Support study for an ex-post evaluation of the SES performance and charging schemes

Final Report - Annexes

Written by Robert Piers, Martin Hawley, Bart Klein Obbink, Job Smeltink, Alfred Roelen, Rachel Beerman, Niels van Wanrooij

February – 2017

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Directorate-General for Mobility and Transport
Directorate E — Aviation
Unit E3 — Single European Sky
Contact: Sabine Cayre
E-mail: sabine.cayre@*ec.europa.eu*

European Commission
B-1049 Brussels

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Preface

This Annex accompanies the final report for the 'Support study for an ex-post evaluation of the SES performance and charging schemes' prepared for the European Commission, DG Mobility and Transport.

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Annex 2 Evaluation Framework

Effectiveness *1.a. What is the effect on capacity that has been achieved during RP1?*	
What did we set out to measure? The study has sought to measure the improvement in capacity against the root causes, particularly concerning network capacity contributions of technology and operational development. The causes of peak delay have been identified from PRB data and PRR reports. The study has sought stakeholder opinion on whether any capacity development has been traded off against cost-efficiency, for example by deferring investment plans that may increase capacity in order to meet the cost-efficiency target.	
Indicators	**Sources**
• Average *en-route* Air Traffic Flow Management (ATFM) delay per flight (planned and actual) • Average arrival ATFM delay per flight (planned and actual)	• PRB Annual Monitoring Reports • PRB online performance monitoring dashboard • and the PRB assessment reports of those plans and their advice to the EC. • Data reported for ACE Benchmarking Reports • PRR reports
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Delay causes • Capacity actions to reduce delay, including effects on productive and allocative efficiency (flight hours per sector hour). • Trade-offs between capacity investment and cost efficiency with respect to forecast service units (which should be in NPPs).	• Open public consultation survey; • Targeted survey to ANSPs, NSAs, AUs • Interviews with selected stakeholders (Network Manager, PRB, selected ANSPs and airlines/ airline associations); • Network Manager reports, e.g. CODA.
Methodological approach – steps taken The following steps have been carried out and reported on in IR 1: • Trends have been analysed using PRB and PRC performance data. • Comparisons with US delays have been made. • Particular capacity shortfalls have been identified and their causal factors. Views on capacity performance have been gathered from stakeholders through surveys (OPC and targeted) and interviews, which have been reported in the chapters 2-4 of this IR2. The final step is compare the desk-based analysis with stakeholder opinion and determine if there were other factors at play besides the performance scheme such as stakeholder pressure. Following analysis of the findings the study could validate these with the NM and PRB, as foreseen in the remaining process of the study.	
Limitations / mitigation measures None foreseen.	

Effectiveness

1.b. What is the effect on environment that has been achieved during RP1?

What did we set out to measure?

The study set out to globally indicate if there was a change of the impact of the Air Navigation Service Provisioning on environmental issues (air quality, noise, global warming) and to measure in particular the effect on horizontal en route flight efficiency (in relation to CO2 emissions and global warming).The actual effects are compared to target-settings and expectations. Mechanisms to increase horizontal en route flight efficiency within and outside the ANSPs span of control are identified. The study has sought stakeholder opinion on whether any of the effects could be attributed to the SES performance scheme.

Indicators	**Sources**
• Horizontal en route flight efficiency, routes in the latest filed flight plan; • Horizontal en route flight efficiency, actually flown flight paths; • Number of flights.	• PRB Annual Monitoring Reports • PRB online performance monitoring dashboard.
Additional information for evaluation	**Sources**
• Target-settings (ICAO, Flightpath 2050, SES, SESAR); • Expectations of stakeholder with respect to improvements; • US statistics (as far as comparable); • Statistics before relevant time frame (as far as comparable); • Mechanisms that influence horizontal flight efficiency.	• Targeted survey; • Interviews with selected stakeholders; • Open public consultation survey; • National and FAB performance plans and evaluation reports; • Target-settings (ICAO, Flightpath 2050, SES, SESAR); • SESAR OIs.

Methodological approach – steps taken

Experts on aviation environmental issues identified relevant issues for Air Navigation Service Provisioning and compared them with the Performance Indicators in the schemes.

The factors influencing horizontal flight efficiency are known from literature, general knowledge of ATM and from answers to questions in the interviews (free routing, airline selection, tactical ATC, route optimisation, airspace redesign, civil-military co-operation…).

Trends on the values of the KPI in the performance scheme have been analysed using PRB and PRC performance data. Comparisons with the US statistics and the past statistics are made. Comparisons with the targets in the Schemes are made, and those targets are compared to other target-settings. Comparisons with expectations of ANSPs, authorities and airlines are made.

It will be remarked that the SES performance scheme has only limited impact on the fragmentation of the airspaces, despite of its partial focus on FABs, and hence on the inefficiency due to that.

Limitations / mitigation measures

It is not known to what extent ANSP actions helped to increase horizontal flight efficiency. The ANSP actions are therefore analysed in a qualitative manner.

It is not known to what extent the fragmentation of airspaces limits horizontal flight efficiency. The effect of the fragmentation of airspaces on horizontal flight efficiency is analysed in a qualitative manner.

Effectiveness

1.c. What is the effect on cost-efficiency that has been achieved during RP1?

What did we set out to measure?

The study team has sought to identify the impact of the SES performance and charging schemes on cost-efficiency during RP1 and the first year of RP2. This is done through an assessment of the en-route ANS unit cost evolution as well as through an assessment of terminal unit cost trends, including consistency with the development of *en route* DUCs and any changes in the allocation of costs between en-route and TANS (see evaluation question 1f below). Finally, distributional effects between stakeholders of costs / carry-overs have been analysed (see evaluation question 21 below).

Secondly, in order to investigate whether these effects could have been achieved in the absence of the SES performance and charging schemes, it is relevant to compare the developments and corresponding achievements during RP1 with those under the pre-RP1 arrangements.

Indicators	**Sources**
• DUC for en-route ANS, defined as the ratio between en-route ANS determined costs (in real terms – ie €2009) and en-route forecast traffic (expressed in en-route service units at charging zone level) • actual en-route unit cost per service unit (SU) • terminal ANS costs (planned and actual) • terminal navigation service units (TNSU) (planned and actual)	• PRB Annual Monitoring Reports • PRB online performance monitoring dashboard • • National/FAB Performance Plans (NPPs for RP1) • Data reported for ACE Benchmarking Reports
Additional information for evaluation	**Sources**
Stakeholder input relating to: • validation of impacts and further substantiation of underlying drivers, endogenous and exogenous factors affecting performance; • interdependencies between KPAs and interactions with other SES initiatives; • actions taken to improve cost-efficiency.	• Open public consultation survey; • Targeted survey to ANSPs, airspace users • Interviews with selected stakeholders (PRB, selected ANSPs and airline associations);

Effectiveness

1.c. What is the effect on cost-efficiency that has been achieved during RP1?

Methodological approach – steps taken

A trend analysis of cost-efficiency has been made based on PRB data, feeding into a quantitative assessment of the evolution of cost-efficiency. Specific attention has been put to the full costs to the user, by assessing what they have been charged after adjustments.

A comparison with Pre-RP1 performance has been made based on PRC reports. Views on, and assessments of the effects on cost-efficiency have been gathered from stakeholders through the OPC, targeted survey and interviews.

The final step is to combine the indicator trends with the stakeholder views. The challenge here that an overall assessment needs to take great care to weigh the views of the different stakeholder groups, who interpret and assess the effects on cost-efficiency of the Regulations in a widely divergent manner. Findings will be validated in final round with PRB/PRU.

Limitations / Mitigation measures

The changes in (cost of) terminal navigation service units (TNSU) (planned and actual) has not yet been reported in IR1. The change in units and (unit) costs for terminal ANS are available from the PRB reports and an assessment will be reported in the (draft) final report.

Effectiveness

1.d. Was there an improvement of safety levels during RP 1? If yes, could they be attributed to the SES performance scheme?

What did we set out to measure?

The study set out to measure if there was an improvement of the safety parameters of the performance scheme and if there was an improvement of event-based parameters. The study has sought stakeholder opinion on whether any safety effects could be attributed to SES performance scheme.

Indicators	**Sources**
• The effectiveness of safety management as measured by a methodology based on the ATM Safety Maturity Survey Framework. • The application of the severity classification based on the Risk Analysis Tool methodology to the reporting of, as a minimum, three categories of occurrences: Separation Minima Infringements, Runway Incursions and ATM-specific occurrences. • The reporting by the Member States and their ANSPs through a questionnaire-based methodology which measures the level of presence and corresponding level of absence of Just Culture. • Unauthorised penetration of en route airspace (numbers and severities); • Separation minima infringements by en route IFR flights (numbers and severities). • Wake vortex encounters, en-route IFR flights.	• PRB Annual Monitoring Reports • Statistics of incident reports as delivered by Member States • TCAS RA statistics
Additional information for evaluation	**Sources**
Stakeholder input relating to: • The effect of the SES scheme on en route safety from ATC perspective; • The effect of other SES initiatives (especially cost reductions) on en route safety from ATC perspective • Actions to improve safety performance	• Targeted survey of ANSPs; • Interviews with selected stakeholders (PRB, selected ANSPs); • Open public consultation survey; • Integrated Risk Picture (Eurocontrol) and its road map; • Results from the Optics project for the short term (SESAR program).

Methodological approach – steps taken

Trends on of the safety parameters of the performance scheme have been analysed using PRB and PRC performance data. A comparison with the US has been made on a single event-based parameter (the number of loss of separation events). Views on safety performance have been gathered from stakeholders through surveys (OPC and targeted) and interviews.

Limitations / mitigation measures

Statistics of incident reports as delivered by Member States and TCAS statistics have not yet been obtained and analysed and therefore the question if there was an

improvement of event-based parameters has not been answered. Stakeholder input regarding actions taken to improve safety and the effect of other SES initiatives suggested that it is difficult to know whether actions lead to safety improvement in terms of a reduction of the number events. Interactions are diffuse because it is a loosely coupled system and effects may only be seen on the longer term. Incident reports from Member States and TCAS statistics will be obtained and analysed to determine whether there was a change in the number of event-based parameters. The difficulty of attributing safety improvement (in terms of a reduction in the number of events) is considered to be an inherent characteristic of the aviation system as it is loosely coupled. No further action for solving this issue is considered viable.

Effectiveness

1.e. What were the effects on investment activity in ATM infrastructure during RP1? Are there significant differences between investments planned in the performance plans and actual investments?

What did we set out to measure?

The team has sought to analyse the aspects of Member States' capital expenditures / investments in ATM infrastructure during RP1 via an assessment of the planned annual CAPEX investments (i.e. in the adopted RP1 and RP2 performance plans) against the actual annual CAPEX values reported over the same period, in compliance with the Performance Scheme Regulation (Article 3(3)(i) and 18(4) of EU No 390/2013).

Indicators	**Sources**
• Planned CAPEX (ANSP level) • Actual CAPEX (ANSP level) • Ratio (%) of actual CAPEX to planned CAPEX (ANSP level) • Total CAPEX of ANSPs' main projects • Difference between the date of entry into operation of investments and actual situation	• PRB Annual Monitoring Reports on Capital Expenditures • Annual Member States' Monitoring reports (required by Art 18(4) of EU 390/2013) • National/FAB Performance Plans (NPPs for RP1 and RP2) • European ATM Master Plan reporting process (ESSIP Report and LSSIP documents)
Additional information for evaluation	**Sources**
Stakeholder input related to: • indicated reasons for differences between investments planned and actual investments.	• Reporting table detailed in Annexes II, VI and VII of the charging Regulation (EU) No 391/2013 • Data reported for ACE Benchmarking Reports; • Investment Plans • Annual Reports or financial results • Interviews with stakeholders (selected ANSPs, NSAs)

Methodological approach – steps taken

A quantitative assessment of the evolution of capital expenditures has been made based on CAPEX volumes of the PRB Annual Monitoring Reports. It was not reported in IR1, but it is added as annex 2 to this IR2.

