Gate-to-gate total staff	646
Total IFR flight-hours controlled by ANSP ('000)	560
IFR airport movements controlled by ANSP ('000)	n/appl
En-route sectors	20
Minutes of ATFM delays ('000)	59

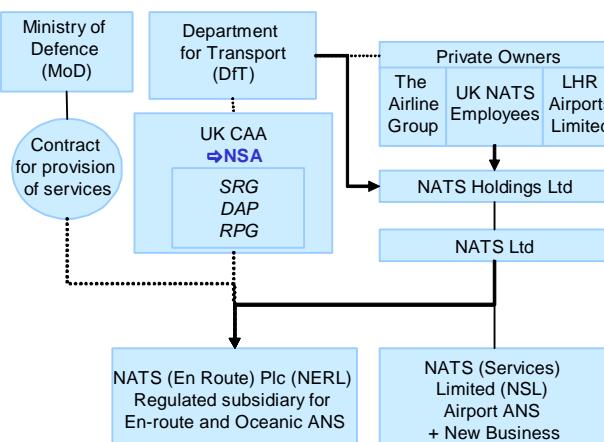
Size

Size of controlled airspace: 260 000 km²



<u>Institutional arrangements and links (2014)</u>  <pre> graph TD MTI[Ministry of Transport and Infrastructure (MT&I)] --- CAA[Civil Aviation Agency (CAA) ⇒ NSA] MEDTE[Ministry of Economic Development, Trade and Entrepreneurship (MEDTE)] --- ALBCONTROL[ALBCONTROL Air Navigation Services of Albania] CAA --- ALBCONTROL </pre>	<u>Status (2014)</u> <ul style="list-style-type: none"> - Since May 1999 NATA, now ALBCONTROL, is a joint-stock company - 100% State owned <p>National Supervisory Authority (NSA): Civil Aviation Agency (CAA)</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u>: MT&I and Civil Aviation Agency (CAA) <u>Airspace Regulation</u>: MT&I and Civil Aviation Agency (CAA) <u>Economic Regulation</u>: Ministry of Economic Development, Trade and Entrepreneurship (MEDTE) 																						
<u>Corporate governance structure (2014)</u> <div style="background-color: #e0f2ff; padding: 10px;"> <p>SUPERVISORY BOARD (6 members) Chairman + 5 members</p> <p>All 6 members are nominated by the MEDTE. 2 members are proposed by the MEDTE, 2 members by the MT&I and 2 members by the Ministry of Finance.</p> </div> <div style="background-color: #e0f2ff; padding: 10px; margin-top: 10px;"> <p>MANAGEMENT BOARD (6 members) Director General + 5 Head of Divisions</p> <p>Director General is appointed by MEDTE through the Supervisory Board of ALBCONTROL</p> </div>	<p>NATA Albania (2014)</p> <p>CHAIRMAN OF SUPERVISORY BOARD: Genci Gjonçaj</p> <p>DIRECTOR GENERAL (CEO) OF ALBCONTROL: Belinda Balluku</p> <p>HEAD OF THE ATS DEPARTMENT: Sokol Ruçi</p>																						
<u>Scope of services</u> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <input checked="" type="checkbox"/> GAT <input checked="" type="checkbox"/> Upper Airspace <input type="checkbox"/> Oceanic ANS <input checked="" type="checkbox"/> OAT <input checked="" type="checkbox"/> Lower Airspace <input checked="" type="checkbox"/> MET </div>	<u>Operational ATS units:</u> <ul style="list-style-type: none"> 1 ACC (Tirana) 1 APP (Tirana) 1 TWR (Tirana) 1 AFIS (Tirana) 																						
<u>Key financial and operational figures (ACE 2012)</u> <table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 60%;">Gate-to-gate total revenues (M€)</td> <td style="width: 40%;">21</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td>23</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td>21</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td>42</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td>2</td> </tr> <tr> <td>ATCOs in OPS</td> <td>56</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td>309</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td>41</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td>21</td> </tr> <tr> <td>En-route sectors</td> <td>4</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td>12</td> </tr> </tbody> </table>	Gate-to-gate total revenues (M€)	21	Gate-to-gate total costs (M€)	23	Gate-to-gate ATM/CNS provision costs (M€)	21	Gate-to-gate total ATM/CNS assets(M€)	42	Gate-to-gate ANS total capex (M€)	2	ATCOs in OPS	56	Gate-to-gate total staff	309	Total IFR flight-hours controlled by ANSP ('000)	41	IFR airport movements controlled by ANSP ('000)	21	En-route sectors	4	Minutes of ATFM delays ('000)	12	<u>Size</u> Size of controlled airspace: 36 000 km ² 
Gate-to-gate total revenues (M€)	21																						
Gate-to-gate total costs (M€)	23																						
Gate-to-gate ATM/CNS provision costs (M€)	21																						
Gate-to-gate total ATM/CNS assets(M€)	42																						
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IFR airport movements controlled by ANSP ('000)	21																						
En-route sectors	4																						
Minutes of ATFM delays ('000)	12																						

Institutional arrangements and links (2014)



Status (2014)

- Public Private Partnership as of 2001
 - 49% State-owned (Govt retains a Golden Share)
 - 51% private-owned (42% by the Airline Group, 4% by LHR Airports Limited and 5% by UK NATS employees)
- The Airline Group comprises 7 airlines: BA, Virgin Atlantic, Lufthansa, EasyJet, Thomas Cook, Thomson Airways and Monarch Airlines