Views and explanations for differences between planned and implemented investments have been gathered from stakeholders through the OPC, targeted survey and interviews

The next step for the final report will be to make the combination of the indicator trends and stakeholder views for the final response to the question.

Limitations / mitigation measures

Based on the desk research and collected stakeholder views, the evaluation question can be answered. The lack of justification by ANSPs for why certain investments were not made during RP1 presents a slight limitation in terms of adding analysis behind discrepancies in investments and their impact. As the PRB noted in its annual Monitoring Report in 2014,

> "A considerable part of CAPEX (-758,39M€2009) planned as part of the NPPS for RP1 has been cancelled or postponed. However, ANSPs did not provide sufficient information with regard to the postponement of the unrealized investments to RP2. It is therefore not possible to draw detailed conclusions on the actions necessary to address [this] and associated impacts." (PRB Annual Monitoring Report 2014, section 2.1.9, p.10).

This topic of CAPEX will be addressed during the workshop with the PRB. Also the PRB is currently preparing a new report on CAPEX that will be used when it is published.No additional measures are foreseen.

Effectiveness

1.f. Was there a shift of costs between the regulated en route activities and the not regulated terminal activities during RP1?

What did we set out to measure?

The study has sought to compare the differences in actual terminal ANS costs to changes in en-route costs in order to identify whether, and to what extent, costs were transferred between the "regulated" en-route costs, and the "non-regulated" terminal ANS costs, which remain subject to full cost recovery until 2015 (excluding France). The changes in costs have been identified from PRB data and stakeholder views have been sought on whether they observed shifts and if so, what the reasoning for this was.

Indicators	**Sources**
• En-route costs (determined costs and actual costs, in €2009) • TANS costs (planned and actual, in €2009) • Gate-to-gate ANS costs (planned and actual, in €2009)	• PRB Annual Monitoring Reports: European overview and PRB recommendations (Vol 1); National overviews (Vol 2) • PRB online performance monitoring dashboard • NSA Annual Monitoring Reports
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Justifications for changes in the allocation of costs between en-route and TANS	• Interviews with selected stakeholders (selected NSAs and airline associations)

Methodological approach – steps taken

Trends have been analysed using PRB and ACE Benchmarking data

Views on shifts between terminal and en-route costs have been gathered from stakeholders through the OPC, targeted survey and interviews. Some stakeholders stated that they observed shifts of costs from en-route to terminal activities, but these views could not be substantiated by them. Final analysis to eb made on factual developments and put in perspective with stakeholder views.

Limitations / mitigation measures

The changes in (cost of) terminal navigation service units (TNSU) (planned and actual) has not yet been reported in IR1. The change in units and (unit) costs for terminal ANS are available from the PRB reports and an assessment will be reported in the (draft) final report.

Effectiveness

2. Have the objectives been achieved? If not, which factors have hindered the achievement of objectives?

What did we set out to measure?

Whether overall performance of the SES Performance and Charging regulations resulted in meeting the objectives of improved outcomes in safety, environment, capacity and cost efficiency. It thus needs to compare the synthesized analysis on the results of Question 1 sub-questions with the objectives. This requires not only an examination of the achievement of performance targets, but also of the relative merits of the two schemes (i) to tackle the root causes driving the core problems that afflict the ATM system in Europe, (ii) when compared to previous arrangements. Secondly, the analysis needs to identify the key factors that have driven and/or hindered the successful achievement of the objectives, where relevant. This should include an assessment of the endogenous and exogenous factors, as well as interdependencies between KPAs and interactions with other SES initiatives (i.e. FABs, Network Manager, SESAR, military mechanisms and EASA).

Indicators	**Sources**
Same as Question 1.a – 1.f Other indicators: • Traffic demand (and variability)	• Same as Question 1.a – 1.f
Additional information for evaluation	**Sources**
Stakeholder input relating to: • indicated reasons for differences between planned and actual performance. • factors that hindered and/or helped the achievement of performance targets. • validation of effects SES progress elements	• Open public consultation and targeted survey; • Interviews with selected stakeholders (PRB, ANSPs, NSAs and airline associations); • SES implementation (progress) reports on other SES initiatives.

Methodological approach – steps taken

The factual analysis of the KPIs as described in Q1 are the starting point. In IR1 we have also reported on the objectives of the regulations, which are qualitative of nature. Most importantly, we collected extensively stakeholder views via the OPC, survey and interviews on the limits to achieve certain targets, and background reasons for developments of KPIs observed in RP1 and RP2 year 1. During consultations we have addressed the links with other SES initiatives, and the interdependency between KPAs. This will be combined in the analysis to arrive at a final judgement to answer this question.

Limitations / mitigation measures

None foreseen.

Effectiveness

3. Are there other indicators that should have been used to measure or target performance improvement so as to better achieve the objectives?

What did we set out to measure?

The study set out to capture the pros and cons for the current set of indicators against the overall performance improvement compared to the previous PRC benchmarking regime. Stakeholder opinions are the primary source of information,

Indicators	**Sources**
• As per Regulation 390(2013), Annex I	• PRB Annual Monitoring Reports • PRB online performance monitoring dashboard • PRB/C ad-hoc studies in preparation for the performance scheme. • RP2 consultations and related studies.
Additional information for evaluation	**Sources**
Stakeholder input relating to: • The appropriateness of current indicators. • Side effects of performance measurement and target setting.	• Open public consultation survey; • Targeted surveys • Interviews with selected stakeholders (Network Manager, PRB, selected ANSPs and airlines/ airline associations).

Methodological approach – steps taken

Desk research has led the study team to gain an understanding of the indicators and develop their own views of pros and cons. Opinions of stakeholders have been capture through the questionnaires and targeted interviews, including ideas on possible new indicators. Questions asked were on the effectiveness of indicators for each KPA and also views on interdependencies. There were some comments on the links between the performance scheme and SESAR KPIs.

In the final analysis the study will summarise potential new indicators and assess their pros and cons in respect of broad criteria (that reflect, e.g. measurability, complexity – to be worked out in the next phase of work.). These indicators will be further validated with the PRB and EASA.

Limitations / mitigation measures

None foreseen.

Effectiveness

4. Are actions at national and EU level organised in a way to maximise their joint effects e.g. by mobilising resources at national level supporting the implementation of the performance scheme (e.g. working group of National Supervisory Authorities)?

What did we set out to measure?

The study aimed analyse this question as follows.

- What are the different actions that have been organised and undertaken at the national / EU level to support implementation of the performance scheme (e.g. the establishment of working groups of NSAs, pooling of expertise on FAB level, etc)?
- To what extent are such activities and/or resources mobilised to effectively contribute to the achievement of the performance and charging scheme objectives?

Indicators	**Sources**
• Listing of national initiatives • Listing of FAB initiatives • Listing of EU initiatives	• Interviews with selected stakeholders (PRB, selected ANSPs, NSAs, airline associations, European Commission - DG MOVE); • Minutes of meetings
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Degree of sufficiency of available resources at stakeholders • Additional actions undertaken at national level and EU level to overcome any potential capacity or expertise deficiencies (i.e. initiatives at FAB level to pool expertise)	• Open public consultation survey; • Interviews with selected stakeholders (as above) • EC documents, e.g. 2011 White Paper on Transport

Methodological approach – steps taken

A initial step was to scan the available documentation on this. This is not frequently reported, so there is a dependency on information from stakeholders on this. It has been addressed in the survey, and a list of initiatives has been raised. The next step is to group initiatives mentioned in the survey and analyse if it is a maximised joint effort.

Limitations / mitigation measures

While a list of initiatives can be drawn up, the assessment to which extent the combination of initiatives would *maximise the joint effort* is more challenging. An obvious vehicle for joint effort are the FABs. We have some insights on initiatives on FAB level from the consultations, but a more in-depth consultation is currently ongoing in the frame of the DG MOVE study 'Support for further development of air traffic management in the area of Functional Airspace Blocks'. Ecorys and Winsland participate in this study and the consultations in this respect, and we will seek additional initiatives for joint effort from this study.

PRB set-up (linked to effectiveness):
5. Was the PRB set-up (designation of Eurocontrol's PRC as PRB supported by Eurocontrol's PRU) during the first reference period effective in providing independent advice to the Commission in respects to its tasks laid down in Article 3(3) of Commission Implementing Regulation (EU) No 390/2013?

What did we set out to measure?
The study set out to address the independence of the PRC as PRB.

Indicators	Sources
• Planned and achieved shortfall in performance indicators.	• Regulation 390 (2013). • PRB "SES II Performance Scheme Assessment of revised National / FAB Performance Targets 1st Reference Period: 2012-2014".
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Advice of the PRB • Perceived independence of the PRB • PRB capability and its approach to problem solving	• Open public consultation survey; • Interviews with selected stakeholders (PRB, selected NSAs, ANSPs, airline associations).

Methodological approach – steps taken
Whilst an initial indicator of effectiveness was the relationship between targets and achievement, to answer this question the study has sought stakeholder opinion. We have interviewed the PRB, PRU and stakeholders on the topic of the PRB effectiveness, as well as covered these aspects in the surveys. This has yielded views on the quality of the work, independence (from Eurocontrol mostly but also the EC), reporting timescales and duplication of resources.

In the next steps the study team will extract the positive and negatives as communicated in the surveys and interviews and qualitatively assess whether the positives outweigh the negatives and thereby indicate the PRB's effectiveness. This will be set in the context of the achievements to date.

Limitations / mitigation measures
Whilst there are views that the PRB should be made more independent, no specific examples of partial behaviour have been cited, with respondents mostly pointing to the target setting as being the main issue. Any further examples of partial behaviour may be an area to follow up with selected stakeholders such as during the external workshop..

Data quality (linked to effectiveness):
6. Was the data that was submitted in accordance with Annex V of Commission Implementing Regulation (EU) No 390/2013 and the Annexes of Commission Implementing Regulation (EU) No 391/2013 of a quality that allowed the Commission and the PRB to use it in a proper way during RP1?

What did we set out to measure?

The study set out to measure the quality of the data, looking at how it was processed and the measurement accuracy (or measurement error). In terms of whether the data was fit for its decision making purpose, the key aspects are the accuracy compared to the decisions being made and any sampling issues, such as small samples.

Indicators	Sources
• None defined, but this could be inferred as a level of confidence that submitted data was sufficiently accurate on which to base recommendations.	• Interviews with PRB • PRB review of National/FAB Performance Plans (NPPs for RP1) • National / FAB plans themselves and corresponding data submitted

Additional information for evaluation	Sources
Stakeholder input relating to: • PRB experts view on scale and scope of data quality issues and the impact on decision making for performance plans. • NSA / ANSP view of the quality and practicality (and cost) of providing data • PRU / NM view on data process	• Interviews with additional stakeholders (ANSPs, NSAs, PRU, NM)

Methodological approach – steps taken

A series of meetings were held with the PRU and Network Manager (as a data originator for capacity and environmental KPIs). The study team explored the processes, process improvements implemented over the period of the scheme, sample sizes, systematic errors identified etc. The study team also made estimates of measurement accuracy and compared these with the KPI values. A sampling approach was taken, so not all KPIs or PIs were investigated.

A report on data quality was made in the first interim report.

The remaining stage is to validate the findings with the PRU/PRB/NM.

Limitations / mitigation measures

None foreseen.

Data quality (linked to effectiveness):
7. Were the handling of data, the data analysis, the data review and resulting findings effective?

What did we set out to measure?

The study looked at how data was processed, looking at selected end-to-end processes and the lessons learned over the period. The study also wanted to assess the overall maturity of the processes.

Indicators	Sources
• Extent of rework - requirement for the PRB to revert to ANSP /NSA to correct erroneous or provide missing data • Extent of challenge to data from States.	• Interviews with the PRU and PRB • Interviews with the Network Manager • PRB review of National/FAB Performance Plans (NPPs for RP1) • National / FAB plans (NPPS)
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Perceptions of stakeholders on data handling	• Interviews with additional stakeholders (ANSPs, NSAs)

Methodological approach – steps taken

As for question 6, a series of meetings were held with the PRU and Network Manager. The study team explored the processes, lessons learned and process improvements made or planned. A sampling approach was taken, so not all processes were investigated.

A report on data quality was made in the first interim report.

The remaining stage is to validate the findings with the PRU/PRB/NM.

Limitations / mitigation measures

None foreseen.

Data quality (linked to effectiveness):
8. Did the data analysis take sufficiently account of existing agreements of delegation of airspace in Europe so that results of cross border activity were allocated correctly?

What did we set out to measure?

The study aimed to assess the size and scope of possible effects, by gauging whether this is minor operational arrangements between ANSPs or contracted delegations supported by commercial agreements, or problems with data handling.

Indicators	Sources
• Delegation instruments in place	• Interviews with PRB • Meeting with the PRU with respect to Task 4. • LSSIP reports on cross border arrangements • National/FAB Performance Plans • PRB Annual Monitoring Reports

Additional information for evaluation	Sources
Stakeholder input relating to: • validation of effects related to data analysis and subsequent planning resulting from delegation of airspace	• Open public consultation survey; • Targeted survey with Member States / ANSPs • Interviews with additional stakeholders (ANSPs, Member States/NSAs)

Methodological approach – steps taken

The study addressed this question alongside the assessment of data quality through the discussions with the PRB and PRU on where issues were thought to arise.

The initial findings indicate that this is a minor issue and one that may have arisen due to early stage data processing issues that have now been improved. The next stage is to review these findings against any contrary opinion in the surveys/interviews and then validate with the PRB/PRU.

Limitations / mitigation measures

None foreseen.

Efficiency

9. Were the outputs and (expected) effects obtained at a reasonable cost? (This should include estimates of the costs at all levels (EU level (including PRB), national level (NSA costs, etc.), airspace users and other stakeholders participating in the scheme.)

What did we set out to measure?

This question should present the costs incurred by each of the different, participating stakeholders to implement the performance and charging schemes in relation to the outputs and anticipated effects. Regarding the outputs and anticipated effects, we will use results from the effectiveness questions (see evaluation question 1). Here we will first focus on costs, which will be assessed per stakeholder group participating to the performance scheme as follows

Indicators	**Sources**
Costs indicators: • Implementation costs for public authorities resulting from the Regulation. • Substantive compliance costs for relevant stakeholders resulting from the Regulation. • Administrative burdens for NSAs, ANSPs, and air space users. • Enforcement costs in ensuring compliance. Effects / Outputs: • Same as Question 1 and Question 2 Outcome: • Cost of regulation / (monetized) benefits from regulation impacts	• Annual Performance Review Reports (PRR) • NSA Monitoring Reports • June reporting tables
Additional information for evaluation	**Sources**
• Stakeholder perception on implementation costs for public authorities. • Stakeholder perception on compliance costs for airports and airspace users. • Stakeholder administrative burdens for airports and air space users. • Stakeholder perception on enforcement costs in ensuring compliance.	• OPC survey; • Targeted survey with selected stakeholders (PRB, selected ANSPs and airline associations); • Interviews with selected stakeholders (PRB, selected ANSPs and airline associations); • Dedicated meetings with PRB and EASA; •

Methodological approach – steps taken

An initial scan of the available documents indicated that NSA supervision costs are part of the reporting requirements as part of Regulation 391, but the result of this is not included in the PRB monitoring reports. The overall aspects of the cost-benefit ratio of the schemes has been discussed during the workshop with the PRB, and an initial view is there. However, a further breakdown of costs needs still to be made.

The issue of efficiency was also included in the survey and interviews. These consultations provide for the overall vision of stakeholders on the efficiency of the system. Budgets for the EU level (EC, PRB, contract with PRU amounts to € 7 million per year.

Efficiency

9. Were the outputs and (expected) effects obtained at a reasonable cost? (This should include estimates of the costs at all levels (EU level (including PRB), national level (NSA costs, etc.), airspace users and other stakeholders participating in the scheme.)

Limitations / mitigation measures

The reporting on supervision costs is not reported in the PRB monitoring reports. It is already being followed-up with PRB/PRB to get the union-wide estimate from the reporting tables.

In the survey, the quantitative question on the FTE involved was poorly responded (3 ANSPs, 3 NSAs). Where the NSA part can be covered via the reporting requirements (see previous bullet), the ANSP part needs to be estimated by the study team. We might need to have a follow-up interview with 1-2 ANSPs for validation. Similarly we will estimate the effort for airspace users and validate that with the representing organisations we have interviewed.

Efficiency

10. Could the same results have been achieved with a system that is less complex and requires less intervention (less data, etc), thus at lower costs?

What did we set out to measure?

This question builds on the previous question 9 to identify whether, and to what extent, certain costs elements of the performance scheme could be reduced while achieving the same results as achieved under the schemes during the period 2012-2015. The question will examine the main cost elements of the system and the relationship to the output / effects achieved.

Indicators	**Sources**
• Main costs elements of the system (Question 9) • Outputs / effects of the system (Question 1)	• Same as Question 9 • Question 1
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Perceptions on the efficiency of system with respect to costs, in particular administrative burdens and enforcement costs • Opinions on alternative approaches / systems that could achieve the same results at lower costs	• Interviews with selected stakeholders (PRB, NSAs, ANSPs) • Targeted survey of ANSPs, NSAs, airspace users, PRB • Open public consultation survey

Methodological approach – steps taken

During the consultations we have addressed the issue of scope for cost reductions in primarily the survey and to a lesser extent the interviews. This has resulted in some valuable suggestions, especially in the area of duplication. This will be taken into the analysis phase and combined with the results of question 9, to focus on the largest cost elements of the system (i.e. data provisions, etc) to identify potential inefficiencies in the system in relation to output/effects. This will be validated with PRB.

Limitation / mitigation measures

None foreseen.

Relevance

11 Do the objectives of the scheme still correspond to the needs of the aviation sector and usefully supplement the EU aviation and transport policy in more general terms?

What do we want to measure?

The question is cascaded in two steps:

- How do the four performance areas in the scheme correspond to the current needs of the aviation sector? Did the needs/problems remain the same as before the implementation?
- How do the performance indicators in the scheme correspond to the performance areas?

The general needs of the aviation sector, in particular the users of the European en route airspaces, will be sketched on the basis of existing policies and analysis studies, taking not only the commercial interests into account but also the demands from society. The set of four performance areas is then compared to those needs in order to identity whether they correspond.

The consortium will further analyse whether the performance indicators within the SES performance and charging schemes sufficiently cover the four performance areas. (This analysis is also related to the questions 1 and 3 on effectiveness). As an example, the performance area environment is only covered by horizontal flight efficiency in the scheme, while the aviation industry also demands for continuous glide paths from top of descend onwards and for continuous clime profiles. As a second example, the performance area delay only takes into the en route delays, and not the other delays related to ATM.

Indicators	**Sources**
• Needs of the aviation sector, users and society; • Coverage of the indicators in the SES performance and charging schemes with respect to the performance areas. • Total Delay, costs, environmental impact and risks of flight within Europe; • Fraction of delay, costs, environmental impact and risks related to ATM service delivery within Europe	• EU aviation and transport policy; • Policies and missions statements of groups representing air space users; • European Air Traffic Management Master Plan; • Literature about ATM related performance areas and performance indicators (e.g. PRR reports).
Additional information for evaluation	**Sources**
• Opinions about the correspondence between the needs of the aviation sector and the four performance areas; • Opinions about the correspondence between the four performance areas and the indicators in the SES performance and charging schemes.	• Targeted Survey; • Open public consultation survey; • Interviews with stakeholders (selected ANSPs, NSAs); • Literature about ATM related performance areas and performance indicators (e.g. PRR reports).

Methodological approach – steps taken

For each of the four performance areas (capacity, environment, safety and cost efficiency), the trends within the KPIs have been collected as well as (see IR1):

- Total Delay, costs, environmental impact and risks of flight within Europe;
- Fraction of delay, costs, environmental impact and risks related to ATM

service delivery within Europe

Views from the airspace users have been collected through interviews (see IR2) and the surveys (targeted and OPC) (see IR2). The next step is, that these two are matched to see to what extend they correspond, what is missing, or what limitations or deficiencies there are in the system. In IR2 an initial analysis has been made. This analysis has to be finalised.

Limitations / mitigating measures

None foreseen.

Coherence

12 Are the SES performance and charging schemes coherent in that all procedures included in this legislation contribute consistently to improve the overall performance of air navigation services and network functions?

What did we set out to measure?

It is verified whether there are any missing or counter-productive elements or processes in the legislation of the schemes and the way the schemes work in practice.

Indicators	**Indicators**
• The over-all effectiveness of the schemes; • The obstructions for the schemes to have positive impacts •	• The over-all effectiveness of the schemes; • The obstructions for the schemes to have positive impacts •
Additional information for evaluation	**Additional information for evaluation**
• Number of significant efforts to circumvent any inconsistencies, omissions or incoherence; • Factors hindering achievements in the KPAs.	• Number of significant efforts to circumvent any inconsistencies, omissions or incoherence; • Factors hindering achievements in the KPAs.

Methodological approach– steps taken

The overall coherence of the procedures is considered in terms of the Demming cycle of Plan-Do-Check-Act. Each of the steps in this process is analyzed, including the role of the relevant actors, such as EU, EASA, PRB, NSAs, Ministries and ANPSs. It is verified whether all sub-processes are in place and working consistently on paper; that is: whether the processes, the responsibilities and the checks are defined and addressed. Questions concerning the coherence and consistency of the processes in practice are turned into the search for any signs of incoherence, omissions or inconsistency in the schemes, legislation or procedures. Representatives of all stakeholders are asked to identify such signs. It is concluded on the basis of the answers that these signs exist but, at the same time, are already known and addressed, although not necessarily solved. There was therefore no need for searching for factual evidence for yet unknown signs.

Limitations / mitigation measures

The missing or counter-productive elements or processes in the legislation of the schemes and the way the schemes work in practice are identified and characterised but are not analysed in detail, leave alone solved, as they are already addressed and discussed in meetings and proposals to the PRB, EASA, NSAs, probably in the most effective way, given the pro's and con's.

Coherence

13 Are the interdependencies of between the four key areas in the scheme sufficiently acknowledged and addressed, and if not, how could this be improved?

What did we set out to measure?

It is analysed to what extent the interdependencies are addressed and to what extent that is considered sufficient by national authorities and ANSPs. It is then analysed to what extent their complaints about this are rational, or just intrinsic to the difficulties of the need to perform well in different areas. Representatives of the ANSPs were also asked to suggest particular improvements, once they indicated an interdependency was not well addressed.

Indicators	**Sources**
• The overall development of the KPIs in the KPAs; • Opinions of stakeholders about the balance in the performance scheme; • Opinions of stakeholder about how the interdependency of the four key performance areas and in particular the (de-)incentive schemes are addressed.	• The PRB reports; • Interviews with selected stakeholders, in particular ANSPs; • Targeted survey; • General knowledge about how ANSPs balance different KPAs.
Additional information for evaluation	**Sources**
• The nature of investments and the related objectives of those investments; • Factors hindering achievements in the KPAs.	• Investment plans; • Performance assessments of SESAR Operational Improvements

Methodological approach– steps taken

The Air Navigation Service Provisioning is considered from a business administration point of view to determine the intrinsic interdependencies of the performance areas and to what extent this prevents setting isolated targets, including incentives. With the conclusions of this in mind, opinions and statements of stakeholders about the lack of acknowledgement of the interdependencies by the scheme are analysed. It then turns out that the main difficulty lies in a) the conflict between the need to invest in order to improve performance and the need to save costs and b) the conflict between the need to invest now in order to save costs on the long run.

Limitations / mitigation measures

None foreseen.

Coherence

14 Have all Member States and entities concerned implemented the SES performance scheme in a coherent and satisfactory manner?

What did we set out to measure?

It is identified to whether Member States and entities monitor and report on performance, establish incentive schemes and supervise performance achievements in the way they are supposed to do so in accordance to the legislation. It is analysed to whether this is in incoherent with the supervision on ANSP performance supervision organised nationally. It is analysed to what extent the implementation is considered satisfactory by AUs, the national authorities themselves and by the ANSPs.