National Supervisory Authority (NSA):

UK CAA

Body responsible for:

Safety Regulation

UK CAA, Safety Regulation Group (SRG)

Airspace Regulation

UK CAA, Directorate of Airspace Policy (DAP)

Economic Regulation

UK CAA, Regulatory Policy Group (RPG) which sets charges through a formula linked to the Retail Price Index (RPI) where "RPI minus X" targets for En-route and Oceanic Charges are usually set for 5 years at a time (although CP3 was set at 4 years to align with RP1)

Corporate governance structure (2014)



NATS (2014)

CHAIRMAN OF THE NATS BOARD:

John Devaney

CEO of NATS:

Richard Deakin

MANAGING DIRECTOR, NATS SERVICES

Paul Reid
Catherine Mason (from 1 April 2014)

MANAGING DIRECTOR, NATS OPERATIONS

Martin Rolfe

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input checked="" type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

Operational ATS units:

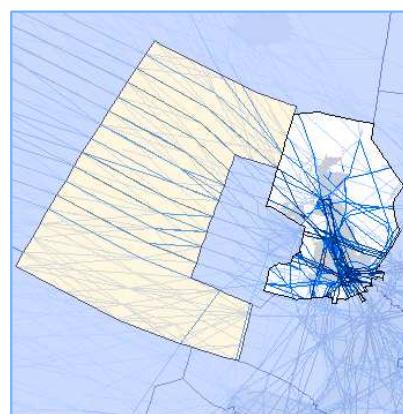
1 OAC (Shanwick)
3 ACCs (London AC, London TC, Prestwick)
16 APPs
16 TWRs (including Gibraltar TWR)
2 AFISs

Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	939
Gate-to-gate total costs (M€)	770
Gate-to-gate ATM/CNS provision costs (M€)	760
Gate-to-gate total ATM/CNS assets(M€)	957
Gate-to-gate ANS total capex (M€)	137
ATCOs in OPS	1 423
Gate-to-gate total staff	4 426
Total IFR flight-hours controlled by ANSP ('000)	1 292
IFR airport movements controlled by ANSP ('000)	1 731
En-route sectors	73
Minutes of ATFM delays ('000)	984