Indicators	Sources
• To what extent targets are reached per Member State at the end of RP1; • To what extent performance is reported about, monitored and managed per Member State.	• Indications in Performance Review Reports (PRR); • EU347-2015 and EU348-2015;; • National policies (Performance Plans, State Programs, Action Plan, Network Strategy, et cetera); • Network Performance Plan.
Additional information for evaluation	**Sources**
• Opinions about the implementation of the schemes; • Factors hindering achievements in the KPAs.	• Interviews with selected stakeholders, in particular ANSPs; • Targeted survey.

Methodological approach– steps taken

A desk top search and the interviews led to a lot of information about the implementation of the SES performance scheme at national level. Omissions and inconsistent or unsatisfactory implementations are identified. It will be tried to identify structural underlying causes, to distinguish them from local, specific or coincidental causes.

Limitations / mitigation measures

Relevant aspects of the implementation within the Member States are the actions by national authorities in the event that the performance of ANSPs is insufficient. It is however hard to gain substantial evidence about the existence and the effectiveness of these actions as the time scales of such interactions are as long as the time scales of RP1 and the period between the end of RP1 and this study.

An analysis of the quality of the implementation in each individual Member State was considered beyond the scope of this study. Instead, implicit samples are taken by the open OPC, the voluntary Targeted Survey and only partially covering interviews.

Coherence

15 Are the provisions of EU 390-2013 and EU 391-2013, as well as the achievement of the performance and charging targets, coherent, complementary and not duplicating other (EU) initiatives with similar objectives?

What do we want to measure?

The "other EU initiatives with similar objectives" refer to the initiatives such as the introduction of the FABs, Network Manager, ATM Master Plan, SESAR common projects, PRB, EASA and more. These initiatives shall not be limited to EU initiatives, but could also include national and international initiatives. This set constitutes different services, functions, mechanisms, controls and means, with common, overlapping and complementary objectives, on different levels of tactical operations, strategy and policy.

The question on the coherency and complementariness can therefore not straightforwardly be answered. It is considered more efficient to try to refute the opposite. That is: are there any signs of incoherence or unnecessary duplications between the performance schemes (in a wide context, i.e., including implementation and oversight) at one hand at the other EU initiatives at the other hand? Such signs may appear from actual impossibilities to fulfil all requirements or from large efforts to circumvent any incoherence or inconsistency.

Indicators	**Sources**
• The amount of coherence between the initiatives and the provisions of EU 390-2013 and EU 391-2013, as well as the achievement of the performance and charging targets • Actual blockades of the improvement of the performance due to inconsistencies or incoherence with other EU initiatives • Efforts to circumvent any inconsistencies or incoherence with other EU initiatives.	• EU regulations; • Public documentation concerning the initiatives; • Interviews with employees working for EU, NSA, ANSPs, Network Manager with experience in the implementation and execution of the legislation; • Open public consultation survey;
Additional information for evaluation	**Sources**
• Opinions about the implementation of the schemes in the light of other EU initiatives	• Interviews with employees working for NSA, ANSPs and Network Manager

Methodological approach – steps taken

An inventory list of EU initiatives has been made. This list has been used for developing the questions for the survey and the interviews. Next, views from stakeholders have been through interviews (see IR2) and the surveys (targeted and OPC) (see IR2) on the coherence. The next steps are:

- The analysis of all results to see if there are any signs of non-coherence or if there are EU initiatives mentioned that have not been identified on the list of initiatives.
- Analyse the opinions about the implementation of the schemes in the light of other EU initiatives
- Making a detailed description of the most important initiatives, their objectives and how they cohere to the SES performance and charging scheme.

Limitations / mitigating measures

None.

EU Added Value

16. What is the additional value of the SES performance and charging scheme with target setting at Union-level compared to what could have been achieved by Member States at national and/or regional level? Would it have been possible to have the same results without the EU intervention (including PRB)?

What did we set out to measure?

The study activities to date aimed to collect data on the pre-RP1 situation (trends per KPA, only PRC but absence of PRB) to form a baseline for the development of ATM performance in Europe in the absence of a SES PCS. The effectiveness of PRB (see Q5), the effectiveness of each KPA (see Q1) are important in this analysis. There is also a link with the coherence aspects from Q12-15 as the SES PCS is one of the instruments of the SES policy to improve the performance of ATM.

Indicators	**Sources**
• Outputs / effects of the system (Question 1 results) • Effects of PRB (q5) • Trends on the KPIs prior to RP1 and compare with achievements during 2012-2015	• Desk research on the previously existing arrangements regarding ATM performance, both at EU level and Member State level • Same as Question 1, 5.
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Opinions and views on the contribution of the additional requirements to achieving targets and delivering benefits	• Open public consultation survey • Interviews with selected stakeholders (PRB, EASA, NSAs, ANSPs, airline associations) • Targeted survey

Methodological approach – steps taken

The trends and situation pre-RP1 have been reported in IR1.

The aspect of EU added value has been part of all three consultation approaches, with some differences of opinion that need to be weighted. The next step is to combine these elements and provide the final analysis. Major challenge is to weigh the differences in opinion.

Limitations / mitigation measures

No data limitations are foreseen. Possibly a challenge in exact attribution of effects to PCS compared to a situation without PCS, also due to some opposed views by stakeholders. This will be clearly stated in the report.

Sustainability

17. Will the effects last, in the medium or long term and over several reference periods or is there a risk that achievements in one reference period are taken away by less performance in a subsequent reference period?

What did we set out to measure?

Whether performance improvements are likely to be sustained between one period and another. For example, a sudden up-turn in traffic could create a strong argument for the delay target to be moderated. This could be caused by insufficient investment in capacity, either through forecasting/planning error or in trying to meet cost-efficiency goals.

Indicators	**Sources**
• None foreseen from an ex-post evaluation perspective	•
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Perceptions on the absolute vs relative impacts of targets and achievements and their sustainability	• Open public consultation survey; • Interviews with selected stakeholders (PRB, selected ANSPs and airline associations)

Methodological approach – steps taken

The surveys and interviews have gathered information on target setting, particularly on the problems of traffic volatility and the impact of alert thresholds. The concerns of stakeholders will be related to quantitative performance in the analysis phase and risks of trade-offs between periods estimated. This will then be discussed with the PRB/PRU to gain their insight.

Limitations / mitigation measures

From the feedback from stakeholders this issue may be difficult to separate from trade-offs between indicators, the subject of question 18. The two questions will therefore be analysed together and distinguished if possible.

Sustainability

18. Are there benefits shifted from one key performance area to another throughout a reference period or between reference periods (interdependencies)?

What do we want to measure?

Whether trade-offs between indicators have been made in performance plans, with a focus on any compensating effects, which could be between reference periods. For example, if ANSPs have deferred investment to meet cost-efficiency targets, creating impacts on capacity.

Indicators	**Sources**
• Performance targets set in NPPs, comparing between planned and actual performance, and how this translates to follow up planning targets	• Annual Performance Review Reports (PRR) • National/FAB Performance Plans (NPPs for RP1)
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Opinions on the interaction of, and trade-offs between KPAs and impacts on performance planning	• Interviews with selected stakeholders (PRB, selected ANSPs and airline associations) • Open public consultation survey and targeted surveys with NSAs and AUs

Methodological approach – steps taken

The study has sought stakeholder views on trade-offs or relations between indicators which has particularly identified delayed investment due to traffic volatility. This will be analysed with reference to how well performance indicators have been met. We will discuss these findings with the PRB/PRU.

Whilst the original intention was to look at issues between RP1 and RP2, it may be that deferred investments will have an impact towards the end of RP2 and into RP3. The issue may be best addressed as the risk of not meeting current or future targets, e.g. due to underinvestment. The way forward should be more apparent during the analysis phase.

Limitations / mitigation measures

No numerical estimates of trade-offs have been provided, such as capacity sacrifice for improved cost efficiency.

Acceptability

19 To what extent are the schemes accepted by stakeholders?

What do we want to measure?

The actual performance in the operations is delivered by the ATC service providers and the Network Manager and it is therefore important to identify their level of acceptance of the schemes, distinguishing non-acceptance, ineluctable pressure or internalisation (i.e., corresponding to the internal motivation that striving to the performance targeted is a good thing).

The level of acceptance by other stakeholder (as the other service providers, the Authorities, airspace users, airports, manufacturing industry, and professional staff representative bodies) is roughly indicated.

Indicators	Sources
• Level of acceptance by ATC service providers • Level of acceptance by other stakeholders.	• Policy documents of ATC service providers; • Interviews with employees working for EU, NSA, ANSPs, Network Manager with experience in the implementation and execution of the legislation; • As indirectly apparent from the answer to questions 1, 2, 13 and 14 • Open public consultation survey.

Methodological approach – steps taken

The level of acceptance by the ANSPs has been measured in terms of actions and in terms of culture (motivation of the organisation). Actions have been identified through interviews with ANSPs and Member States. Views on motivation of the ANSP have been identified through interviews with stakeholders other than ANSPs (Member States and airspace users) and are matched with views on motivation by the ANSPs themselves.

The level of acceptance by the ANSPs can be measured in terms of culture and in terms of actions. In terms of culture, it is noted that the motivation of service providers results mainly from the three: the intrinsic motivation of the organisation, the demands from clients (i.e., the airspace users) and the regulations and related oversight. In an ideal world, the SES performance schemes correspond entirely with all three of them (see also question 11), and then the schemes are not only accepted but also welcomed. In a less ideal world, the service providers adopt the schemes, as they understand that it is the best way to proceed, given the demands form airspace users and society. In an awkward world, the ATC service providers deny the schemes. The easiest way to find out is to ask representatives from the organisations.

The next step would be to compare the results obtained here and the results from questions 1, 2,13 and 14.

Limitations / mitigating measures

None foreseen.

Equity

20. How fairly are the different effects resulting from the introduction of the SES performance and charging schemes distributed across the different stakeholders and regions?

What did we set out to measure?

Identification of the distribution of effects (i.e. Question 1, achievement of performance targets and corresponding outputs) and of costs (Question 9) to identify the overall "winners and losers" of the SES performance and charging schemes relative to the objectives of Regulations. The assessment will examine:

Indicators	**Sources**
• Indicators from Q1, per region and per stakeholder group (ANSPS, Airspace users, passenger) • Indicators from Q9, per region and per stakeholder group	• Same as Question 1 and Question 9
Additional information for evaluation	**Sources**
-	-

Methodological approach – steps taken

The data has been collected or some last elements need to be collected / estimated (see Q1 and Q9). The next step is to attribute this to stakeholders and regions.

Limitations / mitigation measures

None foreseen.

Equity

21. What is the distributional effect between stakeholders of carry-overs (e.g. inflation adjustments, cost exempt from cost-sharing, traffic adjustments, etc. that are allowed under the SES charging scheme)?

What did we set out to measure?

This study sought to identify the different carry-overs in the study and the extent to which these have been applied. This will be taken to the analysis phase to estimate the distributional impact of such carry-overs (i.e. gains/losses with respect to charges paid by airspace users, profit margins of ANSPs, etc) for the relevant entities (i.e. ATSPs, other ANSPs, airspace users, etc) and how these are shared amongst the different groups.

Indicators	**Sources**
• Total inflation adjustment • Carry-overs resulting from the implementation of traffic risk-sharing • Carry-overs from the previous RP resulting from the implementation of cost risk-sharing • Restructuring costs • Over- or under-recoveries resulting from the modulation of *en-route* charges • Over- or under-recoveries resulting from traffic variations • Bonuses and penalties resulting from financial incentives (capacity, environment if applicable) • Costs exempted from cost sharing • Deductions for income from other revenues (e.g terminal unit rate arrangements)	• Same as Question 1.c.
Additional information for evaluation	**Sources**
Stakeholder input relating to: • Whether users bear more or less costs than before • Perceptions on the equity of distributional effects of carry-overs	• Interviews with selected stakeholders (ANSPs, airline associations) • Targeted survey • OPC Questionnaire

Methodological approach

The majority of these carry-overs have been reported in IR1. Few elements have not been included there, but are reported in the PRB monitoring reports. Additionally, the carry-over elements have been part of the targeted survey and to a lesser extent of the interviews. As such, both the actual use and the perception of stakeholder will be used during the analysis phase to estimate the impact of these on equity of the system.

Limitation / mitigation measures

The majority of factual information is already reported in IR1. Some elements missing, such a modulation. These are reported on in the monitoring reports of PRB and will be reported on in the draft final report.

Annex 3 Stakeholders Consulted

Interviews were conducted with the organisations listed in the table below.

Stakeholder Group	Organisation
EU Member States: NSAs and Ministries	NSA The Netherlands
	Ministry of Transport The Netherlands
	Civil Aviation Authority (CAA) (UK)
	Transportstyrelsen / Swedish Transport Agency (Sweden)
	Agencia Estatal de Seguridad Aérea (AESA) – Ministerio de Fomento (Spain)
	Urząd Lotnictwa Cywilnego (Poland NSA/CAA)
	Autoridade Nacional da Aviação Civil (ANAC) (Portugal)
	Bundesaufsichtsamt für Flugsicherung (BAF) (Germany)
	NSA Coordination Platform (NCP)
ANSPs	CANSO
	DFS Deutsche Flugsicherung (Germany)
	NATS (UK)
	DSNA (France)
	EANS (Estonia)
	ENAIRE (Spain)
Airlines	A4E (association)
	IACA
	SAS
	Wizz Air
Professional staff representative bodies	IFATCA
	ATCEUC
	ETF-ATM
	ATC-organisation of Bulgaria
Manufacturing Industry	ASD
PRB	-
EASA	-
PRU	3 mini workshops on data quality with different PRU representatives (and CRCO representatives)

Annex 4 Stakeholder Consultation Questionnaires

4.1 Open Public Consultation Questionnaire

Background information

The Performance Scheme is a key element of the Single European Sky (SES) initiative. The SES performance scheme, which was first introduced in 2009, sets Union-wide performance targets binding on Member States as of 2012 at local and regional level for fixed reference periods of 3 – 5 years in four key performance areas (KPAs): safety, environment (flight efficiency), capacity (delay) and cost-efficiency. The scheme aims to deliver better air navigation services (ANS), leading to more direct routes, fewer delays, and the saving of unnecessary costs for airspace users and passengers while maintaining or improving existing high levels of safety. The costs of ANS, including Eurocontrol costs and national oversight costs are paid by airspace users through user charges. The SES performance scheme is therefore closely linked to the SES charging scheme, which regulates the calculation of user charges on the basis of the cost-efficiency performance targets.

Under the performance scheme, Union-wide targets for the first reference period (RP1, from 2012 – 2014) and for the second reference period (RP2, 2015-2019) are listed in the table below:

KPA	RP1	RP2
Safety	No Union-wide targets on safety.	Union-wide targets are set at achieving high levels of effectiveness of safety management and full application of the severity classification based on the Risk Analysis Tool methodology by 2019.
Capacity	Reduction of the en route air traffic management delay to 0,5 minute per flight for the whole year 2014	Reduction of the en route air traffic management delay to 0,5 minutes per flight for each year
Environment	Reduction of -0,75% of the route extension in 2014 compared to 2009	Reduction of the average horizontal en route flight inefficiency for the last filed flight plan trajectory to 4,1% and for the actual trajectory to 2,6%
Cost-efficiency	Reduction of the average EU-wide determined unit cost for en route ANS from € 59,97 in 2011 to € 53,92 in 2014 (expressed in real terms per service unit), with intermediate annual values of € 57,88 in 2012 and € 55,87 in 2013.	Setting the average Union-wide determined unit cost for en route air navigation services as defined in point 4.1 (a) of section 1 of Annex I to Implementing Regulation (EU) No 390/2013, expressed in real terms EUR2009, of EUR 56.64 for 2015, EUR 54.95 for 2016, EUR 52.98 for 2017, EUR 51.00 for 2018, and EUR

KPA	RP1	RP2
		49.10 for 2019. This corresponds to an annual reduction of -3,3% in the determined unit cost of en-route ANS.

For the implementation of the SES performance scheme, the Commission is assisted by the Performance Review Body (PRB). The PRB produces regular reports, including on the annual monitoring of the performance achievements during the reference period.

Objectives of the Consultation

This open public consultation is part of the process to support the European Commission with an independent evaluation of the SES performance and charging schemes. In the frame of the present evaluation, a public consultation will ensure that all stakeholders (airspace user or relevant groups representing airspace users, air navigation service providers, professional staff representative bodies, manufacturing industry, airport operators or bodies acting on their behalf, National Supervisory Authorities, military authorities, etc.), as well as any interested citizen, have the opportunity to provide the Commission with their views and opinion on the implementation and continued policy relevance of the SES performance and charging schemes. The consultation also aims to gather factual information on what works well and what should be improved.

The scope of the public consultation will broadly cover:

- Relevance in relation to the identified problem(s) the regulations purport to address, the form of intervention and coverage
- EU added value compared to what could have been achieved in the absence of EU intervention (i.e. by Member States at the national and/or regional level).
- Effectiveness of the performance and charging schemes
- Efficiency in relation to the costs incurred and benefits achieved and/or expected

Inputs from this written consultation will be taken into account when preparing the final report of the ex-post evaluation support study, due in December 2016.

In addition to the public consultation, a more targeted and in-depth survey questionnaire will be launched in May 2016, which aims at covering the elements not addressed by the present consultation and the annual monitoring and review reports produced by the PRB. Respondents to the public consultation will be given the opportunity to indicate their interest to take part in this targeted survey consultation.

The outcome of the ex-post evaluation will contribute to the revision of the SES performance and charging schemes for the third reference period (RP3, 2020-2025).

Section A: Respondent Details

Please provide information to help us build your profile as a respondent. In accordance with Regulation 45/2001, all personal data collected through this survey will be kept securely and will ultimately be destroyed.

Please note that the questionnaire will only use your full contribution if your name, organisation (if you answer on behalf of an organisation or institution) and contact details are provided. If you choose to not provide your name, organisation and contact details, you have the option of submitting a general comment only.

If you do choose to provide us with your name, organisation and contact details, you can still opt for your answers to remain anonymous when results are published.

1. Are you answering as an individual or on behalf of an organisation/institution?

- ☐ In my private capacity as an individual
- ☐ On behalf of an organisation

1.a. Please let us know which organisation or association you represent.

1.b. Please enter your Registration ID number in the Transparency Register. If you are not registered and would like to do so, you may sign up on the Transparency Register web page.

2. What type of organisation are you representing?

- ☐ Airport operator
- ☐ Airport coordinator
- ☐ Airspace user
- ☐ Air Navigation Service Provider (ANSP)
- ☐ Manufacturing industry
- ☐ National Supervisory Authority (NSA)
- ☐ Ministry
- ☐ Functional Airspace Block (FAB) – ANSP side
- ☐ Functional Airspace Block (FAB) – NSA side
- ☐ Trade union / staff professional association
- ☐ NGO
- ☐ Academic Institution
- ☐ Military
- ☐ Other

2.a. (If other) Please specify:

3. Are you willing to provide your personal data (first name, last name, city, country, e-mail address)?

- ☐ Yes, I will provide my name and contact details
- ☐ No, I prefer to provide a general comment only

3.a. (If no) General comment:

3.b. (If yes) Please fill out the table below:

First name	
Last name	
Address	
City	
Country	
E-mail address	

4. Contributions received from this survey may be published on the European Commission's website, with the identity of the contributor. Do you agree to your contribution being published under your name?
Note that whatever option is chosen, your contribution may still be subject to requests for 'access to documents' under Regulation 1049/2001.

- ☐ My contribution may be published under the name indicated
- ☐ My contribution may be published but should be kept anonymous
- ☐ I do not wish any of my contributions to be published

5. May the Commission contact you, in case further details on the submitted information in this questionnaire are required?

- ☐ Yes
- ☐ No

6. Would you be interested to take part in a more targeted survey questionnaire as part of the consultation process in support of this study?

- ☐ Yes
- ☐ No

Please note that by answering yes to this question, you will receive a more targeted survey questionnaire to the e-mail address provided in response to Question 1.b.

Section B: Questionnaire

Relevance

1. Commission Implementing Regulation (EU) No 390/2013 ("the Performance Regulation") and Commission Implementing Regulation (EU) No 391/2013 ("the Charging Regulation") lay down the performance and charging schemes, respectively, for air navigation services (ANS) and network functions. The objective of the SES performance and charging schemes is to improve the performance of ANS and network functions, thus to deliver better (less delay), environmentally friendly (more direct routes) and more cost-effective ANS in the context of maintaining or improving current levels of safety.

1.a. Have you been aware that these two Regulations have been implemented?

- ☐ Yes
- ☐ No

1.b. In your opinion, do the objectives of the SES performance and charging schemes still correspond to current needs of the aviation sector and their passenger and freight customers?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know / No opinion

1.c. Please elaborate.

2. Do you consider the two Regulations to be the correct response to address the issues identified in Question 1b?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know / No opinion

2.a. Please elaborate.

3. Do you consider that national supervisory authorities are the right party/proxy for representing passenger/ freight customer interest?

- ☐ Yes
- ☐ Mostly
- ☐ Partially

☐ No
☐ Don't know / No opinion

3.a. Please elaborate.

European Added Value

4. Do you consider the SES performance and charging schemes to be useful in terms of improving ANS performance in your Member State, compared to what could be achieved by Member States at national and/or regional level?

☐ Yes
☐ Mostly
☐ Partially
☐ No
☐ Don't know / No opinion

4.a. Please elaborate

5. In your view, to what extent do the issues addressed by the SES performance and charging schemes to improve the performance of ANS and network functions, thus to deliver better (less delay), environmentally friendly (more direct routes) and more cost-effective ANS in the context of maintaining or improving current levels of safety) continue to require action at EU level?

☐ Yes, fully required
☐ Mostly required
☐ Partially required
☐ Not required
☐ Don't know / No opinion

5.a. Please elaborate

Objectives and Goals

SAFETY

6. For the period 2012-2014, no EU-wide performance targets were set in the key performance area (KPA) of safety; but rather only reporting requirements.

6.a. From your experience, were achievements in the KPA of safety during RP1 and the first year of RP2 higher or lower than you expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

6.b. Please elaborate.

6.c. Where expectations have not been met, what factors have hindered the achievement of your expectation in the safety KPA?
(Please indicate all those that apply by ticking the relevant box).

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Reduction in traffic levels
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

6.d. Please elaborate for each that apply.

ENVIRONMENT

7. Union-wide targets for the Environment KPA in RP1 foresaw a reduction of -0,75% (i.e. to 4,67%) of the en route extension in 2014 compared with 2009 (i.e. 5,42%) relating to the last file flight plan trajectory. The following table shows the target and achieved performance in horizontal route extension (measured as a percentage of the great circle distance (GCD)) at EU-level during RP1 and the first year of RP2.

	2012	2013	2014	2015
Target	-	-	4,67%	4,78%
Achieved performance	5,15%	5,11%	4,90%	4,84%

7.a. From your experience, were achievements in the KPA of Environment during RP1 higher or lower than you expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

7.b. Please elaborate.

7.c. Where expectations have not been met, what factors have hindered the achievement of the objectives in your Member State / by the entity that you represent?
(Please indicate all those that apply by ticking the relevant box).

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Reduction in traffic levels
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

7.d. Please elaborate for each that apply.

CAPACITY

8. Union-wide targets for the Capacity KPA in RP1 foresaw an improvement to 0,5 minute en-route ATFM delay per flight for the whole year by 2014; the same target is set for each calendar year of RP2. The following table shows the target and achieved performance in En-route ATFM delays (minutes per flight) at EU-level during RP1 and the first year of RP2.

	2012	2013	2014	2015
Target	-	-	0,50	0,50
Achieved performance	0,63	0,54	0,61	0,76

8.a. From your experience, were achievements in the KPA of Capacity during RP1 higher or lower than you expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

8.b. Please elaborate.

8.c. Where expectations have not been met, what factors have hindered the achievement of the objectives in your Member State / by the entity that you represent?