Size

Size of controlled airspace: 3 002 000 km²

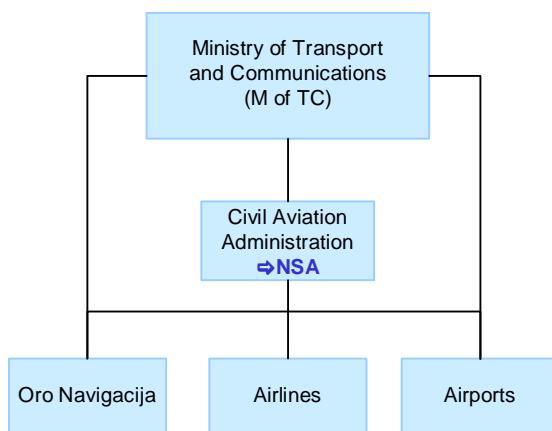


<p>Institutional arrangements and links (2014)</p> <pre> graph TD MEE[Ministry of Economy & Employment (MEE)] --- SOS[Secretary of State] MofF[Ministry of Finance (M of F)] --- SOS SOS --- GPIAA((Aircraft Accident Prevention and Investigation (GPIAA))) GPIAA --- INAC[National Institute for Civil Aviation (INAC)] GPIAA --- ANA_SA[Airports of Portugal (ANA SA)] GPIAA --- NAV[Air Navigation of Portugal (NAV Portugal E.P.E.)] </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Public Entity Corporation as of December 1998 - 100% State-owned <p>National Supervisory Authority (NSA): National Institute for Civil Aviation (INAC)</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <i>Safety Regulation</i>: National Institute of Civil Aviation (INAC) <i>Airspace Regulation</i>: INAC+FA (Portuguese Air Force) + NAV Portugal in close permanent co-ordination <i>Economic Regulation</i>: National Institute of Civil Aviation (INAC) 																						
<p>Corporate governance structure (2014)</p> <div style="background-color: #e0f2ff; padding: 10px;"> <p>BOARD OF ADMINISTRATION (3 members) Chairman + 2 members</p> <p>All members are appointed by the MEE for a 3 year term. Each member has executive functions within NAV Portugal. Each member is responsible to supervise one or several NAV Portugal Directorates and Advisory Bodies to the Board. There are 7 Directorates and 3 Advisory Bodies.</p> <p>NAV Portugal has also a Board of Auditors composed of 3 members who are appointed by MEE for a 3 year term.</p> </div>	<p>NAV Portugal (2014)</p> <p>CHAIRMAN OF THE BOARD OF ADMINISTRATION: Luis Ottolini Coimbra</p> <p>CEO: Luis Ottolini Coimbra</p>																						
<p>Scope of services</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;"><input checked="" type="checkbox"/> GAT</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> Upper Airspace</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> OAT</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> Lower Airspace</td> <td style="padding: 2px;"><input type="checkbox"/> MET</td> </tr> </table>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input checked="" type="checkbox"/> Oceanic ANS	<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET	<p>Operational ATS units:</p> <p>2 ACCs (Lisboa, Santa Maria) 8 APPs (Lisboa, Porto, Faro, Madeira, Santa Maria, Ponta Delgada, Horta, Flores) 10 TWRs (Lisboa, Cascais, Porto, Faro, Funchal, Porto Santo, Ponta Delgada, Santa Maria, Horta, Flores)</p>																
<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input checked="" type="checkbox"/> Oceanic ANS																					
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<p>Key financial and operational figures (ACE 2012)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Gate-to-gate total revenues (M€)</td> <td style="width: 40%;">117</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td>145</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td>127</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td>38</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td>6</td> </tr> <tr> <td>ATCOs in OPS</td> <td>214</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td>721</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td>285</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td>269</td> </tr> <tr> <td>En-route sectors</td> <td>7</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td>390</td> </tr> </table>	Gate-to-gate total revenues (M€)	117	Gate-to-gate total costs (M€)	145	Gate-to-gate ATM/CNS provision costs (M€)	127	Gate-to-gate total ATM/CNS assets(M€)	38	Gate-to-gate ANS total capex (M€)	6	ATCOs in OPS	214	Gate-to-gate total staff	721	Total IFR flight-hours controlled by ANSP ('000)	285	IFR airport movements controlled by ANSP ('000)	269	En-route sectors	7	Minutes of ATFM delays ('000)	390	<p>Size</p> <p>Size of controlled airspace: 5 845 000 km²</p> <p>Continental: 665 000 km² - Oceanic: 5 180 000 km²</p>
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<p>Institutional arrangements and links (2014)</p> <pre> graph TD MoT[Ministry of Transport (MoT)] --- DCAA[Danish CAA Trafikstyrelsen] MoT --- AIB[Accident Investigation Board (AIB)] MoT --- NAVIAIR[Air Navigation Service (NAVIAIR)] DCAA --- AIB DCAA --- BA[Bornholm Airport] DCAA <--> NSA NAVIAIR </pre>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Company owned by the state - 100% State-owned <p>National Supervisory Authority (NSA): Danish Transport Authority (Trafikstyrelsen)</p> <p>Body responsible for:</p> <ul style="list-style-type: none"> <u>Safety Regulation</u> Danish Transport Authority (Trafikstyrelsen) <u>Airspace Regulation</u> Danish Transport Authority (Trafikstyrelsen) <u>Economic Regulation</u> Danish Transport Authority (Trafikstyrelsen) 																						
<p>Corporate governance structure (2014)</p> <table border="1" data-bbox="179 938 771 1044"> <tr> <td>BOARD OF DIRECTORS 1 Chairman + 7 Members (three members elected by the employees)</td> </tr> </table> <table border="1" data-bbox="179 1066 771 1201"> <tr> <td>EXECUTIVE BOARD (2 members) CEO + CFO The CEO and CFO are appointed by the Board of Directors.</td> </tr> </table>	BOARD OF DIRECTORS 1 Chairman + 7 Members (three members elected by the employees)	EXECUTIVE BOARD (2 members) CEO + CFO The CEO and CFO are appointed by the Board of Directors.	<p>NAVIAIR (2014)</p> <p>CHAIRMAN OF BOARD OF DIRECTORS Anne Birgitte Lundholt</p> <p>CHIEF EXECUTIVE OFFICER (CEO): Morten Dambæk</p>																				
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<p>Key financial and operational figures (ACE 2012)</p> <table border="1" data-bbox="163 1686 763 2091"> <tr> <td>Gate-to-gate total revenues (M€)</td> <td>120</td> </tr> <tr> <td>Gate-to-gate total costs (M€)</td> <td>114</td> </tr> <tr> <td>Gate-to-gate ATM/CNS provision costs (M€)</td> <td>113</td> </tr> <tr> <td>Gate-to-gate total ATM/CNS assets(M€)</td> <td>156</td> </tr> <tr> <td>Gate-to-gate ANS total capex (M€)</td> <td>14</td> </tr> <tr> <td>ATCOs in OPS</td> <td>195</td> </tr> <tr> <td>Gate-to-gate total staff</td> <td>673</td> </tr> <tr> <td>Total IFR flight-hours controlled by ANSP ('000)</td> <td>201</td> </tr> <tr> <td>IFR airport movements controlled by ANSP ('000)</td> <td>326</td> </tr> <tr> <td>En-route sectors</td> <td>7</td> </tr> <tr> <td>Minutes of ATFM delays ('000)</td> <td>10</td> </tr> </table>	Gate-to-gate total revenues (M€)	120	Gate-to-gate total costs (M€)	114	Gate-to-gate ATM/CNS provision costs (M€)	113	Gate-to-gate total ATM/CNS assets(M€)	156	Gate-to-gate ANS total capex (M€)	14	ATCOs in OPS	195	Gate-to-gate total staff	673	Total IFR flight-hours controlled by ANSP ('000)	201	IFR airport movements controlled by ANSP ('000)	326	En-route sectors	7	Minutes of ATFM delays ('000)	10	<p>Size</p> <p>Size of controlled airspace: 158 000 km²</p>
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Institutional arrangements and links (2014)



Status (2014)

- Since July 2001
- 100% State-owned Enterprise (SOE)

National Supervisory Authority (NSA):

Civil Aviation Administration

Body responsible for:

Safety Regulation

Lithuania CAA

Airspace Regulation

Oro Navigacija in coordination with CAA and M of TC

Economic Regulation

Oro Navigacija in coordination with CAA and M of TC

Corporate governance structure (2014)

SUPERVISORY BOARD (5 members)
Chairman + 4 members
represent M of TC

MANAGEMENT BOARD
Duties taken up by Director General
DG is appointed by the Minister.

Oro Navigacija (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:
Arijandas Šliupas

DIRECTOR GENERAL (CEO):
Algimantas Raščius

DIRECTOR ATM:
Sergej Smirnov

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- Air Navigation Services are delegated to LGS (Latvia) above some part of the Baltic sea

Operational ATS units:

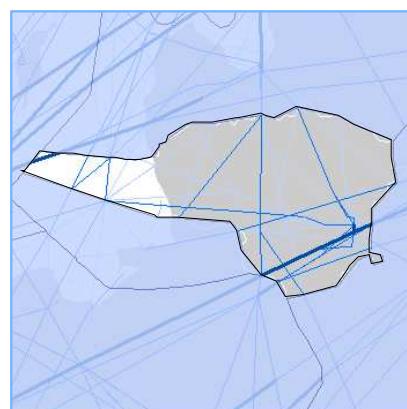
1 ACC (Vilnius)
3 APPs
4 TWRs

Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	25
Gate-to-gate total costs (M€)	25
Gate-to-gate ATM/CNS provision costs (M€)	23
Gate-to-gate total ATM/CNS assets(M€)	34
Gate-to-gate ANS total capex (M€)	4
ATCOs in OPS	85
Gate-to-gate total staff	296
Total IFR flight-hours controlled by ANSP ('000)	52
IFR airport movements controlled by ANSP ('000)	42
En-route sectors	3
Minutes of ATFM delays ('000)	0

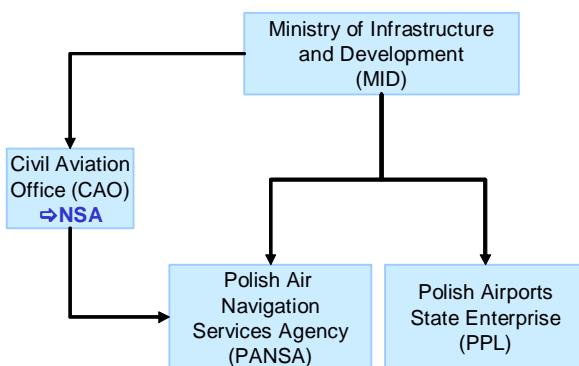
Size

Size of controlled airspace: 74 700 km²





Institutional arrangements and links (2014)



Status (2014)

- PANSA has been operating as an independent entity as from 1st April 2007, separated from the Polish Airports State Enterprise (PPL)
- State body (acting as a legal entity with an autonomous budget)
- 100% State owned

National Supervisory Authority (NSA):

Civil Aviation Office (CAO)

Body responsible for:

Safety Regulation

Civil Aviation Office (CAO)

Airspace Regulation

Civil Aviation Office (CAO)

Economic Regulation

Civil Aviation Office (CAO)

Corporate governance structure (2014)

NO SUPERVISORY BOARD

ADMINISTRATION

According to the Act establishing PANSA, the Agency is managed by the President and his two Vice-Presidents.

The President is nominated by the Prime Minister.
The two Vice-Presidents are nominated by the MID

PANSA (2014)

PRESIDENT OF PANSA:

Krzysztof Kapis

VICE PRESIDENT- AIR NAVIGATION DEPARTMENT:

Maciej Rodak

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- APP Kraków is providing ATC services for Kraków and Katowice
- Katowice TWR is providing only aerodrome control when APP Kraków is providing radar services for Katowice

Operational ATS units:

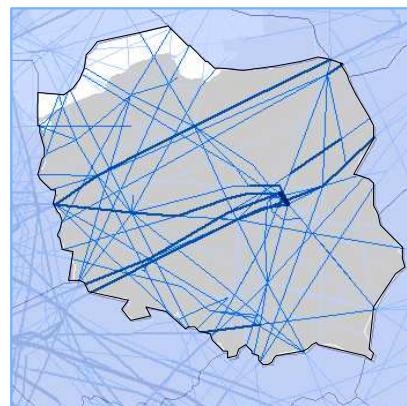
- 1 ACC with 8 sectors
- 4 APPs (Warszawa, Gdańsk, Kraków, Poznań) providing radar control
- 5 TWRs (Warszawa, Gdańsk, Kraków, Poznań, Katowice) providing aerodrome control
- 6 TWRs (Wrocław, Szczecin, Rzeszów, Łódź, Zielona Góra, Bydgoszcz) providing aerodrome control and non-radar approach control
- 4 FIS units (Warszawa, Kraków, Gdańsk, Poznań)