(Please indicate all those that apply by ticking the relevant box).

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Reduction in traffic levels
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

8.d. Please elaborate for each that apply.

COST-EFFICIENCY

9. Union-wide targets for the Cost-Efficiency KPA in RP1 foresaw a reduction of the average EU-wide determined unit cost for en route ANS from € 59,97 in 2011 to € 53,92 in 2014 (expressed in real terms per service unit, € 2009) and € 56,64 in 2015 (first year RP2). The following table shows the target and achieved performance in en-route unit costs (measured as en-route costs per service unit) during RP1 and the first year of RP2.

	2012	2013	2014	2015
Target (Union-wide)	€ 57,88	€ 55,87	€ 53,92	€ 56,64
Real en route unit costs before adjustments	€ 58,43	€ 56,55	€ 54,13	Not yet avail.

9.a. From your experience, were achievements in the KPA of Cost-Efficiency during RP1 higher or lower than you expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

9.b. Please elaborate.

9.c. Where expectations have not been met, what factors have hindered the achievement of the objectives in your Member State / by the entity that you represent?
(Please indicate all those that apply by ticking the relevant box).

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Reduction in traffic levels
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

9.d. Please elaborate for each that apply.

PERFORMANCE REVIEW BODY

10. Article 3(3) of the Performance Regulation sets out the duties and responsibilities of the Performance Review Body (PRB) to assist the European Commission in the implementation of the performance scheme as follows:

- Collection, examination, validation and dissemination of performance-related data;
- Definition or adaptation of KPAs, in line with those outlined in the air traffic management (ATM) Master Plan and related KPIs;
- Definition of appropriate KPIs covering the performance of the network functions and of air navigation services both in en route and terminal services, for all key performance areas;
- The setting and revisions of Union-wide performance targets; as well as the alert threshold(s) for activating the alert mechanisms;

- Consistency assessment of adopted performance plans as well as of the alert threshold(s) adopted with the European Union-wide alert threshold(s);
- Assessment of the revised performance targets and corrective measures implemented by Member States;
- Monitoring, benchmarking and review of the performance of air navigation services, including investment and capital expenditure at local and Union levels; and of the performance of the network functions
- Monitoring of the overall performance of the European air traffic management network, including the preparation of annual reports to the Single Sky Committee;
- Assessment of the achievement of the performance targets at the end of each reference period
- Assessment of the performance plan of the Network Manager
- Maintenance and support in the coordination of the stakeholder consultation calendar
- In particular, the PRB is tasked with the monitoring of performance achievements and providing advice to the Commission on the setting of Union-wide performance targets and on the assessment of performance plans.

10.a. Do you consider that the PRB carried out these tasks effectively?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know

10.b. Please elaborate.

10.c. What recommendations do you have to increase the effectiveness of the PRB in carrying out its tasks?

10.d. Do you consider that the PRB carried out its tasks in an independent manner?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know

10.e. Please elaborate.

10.f. What recommendations do you have to increase the independence of the PRB in carrying out its tasks?

HORIZONTAL ISSUES

11. Are you aware of any other positive (unintended) effects of the schemes that have not been mentioned above?

- ☐ Yes
- ☐ No
- ☐ Don't know

11.a. Please elaborate.

12. Are you aware of any other negative (unintended) effects of the schemes that have not been mentioned above?

- ☐ Yes
- ☐ No
- ☐ Don't know

12.a. Please elaborate.

Efficiency

13. Has the implementation of the SES schemes resulted in any cost savings / benefits in relation to any of the following aspects for the organisation(s) that you represent?
(Please indicate all those that apply by ticking the relevant box).

- ☐ Reduced fuel burn
- ☐ Time savings, as a result of better ANS service and fewer delays
- ☐ Cost savings related to reduced delays
- ☐ Reduced costs of noise
- ☐ Reduced aircraft operating costs (more efficient airline cost structure_
- ☐ Reduced cost base of ANSPs
- ☐ Improved air traffic safety
- ☐ None
- ☐ Other
- ☐ Don't know

Other types of cost savings /benefits (please indicate below).

13.a. Please elaborate for all that apply.

14. Do you believe that the cost savings/ benefits achieved (identified under Question 13above) during RP1 could have been achieved in the absence of the SES charging and performance regulation, including the EU-wide target setting for Member States / FABs?

- ☐ Yes
- ☐ No
- ☐ Don't know

14.a. If yes, please indicate the specific mechanisms and factors which were responsible for performance achievements.

Section C: Final Remarks

15. Please indicate any reports or other sources of information that provide evidence to support your responses. Please provide the title, author and, if available a hyperlink to the study/report.

16. Do you have any recommendations for what should be improved in the future of the performance and charging schemes? Please elaborate.

17. Do you have any further comments to make regarding the requirements and corresponding implementation of the SES charging and performance schemes during RP1 and the first year of RP2?

Thank you for participating in the survey.

Background Literature

Commission Implementing Regulation (EU) No 391/2013 of 3 May 2013 laying down a performance scheme for air navigation services and network functions http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:128:0001:0030:EN:PDF

Commission Implementing Regulation (EU) No 391/2013 of 3 May 2013 laying down a common charging scheme for air navigation services. Available http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:128:0031:0058:EN:PDF

All other SES legislation is available here: http://ec.europa.eu/transport/modes/air/single_european_sky/index_en.htm

PRB Reports: http://www.eusinglesky.eu/rp1-monitoring.html

Performance data (PRB Monitoring Dashboard): http://www.eusinglesky.eu/data-dashboard.html

4.2 Targeted Survey Questionnaire

NB: The study team developed four targeted surveys with a selection of more detailed questions for 4 distinct groups of stakeholders: (1) NSAs and Authorities, (2) ANPs, (3) Airspace Users and (4) Other actors. The "Other" category includes organisations and individuals representing airport operators / coordinators, trade unions and staff professional associations, the manufacturing industry, academia, NGOs and the Network Manager. In this Annex, we present the compiled list of questions included in each of the 4 surveys. At the beginning of each question, we denote in ***red, bold text*** *the specific stakeholder group(s) to which each question was formulated.*

Background of the Single European Sky Schemes

In 1998 the Performance Review Commission published the first annual Performance Review Reports about the performance of the air navigation service delivery. In 2009, the Single European Sky (SES) regulations adopted performance and charging schemes, which are still in further development. It currently covers 28 EU Member States plus Norway and Switzerland.

Four Key Performance Areas are distinguished:

- Safety;
- Capacity;
- Environment (or flight efficiency) and
- Cost efficiency (or unit costs).

Three Reference Periods (RPs) are distinguished:

- RP1: 2012- 2014;
- RP2: 2015-2019;
- RP3: 2019-2023.

There are Performance Indicators (PIs, without binding targets) and Key Performance Indicators (KPIs, with binding targets), depending on the RP. Targets for KPIs are set on European level and on Member State level. The table below lists the European-wide targets for the KPIs for RP1 and RP2.

KPA	RP1	RP2
Safety		Effectiveness of safety management Application of the aspects of Risk Analysis Tool by 2019.
Capacity	Reduction of the en route ATFM delay to 0,5 minute per flight for 2014	Reduction of the en route ATFM delay to 0,5 minutes per flight for each year
Environment	Reduction of 0,75% of the route extension in 2014 compared to 2009	Reduction of the average horizontal en route flight inefficiency for the last filed flight plan trajectory to 4,1% and for the actual trajectory to 2,6%
Cost-efficiency	Reduction of the average EU-wide determined unit cost for en route ANS from € 59,97 in 2011 to € 53,92 in 2014 with intermediate annual values of € 57,88 in 2012 and € 55,87 in 2013.	An annual reduction of -3,3% in the determined unit cost of en-route ANS.

Objectives of the Consultation

The EU tasked a consortium of Ecorys, NLR and Winsland to evaluate the SES performance and charging schemes. The assessment should include the schemes themselves, their effectiveness, the coherence, the efficiency, the acceptance, the relevance and the role of the Performance Review Body. One important way of gathering expert opinions and experience is this questionnaire.

Your input is highly appreciated, by the consortium, by the EU and by all who benefit from European air navigation services!

Section A: Respondent Details

1. Identification: Please provide the following information.

Name:	
Position or function:	
Organisation:	
Country:	
We may wish to obtain additional information or clarification concerning your answers to this questionnaire. If you are willing for us to contact you again, please provide your e-mail address and/or telephone number.	
E-mail address:	
Telephone:	

2. Organisation type: please indicate which of the below listed types best describe your organisation.

- ☐ Airport operator / coordinator
- ☐ Airspace user
- ☐ Air Navigation Service Provider (ANSP)
- ☐ National Supervisory Authority (NSA)
- ☐ Ministry
- ☐ Functional Airspace Block (FAB) – ANSP side
- ☐ Functional Airspace Block (FAB) – NSA side
- ☐ Manufacturing industry
- ☐ Trade union / staff professional association
- ☐ NGO
- ☐ Academic Institution
- ☐ Other

(If other) Please specify:

Section B: Questionnaire

Relevance and European Added Value

1. **[All]** To what extent does the SES performance and charging initiative cover the needs for European air navigation services?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know / No opinion

Please elaborate

2. **[All]** Which of the following statements would you consider (largely) true and (over-all) positive:
(Please check indicate all that apply)

- ☐ There is a trend towards more uniform and transparent reporting about ANSP performance;
- ☐ There is trend towards performance based management of ANSPs;
- ☐ The schemes gradually improve the performance of the air navigation services;
    - In the best way possible;
    - At a reasonable speed, given inevitable barriers;
    - Although not as fast as necessary;
- ☐ The schemes provoke an evidence-based, challenging relation between service providers on one hand and authorities on the other hand.

3. **[All]** What are, in your opinion, weak links in the whole set-up of the schemes:
(Please check indicate all that apply)

- ☐ There is too much influence from the ANSPs especially on the target-setting;
- ☐ There is too little influence from independent parties, e.g. EU, Performance Review Body (PRB), Network Manager (NM), EASA.
- ☐ The information gathering and processing is too complex
- ☐ The information gathering and processing is too vulnerable
- ☐ The information gathering and processing is too biased;
- ☐ The KPIs only cover limited parts of the whole performance;
- ☐ Authorities within Member States tend to favour high incomes and high autonomy for the ANSPs, which can come at the expense of low costs for the airspace users and the public;
- ☐ The (dis)incentives schemes are not sufficiently stimulating in practice;
- ☐ The ANSPs do not have the means to improve the performance that significant that fast.
- ☐ The schemes drive the design of the air navigation schemes away from cooperation across borders (i.e., national borders and civil-military border).
- ☐ The schemes incentivise "gaming" behaviour of certain stakeholders.
- ☐ Ultimately, the targets are set by the regulated entities.

Please elaborate

4. **[All]** Do you consider the charging and performance schemes to be useful in terms of improving ANS performance in your Member State, compared to what could have been achieved by Member States at national and/or regional level?

- ☐ Yes
- ☐ Mostly
- ☐ Partially

☐ No
☐ Don't know / No opinion

Please elaborate

Objectives and Goals

5. **[All]** ANSP actions (i.e., changes to the ATM functional system) are triggered by several motivators, such as

- customers satisfaction,
- pressure from society,
- own ambitions for sustainability and reputation,
- SES performance schemes,
- employee satisfaction, and
- financial considerations.

5.a. Some of these motivators overlap, some are partially counter-effective. From your experience, what fraction of the performance improvements in the years from 2012 onwards can be due to the schemes:

☐ More than the other forces; the schemes are the main push;
☐ A significant part; the schemes are one of the drivers
☐ A minor part; the schemes are only reassuring, legitimizing or enabling;
☐ A negative contribution; the schemes are counterproductive.

5.b. For which KPA have the schemes had the most impact to this point? Please rate these from 1 (most) to 4 (least).

☐ Safety
☐ Environment
☐ Capacity
☐ Cost efficiency.

5.c. For which of the KPAs do you expect the schemes will eventually have the most impact in the future? Please rate these from 1 (most) to 4 (least).

☐ Safety
☐ Environment
☐ Capacity
☐ Cost efficiency.