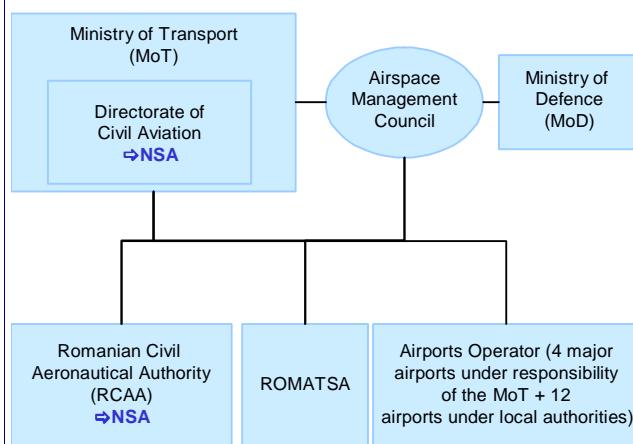
Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	172
Gate-to-gate total costs (M€)	167
Gate-to-gate ATM/CNS provision costs (M€)	147
Gate-to-gate total ATM/CNS assets(M€)	149
Gate-to-gate ANS total capex (M€)	19
ATCOs in OPS	442
Gate-to-gate total staff	1 712
Total IFR flight-hours controlled by ANSP ('000)	402
IFR airport movements controlled by ANSP ('000)	324
En-route sectors	8
Minutes of ATFM delays ('000)	355

Size

Size of controlled airspace: 334 000 km²



Institutional arrangements and links (2014)**Status (2014)**

- Autonomous and self-financing organisation as of 1991 (Government Resolution GR74/1991 ammended by GR731/1992, GR75/2005, GR1090/2006, GR1251/2007, GR741/2008)
- 100% State-owned

National Supervisory Authority (NSA):

- Directorate of Civil Aviation
- Romanian Civil Aeronautical Authority (RCAA)

Body responsible for:**Safety Regulation**

Ministry of Transport (MoT)
Enforcement and safety oversight is delegated and discharged through the RCAA

Airspace Regulation

Both Ministry of Transport (MoT) and Ministry of Defence (MoD), and discharged through the RCAA and Air Force Staff

Economic Regulation

Ministry of Transport (MoT)

Corporate governance structure (2014)

ADMINISTRATION BOARD (7 voting members)
Chairman + 6 members
Members represent: MoT, M of Public Finance, ROMATSA, RCAA and other entity + additional non voting participants representing staff.

STEERING COMMITTEE
Duties taken up by DG.
DG is appointed by the MoT.
DG + other directors.

ROMATSA (2014)

CHAIRMAN OF THE ADMINISTRATION BOARD:
Cristian Ghibu

DIRECTOR GENERAL (CEO):
Valentin Cimpuieru

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET

Operational ATS units:

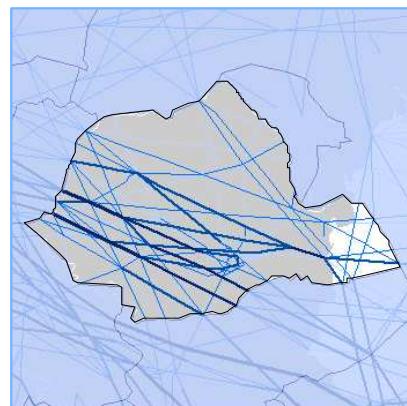
1 ACC (Bucharest)
3 APPs
16 TWRs

Key financial and operational figures (ACE 2012)

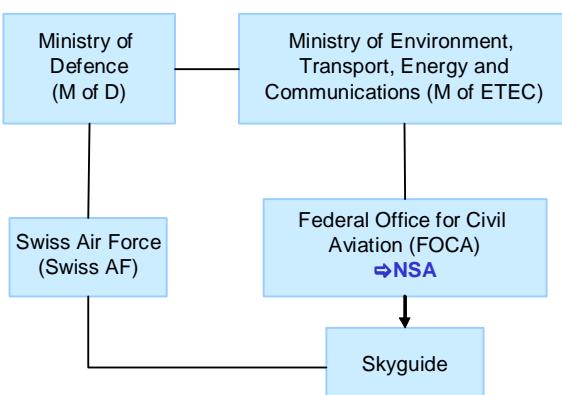
Gate-to-gate total revenues (M€)	181
Gate-to-gate total costs (M€)	185
Gate-to-gate ATM/CNS provision costs (M€)	165
Gate-to-gate total ATM/CNS assets(M€)	134
Gate-to-gate ANS total capex (M€)	9
ATCOs in OPS	441
Gate-to-gate total staff	1 519
Total IFR flight-hours controlled by ANSP ('000)	289
IFR airport movements controlled by ANSP ('000)	148
En-route sectors	11
Minutes of ATFM delays ('000)	1

Size

Size of controlled airspace: 254 000 km²



Institutional arrangements and links (2014)



Status (2014)

- Joint-stock company as of 1996. Currently 14 shareholders; 99,91% is held by the Swiss Confederation which by law must hold at least 51%
- Integrated civil/military as of 2001

National Supervisory Authority (NSA):

Federal Office for Civil Aviation (FOCA)

Body responsible for:

Safety Regulation

Federal Office for Civil Aviation

Airspace Regulation

Federal Office for Civil Aviation

Economic Regulation

The Ministry of the Environment, Transport, Energy and Communications

Corporate governance structure (2014)

GENERAL ASSEMBLY of the Shareholders

SUPERVISORY BOARD (7 members)
Chairman + 6 members
All members are appointed by the General Assembly for their expertise.

EXECUTIVE BOARD (6 members)
CEO + 5 members
The CEO is appointed by the Supervisory Board.

Skyguide (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:

Guy Emmenegger

DIRECTOR GENERAL (CEO):

Daniel Weder

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

- ATC services delegated to Geneva ACC by France

Operational ATS units:

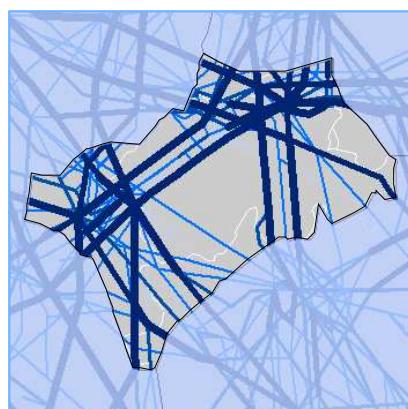
2 ACCs (Geneva, Zurich)
4 APPs (Geneva, Zurich, Lugano, Bern)
7 TWRs (Geneva, Zurich, Lugano, Bern, Buochs, Altenrhein, Grenchen)

Key financial and operational figures (ACE 2012)

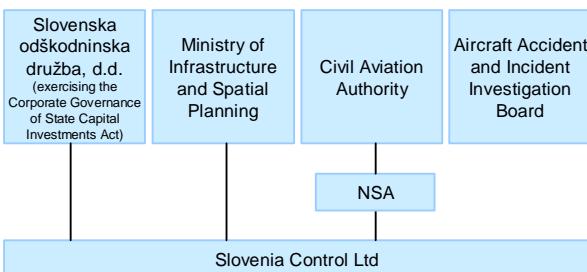
Gate-to-gate total revenues (M€)	329
Gate-to-gate total costs (M€)	317
Gate-to-gate ATM/CNS provision costs (M€)	293
Gate-to-gate total ATM/CNS assets(M€)	293
Gate-to-gate ANS total capex (M€)	41
ATCOs in OPS	362
Gate-to-gate total staff	1 378
Total IFR flight-hours controlled by ANSP ('000)	327
IFR airport movements controlled by ANSP ('000)	491
En-route sectors	19
Minutes of ATFM delays ('000)	620

Size

Size of controlled airspace: 69 700 km²



Institutional arrangements and links (2014)



Status (2014)

- Since 2004 the Slovenia Control, Slovenian Air Navigation Services Ltd, as a 100% state-owned enterprise is independent of national supervisory authorities.

National Supervisory Authority (NSA):

Civil Aviation Authority

Body responsible for:

Safety Regulation

Ministry of Infrastructure and Spatial Planning

Airspace Regulation

Ministry of Infrastructure and Spatial Planning

Economic Regulation

Slovenska odškodninska družba, d.d. (exercising the Corporate Governance of State Capital Investments Act)

Corporate governance structure (2014)

Supervisory Board

Chairman (elected) + 3 members appointed by the Slovenska odškodninska družba, d.d. + 2 staff reps. appointed by "employees board"

Director General (CEO) of Slovenia Control

Slovenia Control (2014)

CHAIRMAN OF THE SUPERVISORY BOARD:

Dušan Hočevr

DIRECTOR GENERAL (CEO):

Franc Željko Županič, Ph.D.

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input type="checkbox"/> MET

Operational ATS units:

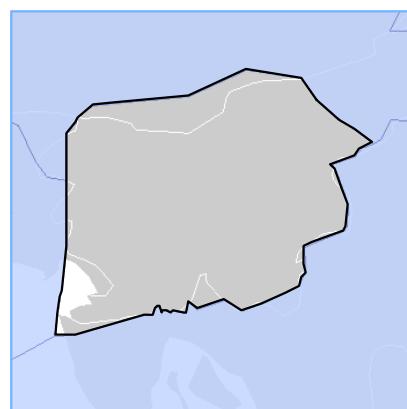
1 ACC (Ljubljana)
3 APPs (Ljubljana, Maribor, Portorož)
3 TWRs (Ljubljana, Maribor, Portorož)

Key financial and operational figures (ACE 2012)

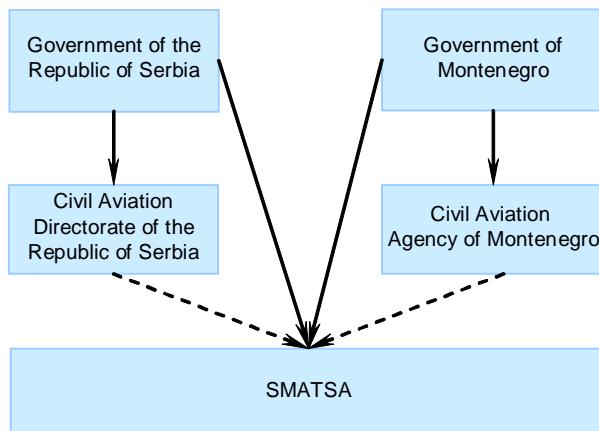
Gate-to-gate total revenues (M€)	35
Gate-to-gate total costs (M€)	32
Gate-to-gate ATM/CNS provision costs (M€)	28
Gate-to-gate total ATM/CNS assets(M€)	35
Gate-to-gate ANS total capex (M€)	11
ATCOs in OPS	89
Gate-to-gate total staff	215
Total IFR flight-hours controlled by ANSP ('000)	48
IFR airport movements controlled by ANSP ('000)	32
En-route sectors	4
Minutes of ATFM delays ('000)	0