SAFETY

6. **[NSAs / ANSPs/ Airspace users]** The Performance Regulation (Commission Implementing Regulation (EU) No 390/2013, Annex I) laid out the following Key Performance Indicators (KPI) and Performance Indicators (PI) with monitoring requirements in the Key Performance Area (KPA) of safety in RP1:

- The minimum level of the Effectiveness of Safety Management (EoSM)
- The application of the severity classification scheme based on the Risk Analysis Tool (RAT) to the occurrences of three categories of occurrences:
  - Separation Minima Infringements (SMI),
  - Runway Incursions (RI), and
  - ATM-specific occurrences (ATM-S)
- Application of Just Culture (JC)

Observe that the EU-wide performance indicators were based on reporting requirements.

6.a. Were the KPIs in the KPA of safety appropriate to measure improvements in safety performance during RP1 and the first year of RP2?

	Very appropriate	Somewhat appropriate	Not appropriate enough	Not at all appropriate	Don't know
Minimum Level EoSM	☐	☐	☐	☐	☐
Application of RAT to SMI	☐	☐	☐	☐	☐
Application of RAT to RI	☐	☐	☐	☐	☐
Application of RAT to ATM-S	☐	☐	☐	☐	☐
Application of Just Culture	☐	☐	☐	☐	☐

Please elaborate

As stated, in the current situation the Risk Analysis Tool (RAT) is applied to the occurrences of SMI, RI and ATM-S. On this basis, occurrences are classified based on their severity. Another option for setting targets in reference to the SMI, RI and ATM-S occurrences would be to only look at the number of occurrences for these categories, without further classifying them according to their severity.

6.b. Would you be in favour of alternatively setting targets to the number of Separation Minima Infringements, Runway Incursions and ATM-specific occurrences, without a further classification with regard to severity?

- ☐ Yes
- ☐ Not at this moment
- ☐ No
- ☐ Don't know

6.c. If you think alternative KPIs or PIs could or should have been used to measure safety performance, please indicate these below with supporting rationale.

6.d. What has been the impact of the SES Performance Scheme during RP1 on the actual level of safety?

- ☐ It significantly improved the actual level of safety
- ☐ It somewhat improved the actual level of safety
- ☐ It had no (significant) impact on the actual level of safety
- ☐ It worsened the actual level of safety
- ☐ Don't know

6.e. Which factors hindered the improvement of the actual level of safety? *(Please indicate all those that apply by ticking the relevant box).*

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Traffic downturn
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

Please elaborate for each that apply.

ENVIRONMENT

7. **[NSAs / ANSPs/ Airspace users]** The Performance Regulation (EU 390/2013, Annex I) laid out the following KPIs and PIs in the KPA of environment in RP1:

- Horizontal en route flight efficiency of last filed flight plan trajectory (KEP) (average);
- Horizontal en route flight efficiency of the actual trajectory (average);
- Effectiveness of booking procedures for flexible use of airspace (FUA);
- Utilisation of Conditional Routes (CDRs)

7.a. Did the (key) performance indicators in the KPA of environment prove appropriate to improving environment performance during RP1 and the first year of RP2?

	Very appropriate	Somewhat appropriate	Not appropriate enough	Not at all appropriate	Don't know
Horizontal efficiency – last filed (KEP)	☐	☐	☐	☐	☐
Horizontal efficiency – actual trajectory	☐	☐	☐	☐	☐
Effectiveness of FUA	☐	☐	☐	☐	☐
Utilisation of CDRs	☐	☐	☐	☐	☐

Please elaborate

7.b. If you think alternative KPIs or PIs could or should have been used to measure environment performance, please indicate these below with supporting rationale.

8. The following table shows the target and achieved performance in horizontal route extension (measured as a percentage of the great circle distance (GCD)) at EU-level during RP1 and the first year of RP2.

	2012	2013	2014	2015
Target	-	-	4,67%	4,78%
Achieved performance	5,15%	5,11%	4,90%	4,84%

8.a. From your experience, were achievements in the KPA of Environment during RP1 and the first year of RP2 higher or lower than expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

8.b. Where expectations have not been met, what factors have hindered the achievement of the objectives in your Member State / by the entity that you represent?
(Please indicate all those that apply by ticking the relevant box).

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Traffic downturn
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

Please elaborate for each that apply.

8.c. What has been the impact of the SES Performance Scheme during RP1 on the actual environment?

- ☐ It significantly improved the environment
- ☐ It somewhat improved the actual environment
- ☐ It had no (significant) impact on the actual environment
- ☐ It worsened the actual environment
- ☐ Don't know

CAPACITY

9. **[NSAs / ANSPs/ Airspace users / Other (NM)]** The Performance Regulation (EU 390/2013, Annex I) laid out the following KPIs and PIs in the KPA of capacity in RP1 and the first year of RP2:

- Minutes of en route ATFM delay per flight (attributable to ANS)
- Minutes of arrival ATFM delay per flight (attributable to terminal and airport ANS and caused by landing restrictions at the destination airport)
- Additional time in taxi-out phase **[Local level]**
- Additional time in arriving sequencing and metering area (ASMA) **[Local level]**

9.a. Were the (key) performance indicators in the KPA of Capacity appropriate to measure and target improvement in capacity performance during RP1 and the first year of RP2?

	Very appropriate	Somewhat appropriate	Not appropriate enough	Not at all appropriate	Don't know
Enroute ATFM delay per flight	☐	☐	☐	☐	☐
Arrival ATFM delay per flight	☐	☐	☐	☐	☐
Additional time in taxi-out	☐	☐	☐	☐	☐
Additional time in ASMA	☐	☐	☐	☐	☐

Please elaborate

9.b. If you think alternative KPIs or PIs could or should have been used to measure capacity performance, please indicate these below with supporting rationale.

10. Union-wide targets for the Capacity KPA in RP1 foresaw an improvement to 0,5 minute en-route ATFM delay per flight for the whole year by 2014; the same target is set for each calendar year of RP2. The following table shows the target and achieved performance in en-route ATFM delays (minutes per flight) at EU-level during RP1 and the first year of RP2.

	2012	2013	2014	2015
Target	-	-	0,50	0,50
Achieved performance	0,63	0,54	0,61	0,76

10.a. From your experience, were achievements in the KPA of Capacity during RP1 and the first year of RP2 higher or lower than expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

10.b. Where expectations have not been met, what factors have hindered the achievement of the objectives in your Member State / by the entity that you represent?

(Please indicate all those that apply by ticking the relevant box).

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Traffic downturn
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

Please elaborate for each that apply.

10.c. What has been the impact of the SES Performance Scheme during RP1 on the actual level of capacity?

- ☐ It significantly improved the actual level of capacity
- ☐ It somewhat improved the actual level of capacity
- ☐ It had no (significant) impact on the actual level of capacity
- ☐ It worsened the actual level of capacity
- ☐ Don't know

COST-EFFICIENCY

11. **[NSAs / ANSPs/ Airspace users]** The Performance Regulation (EU 390/2013, Annex I) laid out the following KPIs and PIs in the KPA of cost-efficiency in RP1 and the first year of RP2:

- Union-wide determined unit costs (DUC) for en route ANS
- Union-wide determined unit costs (DUC) for terminal ANS (TANS)
- Costs of Eurocontrol compared to evolution of the KPI on en route ANS

11.a. Were the (key) performance indicators in the KPA of Cost-Efficiency appropriate to measure and target improvements in cost-efficiency performance during RP1 and the first year of RP2?

	Very appropriate	Somewhat appropriate	Not appropriate enough	Not at all appropriate	Don't know
DUC for enroute ANS	☐	☐	☐	☐	☐
DUC for TANS	☐	☐	☐	☐	☐
Eurocontrol costs	☐	☐	☐	☐	☐

Please elaborate

11.b. If you think alternative KPIs or PIs could or should have been used to measure cost-efficiency performance, please indicate these below with supporting rationale.

12. **[NSAs / ANSPs/ Airspace users]** Union-wide targets for the Cost-Efficiency KPA in RP1 foresaw a reduction of the average EU-wide determined unit cost for en route ANS from € 59,97 in 2011 to € 53,92 in 2014 and € 56,64 in 2015 (first year RP2) (expressed in real terms per service unit, € 2009). The following table shows the target and achieved performance in en route unit costs (measured as en route costs per service unit) during RP1 and the first year of RP2.

	2012	2013	2014	2015
Target (Union-wide)	€ 57,88	€ 55,87	€ 53,92	€ 56,64
Achieved performance	€ 58,43	€ 56,55	€ 54,13	Not yet avail.

12.a. From your experience, were achievements in the KPA of Cost-Efficiency during RP1 and the first year of RP2 higher or lower than expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

12.b. Where expectations have not been met, what factors have hindered the achievement of the objectives in your Member State / by the entity that you represent?
(Please indicate all those that apply by ticking the relevant box).

- ☐ Lack of political support
- ☐ Institutional constraints
- ☐ Regulatory constraints
- ☐ Financial limitations
- ☐ Economic climate
- ☐ Old technology
- ☐ Traffic downturn
- ☐ Interdependencies with other KPAs
- ☐ Insufficient FAB-level performance
- ☐ Fragmentation of ANS
- ☐ Social and labour issues
- ☐ Other

Please elaborate for each that apply.

12.c. What has been the impact of the SES Performance Scheme during RP1 on the actual cost-efficiency?

- ☐ It significantly improved cost-efficiency
- ☐ It somewhat improved cost-efficiency
- ☐ It had no (significant) impact on cost-efficiency
- ☐ It worsened the actual cost-efficiency
- ☐ Don't know

13. **[NSAs / ANSPs]** Are you aware of costs being shifted between en-route activities and terminal activities?

- ☐ Yes
- ☐ No

13.a. If yes, can you provide an estimation of the magnitude of such shifts?

14. **[Airspace Users]** Has the Performance Scheme had the effect of increasing or reducing the charges to airspace users? Can you provide an estimate of the order of magnitude of this change?

- ☐ Charges to airspace users have increased
- ☐ Charges to airspace users have decreased
- ☐ Charges to airspace users have neither increased nor decreased

14.a. Can you provide an estimate of the order of magnitude of this change (if applicable)?

14.b. If charges / costs have increased, what factors have contributed to higher user charges / costs?

15. **[NSAs]** Do you have sufficient oversight capabilities to fully monitor and enforce the implementation of cost-efficiency planning requirements?

- ☐ Yes
- ☐ Partially
- ☐ Not at all
- ☐ Don't know

Please elaborate

INVESTMENT

16. **[ANSPs]** Under the Performance Regulation, Member States are required to report on actual capital expenditures investments carried out against the RP1 adopted performance plans.

16.a. From your experience, were capital expenditures higher or lower than expected?

- ☐ Higher than expected
- ☐ In line with expectations
- ☐ Lower than expected
- ☐ Don't know

16.b. Where expectations have not been met, what factors have hindered actual capital expenditures / investments during RP 1/ first year of RP2?

16.c. What was the most significant investment that was implemented by your ANSP during RP1 and how did this contribute to achieving performance targets / objectives? Please indicate the affected KPAs.

17. **[NSAs / ANSPs]** In your view, has unspent capital expenditure been appropriately dealt with in the context of RP2 planning?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know

17.a. If not, how could unspent capital expenditure been better dealt with in the frame of RP2 planning?

18. **[NSAs / ANSPs]** Does the current target setting process address long-term investments sufficiently?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know

INCENTIVES

19. **[NSAs / ANSPs]** The Performance Regulation (EU 390/2013) and the Charging Regulation (EU 391/2013) set out the regulatory framework for

incentives and penalties with the objective to ensure that the performance targets would be met as follows:

- **KPA Safety:** Financial incentives are prohibited.
- **KPA Environment:** Incentive is optional, however the nature of incentive may be financial or otherwise (such as corrective action plans with deadlines and associated measures).
- **KPA Capacity:** A financial incentive is mandatory, and may be complemented with incentives of another nature (such as corrective action plans with deadlines).
- **KPA Cost-efficiency:** Financial incentives are built into the "determined costs" principle and the traffic and costs risk-sharing mechanisms of the charging Regulation.