Size

Size of controlled airspace: 20 400 km²



Institutional arrangements and links (2014)



Status (2014)

- Limited liability company founded in 2003
- 92% owned by Serbia and 8% owned by Montenegro
- Integrated civil/military ANSP

National Supervisory Authority (NSA):

Civil Aviation Directorate of the Republic of Serbia
Civil Aviation Agency of Montenegro

Body responsible for:

Safety Regulation

- Civil Aviation Directorate of the Republic of Serbia
- Civil Aviation Agency of Montenegro

Airspace Regulation

- Civil Aviation Directorate of the Republic of Serbia
- Civil Aviation Agency of Montenegro

Economic Regulation

Ministry of Finance of the Republic of Serbia

Corporate governance structure (2014)

ASSEMBLY

6 members representing founders
(Government of the Republic of Serbia
and Government of Montenegro)
selected from the Ministries in charge of transport,
finance, and defence)

SUPERVISORY BOARD

5 members appointed by the Assembly for a period of 4 years, upon proposals of the Government of the Republic of Serbia (4) and Government of Montenegro (1)
CEO is appointed by the Supervisory Board.

SMATSA (2014)

PRESIDENT OF THE ASSEMBLY:

Mirel Radić Ljubisavljević

PRESIDENT OF THE SUPERVISORY BOARD:

Bratislav Grubačić

CEO:

Radojica Rovčanin

Scope of services

<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS
<input checked="" type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET

- ANS Services (ATM, CNS, MET, AIS)
- SMATSA provides Air Traffic Services in the 55% of the upper airspace of Bosnia and Herzegovina
- ANS personnel and pilot training, Flight Inspection Services, PANS-OPS and cartography

Operational ATS units:

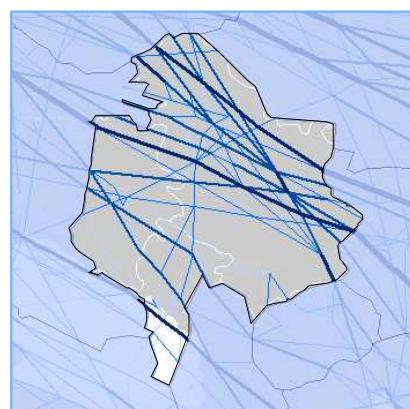
- 1 ACC (Belgrade)
- 1 APP collocated with ACC Belgrade
- 6 APPs/TWRs (Batajnica, Kraljevo, Nis, Vrsac, Podgorica, Tivat)
- 1 TWR

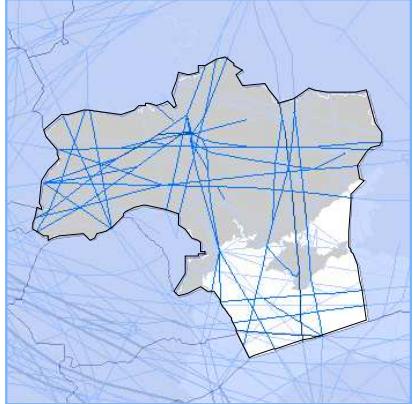
Key financial and operational figures (ACE 2012)

Gate-to-gate total revenues (M€)	82
Gate-to-gate total costs (M€)	84
Gate-to-gate ATM/CNS provision costs (M€)	75
Gate-to-gate total ATM/CNS assets(M€)	100
Gate-to-gate ANS total capex (M€)	8
ATCOs in OPS	246
Gate-to-gate total staff	855
Total IFR flight-hours controlled by ANSP ('000)	209
IFR airport movements controlled by ANSP ('000)	69
En-route sectors	9
Minutes of ATFM delays ('000)	1

Size

Size of controlled airspace: 145 566 km²



<p>Institutional arrangements and links (2014)</p> <div style="background-color: #e0f2ff; padding: 10px;"> Ministry of Infrastructure of Ukraine (State Aviation Administration) </div> <div style="background-color: #e0f2ff; padding: 10px; margin-top: 10px;"> Ukrainian State Air Traffic Service Enterprise (UkSATSE) <ul style="list-style-type: none"> • Regional branches • AIS • Ukraerocenter (Ukrainian Airspace Management and Planning Center) • Training & Certification Center of UkSATSE • UkSATSE Flight Calibration Service • Medical Certification Center </div>	<p>Status (2014)</p> <ul style="list-style-type: none"> - Self-financing enterprise - 100% State-owned <p>National Supervisory Authority (NSA): State Aviation Administration (SAAU) acts as NSA</p> <p>Body responsible for:</p> <p><u>Safety Regulation</u> State Aviation Administration</p> <p><u>Airspace Regulation</u> State Aviation Administration</p> <p><u>Economic Regulation</u> Ministry of Infrastructure of Ukraine</p>																						
<p>Corporate governance structure (2014)</p> <div style="background-color: #e0f2ff; padding: 10px;"> No Supervisory Board </div> <div style="background-color: #e0f2ff; padding: 10px; margin-top: 10px;"> MANAGEMENT BOARD </div> <div style="background-color: #e0f2ff; padding: 10px; margin-top: 10px;"> DIRECTOR GENERAL </div>	<p>UkSATSE (2014)</p> <p>DIRECTOR GENERAL OF UKSATSE: Yuriy Cherednichenko</p>																						
<p>Scope of services</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;"><input checked="" type="checkbox"/> GAT</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> Upper Airspace</td> <td style="padding: 2px;"><input type="checkbox"/> Oceanic ANS</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/> OAT</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> Lower Airspace</td> <td style="padding: 2px;"><input checked="" type="checkbox"/> MET</td> </tr> </table>	<input checked="" type="checkbox"/> GAT	<input checked="" type="checkbox"/> Upper Airspace	<input type="checkbox"/> Oceanic ANS	<input type="checkbox"/> OAT	<input checked="" type="checkbox"/> Lower Airspace	<input checked="" type="checkbox"/> MET	<p>Operational ATS units:</p> <p>5 ACCs/APPs (Dnipropetrov's'k, Kyiv, L'viv, Odesa, Simferopol')</p> <p>6 APPs (Donetsk, Ivano-Frankiv's'k, Kharkiv, Luhansk, Uzghorod, Zaporizhzhia)</p> <p>22 TWRs</p> <p>9 AFISs</p>																
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GLOSSARY

ACC	Area Control Centre
ACE	Air Traffic Management Cost-Effectiveness
ADS-B	Automatic Dependent Surveillance-Broadcast
Aena	Aeropuertos Españoles y Navegación Aérea, Spain
AFIS	Airport/Aerodrome Flight Information Service
AIS	Aeronautical Information Services
ANS	Air Navigation Services
ANS CR	Air Navigation Services of the Czech Republic
ANSP	Air Navigation Service Provider
APP	Approach Control Unit
ARMATS	Armenian Air Traffic Services
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
BULATSA	Air Traffic Services Authority, Bulgaria
Austro Control	Austro Control Österreichische Gesellschaft für Zivilluftfahrt mbH, Austria
Avinor	Avinor, Norway
B	Billion
Belgocontrol	Belgocontrol, Belgium
CAPEX	Capital Expenditure
CNS	Communications, Navigation and Surveillance
CRCO	Central Route Charges Office
Croatia Control	Hrvatska kontrola zračne plovidbe d.o.o., Croatian Air Navigation Services
DCAC Cyprus	Department of Civil Aviation of Cyprus
DFS	Deutsche Flugsicherung GmbH, Germany
DHMİ	Devlet Hava Meydanları İşletmesi, Turkey
DME	Distance-Measuring Equipment
DSNA	Direction des services de la navigation aérienne, France
EANS	Estonian Air Navigation Services
EC	European Commission
ECAC	European Civil Aviation Conference
ENAV	Ente Nazionale di Assistenza al Volo S.p.A., Italy
ERC	EUROCONTROL Research Centre
ETS	Early Termination of Service
EU	European Union
FAB	Functional Airspace Block
FDP	Flight Data Processing system
Finavia	Finavia, Finland
FIS	Flight Information Service
FL	Flight Level
FTE	Full-Time Equivalent
GDP	Gross Domestic Product
HCAA	Hellenic Civil Aviation Authority, Greece
HMI	Human-Machine Interface

HQ	Headquarters
HungaroControl	HungaroControl, Hungary
IAA	Irish Aviation Authority, Ireland
IFR	Instrument Flight Rules
IFRS	International Financial Reporting Standards
ILS	Instrument Landing System
LFV	Luftfartsverket, Sweden
LGS	Latvijas Gaisa Satiksme, Latvia
LPS	Letové Prevádzkové Služby Slovenskej Republiky, Státny Podnik, Slovak Republik
LVNL	Luchtverkeersleiding Nederland, Netherlands
M	Million
MATS	Malta Air Traffic Services Ltd
MET	Aeronautical Meteorology
M-NAV	Air Navigation Services Provider of the former Yugoslav Republic of Macedonia
MoldATSA	Moldavian Air Traffic Services Authority
MSSR	Monopulse Secondary Surveillance Radar
MUAC	Maastricht Upper Air Centre
NSA	National Supervisory Authority
NATA Albania	National Air Traffic Agency, Albania
NATS	National Air Traffic Services, UK
NAV Portugal	Navegação Aérea de Portugal – NAV Portugal, EPE
NAVAIR	Air Navigation Services – Flyvesikringstjenesten, Denmark
NBV	Net Book Value
NDB	Non-Directional Beacon
NM	EUROCONTROL Network Manager
OAT	Operational air traffic
OPS	Operations
Oro Navigacija	State Enterprise Oro Navigacija, Lithuania
PANSA	Polish Air Navigation Services Agency
PPPs	Purchasing power parities
PRB	Performance Review Body
PRC	Performance Review Commission
PRR	Performance Review Report
PRU	Performance Review Unit
RDP	Radar Data Processing system
RP1	Reference Period 1
RPI	Retail Price Index
ROMATSA	Romanian Air Traffic Services Administration
SAR	Search and Rescue
SES	Single European Sky
SESAR IP1	Single European Sky ATM Research Implementation Package 1
SEID	Specification for Economic Information Disclosure
Skyguide	Skyguide, Switzerland
Slovenia Control	Slovenia Control, Slovenia
SMATSA	Serbia and Montenegro Air Traffic Services Agency
TC	Terminal Control
TWR	Traffic Controlled Tower
UK CAA	United Kingdom Civil Aviation Authority
UkSATSE	Ukrainian State Air Traffic Service Enterprise

VFR	Visual Flight Rules
VOR	Very high frequency Omni-directional Range

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