19.a. Did your state make use of the possible (additional) incentive mechanisms provided for in the Regulations during RP1?

☐ Yes, for the Environment KPA
☐ Yes, for the Capacity KPA
☐ Yes, for both the Environment and Capacity KPAs
☐ No

19.b. If yes, what has been the effect on performance? Please elaborate for all additional incentive mechanisms applied.

20. **[All]** To which extent do you believe that incentive mechanisms addressed to the environment, capacity and cost-efficiency KPAs, respectively, have been an effective instrument for incentivising performance?

	Very effective	Mostly effective	Partially effective	Not at all effective	Don't know / No opinion
Environment Incentives	☐	☐	☐	☐	☐
Capacity Incentives	☐	☐	☐	☐	☐
Cost-efficiency Incentives	☐	☐	☐	☐	☐

Why or why not? Please elaborate.

PERFORMANCE REVIEW BODY

21. **[All]** Article 3(3) of the Performance Regulation sets out the duties and responsibilities of the Performance Review Body (PRB) to assist the European Commission in the implementation of the performance scheme as shown in the following table. Do you believe that the PRB carried out these tasks effectively?

	Very effective	Mostly effective	Partially effective	Not at all effective	No opinion
Collection, examination, validation and dissemination of performance-related data	☐	☐	☐	☐	☐
Definition or adaptation of KPAs, in line with those outlined in the air traffic management (ATM) Master Plan and related KPIs	☐	☐	☐	☐	☐
Definition of appropriate KPIs covering the performance of the network functions and of ANS for all key performance areas	☐	☐	☐	☐	☐
The setting and revising of Union-wide performance targets and alert threshold(s) for activating the alert mechanisms	☐	☐	☐	☐	☐
Consistency assessment of adopted performance plans and of the alert threshold(s)	☐	☐	☐	☐	☐
Assessment of the revised performance targets and corrective measures implemented by Member States	☐	☐	☐	☐	☐
Monitoring, benchmarking and review of the performance of ANS, including investment and CAPEX at local and Union levels; and of the performance of the network functions	☐	☐	☐	☐	☐
Monitoring of the overall performance of the European ATM network, including annual reports to the Single Sky Committee	☐	☐	☐	☐	☐
Assessment of the achievement of the performance targets at the end of each RP	☐	☐	☐	☐	☐
Assessment of the performance plan of the Network Manager	☐	☐	☐	☐	☐
Maintenance and support in coordinating the stakeholder consultation calendar	☐	☐	☐	☐	☐

21.a. Please elaborate.

21.b. What recommendations do you have to increase the effectiveness of the PRB in carrying out its tasks?

21.c. Do you consider that the PRB carried out its tasks in an independent manner?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don’t know

21.d. Please elaborate.

HORIZONTAL ISSUES

22. **[NSAs / ANSPs / Airspace Users]** Are the resources and expertise available to you (e.g. number of staff, qualifications of staff) sufficient to implement the performance scheme?

- ☐ Yes
- ☐ Mostly
- ☐ Partially
- ☐ No
- ☐ Don't know

22.a. If not, where do you experience shortages and in what capacity?

23. **[NSAs / ANSPs]** Are you aware of (and/or have you participated in) cooperative initiatives and actions at the national / FAB / EU level to support implementation of the performance scheme (e.g. pooling expertise on performance aspects at FAB level, NSA working groups, etc) ?

- ☐ Yes
- ☐ No
- ☐ Don't know

23.a. If yes, in which expertise areas do you participate and what forms of participation? Or why do you not participate?

24. **[All]** Are you aware of any other positive (unintended) effects of the schemes that have not been mentioned above?

- ☐ Yes
- ☐ No
- ☐ Don't know

Please elaborate.

25. **[All]** Are you aware of any other negative (unintended) effects of the schemes that have not been mentioned above?

- ☐ Yes
- ☐ No
- ☐ Don't know

Please elaborate.

Sustainability

26. **[ANSPs]** The objectives of the SES Performance Scheme in the Performance Regulation (390/2013) are to "contribute to the sustainable development of the air transport system by improving overall efficiency of the ANS across the KPAs of safety, environment, capacity and cost-efficiency, in consistency with those identified in the Performance Framework of the ATM Master Plan, all having regard to the overriding safety objectives." Achievements should therefore be sustainable:

- In the short-term (i.e. in the subsequent reference period)
- In the long-term (i.e. over several reference periods)

26.a. From your experience, were the achievements supported by the charging and performance schemes during RP1 sustainable in the next reference period (i.e. RP2), or is there a risk that achievements in RP1 will be undermined by reduced performance in RP2, in terms of:

	Fully sustainable	Partly sustainable	Not sustainable	Don't know / No opinion
Sustainability of safety levels	☐	☐	☐	☐
Sustainability of environmental achievements	☐	☐	☐	☐
Sustainability of service performance (less delays)	☐	☐	☐	☐
Sustainability of cost-efficiency achievements	☐	☐	☐	☐

26.b. What are the main contributing and/or hindering factors for sustainability of achievements in the next reference period (i.e. RP2, currently ongoing), per KPA?

26.c. From your experience, were the achievements supported by the charging and performance schemes during RP1 sustainable in the long-term (i.e. over several reference periods), or is there a risk that achievements in RP1 will be undermined by reduced performance in subsequent reference periods, in terms of:

	Fully sustainable	Partly sustainable	Not sustainable	Don't know / No opinion
Sustainability of safety levels	☐	☐	☐	☐
Sustainability of environmental achievements	☐	☐	☐	☐
Sustainability of service performance (less delays)	☐	☐	☐	☐
Sustainability of cost-efficiency achievements	☐	☐	☐	☐

26.d. What are the main contributing and/or hindering factors for sustainability of achievements in the long-term (i.e. after RP2), per KPA?

Efficiency

27. **[All]** To what extent do you agree that the outputs and effects of the charging and performance scheme (i.e. achievement of the objectives as identified under Questions 6-12), have been obtained cost-effectively?

- ☐ Outputs and effects have been obtained very cost efficient
- ☐ Outputs and effects have been obtained somewhat cost efficient
- ☐ Outputs and effects have been obtained somewhat cost-inefficient
- ☐ Outputs and effects have been obtained very cost-inefficient

Why or why not? Please elaborate.

28. **[NSAs / ANSPs / Airspace users]** Can you provide an estimation among the following cost categories of the costs which you have incurred resulting from the implementation of the Performance and Charging Schemes?

	Estimate (FTE or EUR)
Administrative costs **(NSA, ANSP, Users)** *costs related to reporting, record-keeping, etc*	
Compliance costs **(NSA, ANSP, Users)** *one off costs from restructuring, costs of drawing up performance plans ; on-going compliance costs of data and information collection, validation of data, etc*	
Enforcement costs **(NSA)** *monitoring implementation of the PPs*	

Indirect regulatory costs **(NSA)**	

29. **[ANSPs]** Did the introduction of the performance and charging schemes lead to the duplication of any reporting efforts?

- ☐ Yes
- ☐ No

29.a. If yes, please explain.

30. **[NSAs / ANSPs]** From your experience, which of the following cost categories have the greatest scope for reductions?

- ☐ Administrative costs
- ☐ Compliance costs
- ☐ Enforcement costs
- ☐ Indirect regulatory costs

30.a. How could this be achieved?

31. **[ANSPs / Airspace Users / Other]** Has the implementation of the SES schemes resulted in any cost savings / benefits in relation to any of the following aspects for the organisation(s) that you represent?
(Please indicate all those that apply by ticking the relevant box).

- ☐ Reduced fuel burn
- ☐ Time savings, as a result of better ANS service and fewer delays
- ☐ Cost savings related to reduced delays
- ☐ Reduced costs of noise
- ☐ Reduced aircraft operating costs (more efficient airline cost structure_
- ☐ Reduced cost base of ANSPs
- ☐ Improved air traffic safety
- ☐ None
- ☐ Other
- ☐ Don't know

Other types of cost savings /benefits (please indicate below).

Please elaborate for all that apply.

32. **[ANSPs / Airspace Users / Other]** Do you believe that the cost savings/ benefits achieved (identified under Question 31 above) during RP1 could have been achieved in the absence of the SES charging and performance regulation, including the binding-EU-wide target setting for Member States / FABs?

- ☐ Yes
- ☐ No
- ☐ Don't know

32.a. If No, please indicate the specific mechanisms and factors which were responsible for performance achievements.. If yes, please indicate through which alternative specific mechanisms and factors performance achievements would have been reached.

33. **[ANSPs / Airspace Users]** The charging Regulation (Commission Implementing Regulation (EU) No 391/2013 allows for a number of adjustments, for example, for inflation, carry-over of legacy costs, traffic risk sharing, bonuses and penalties from incentive schemes and other revenues.

From your experience, have carry-overs been distributed equitably (i.e. distribution between ATSPs/ANSPs and airlines/users and geographic distribution, for example) across the system?
(Please indicate all those that apply by ticking the relevant box).

	Yes	Partly	No	Don't know / No opinion
Inflation adjustments	☐	☐	☐	☐
Traffic adjustments	☐	☐	☐	☐
Cost sharing	☐	☐	☐	☐
Costs exempt from cost sharing	☐	☐	☐	☐
Traffic risk sharing	☐	☐	☐	☐

Please elaborate for all that apply.

Coherence

34. **[All]** In your experience, have the interdependencies between the four key performance areas been sufficiently acknowledged and addressed in the context of implementing the schemes?

- ☐ Yes
- ☐ No
- ☐ Don't know

34.a. If yes, please identify how the interdependencies have been exploited to maximise the benefits / effects of the system.

34.b. If no, please indicate how this could be improved.

35. **[All]** The Commission Implementing Regulations (EU) 390/2013 and (EU) No 391/2013 lay out the provisions of the SES performance and charging schemes, respectively.

In your experience, are the requirements of the schemes, including the achievement of performance targets, complementary and not duplicating and/or undermining other SES initiatives with similar objectives (i.e. Functional Airspace Blocks, Network Manager, SESAR, military mechanisms and EASA)?

	Strongly complementary	Somewhat complementary	Redundant	Undermining	Don't know
FABs	☐	☐	☐	☐	☐
Network Manager	☐	☐	☐	☐	☐
SESAR	☐	☐	☐	☐	☐
Military mechanisms	☐	☐	☐	☐	☐
EASA	☐	☐	☐	☐	☐

35.a. Please elaborate specific issues, i.e. overlaps, trade-offs between conflicting objectives with other SES initiatives, or other inconsistencies, and to the extent possible, indicate the effects of the issue on performance objectives.

Section C: Final Remarks

36. **[All]** Please indicate any reports or other sources of information that provide evidence to support your responses. Please provide the title, author and, if available a hyperlink to the study/report.

37. **[All]** Do you have any further comments to make regarding the requirements and corresponding implementation of the SES charging and performance schemes during RP1 and the first year of RP2?

Thank you for participating in the survey.

Annex 5 Stakeholder Workshop Results

17 November 2016
Note: Speakers making the comment are throughout indicated in blue.

RELEVANCE, COHERENCE, ACCEPTABILITY

There was a strong discussion between airspace users and ANSPs on the report and the draft findings. A representative from the airspace users voiced their surprise and disappointment with the discussion paper that was sent in preparation of the stakeholder meeting. They feel the conclusions and points under discussion are self-evident and should no longer be argued over, in light of the RP1 figures.

A strong and robust regulation at European level is needed to address the monopoly situation. The PRB has already answered a lot of these questions and the way forward is clear. The focus should be more geared towards an assessment of the results, not of the appropriateness of having an economic regulation.

The representative from an ANSP representative responded, partly subscribing to the airspace user's views. He stressed that when you look around Europe, there are a number of ANSPs that have met their objectives and a number that have not. It is good to make this distinction. For this ANSP, it is important to note that they actually reduced their own costs by 25%, and were still able to deliver on safety as well as quality of service. This should be reflected in the messaging to the Commission.

Another ANSP representative responded on a more detailed level to the discussion paper. These points were made in particular: although defragmentation is not addressed in the scheme, this is not a problem as this is not what the SES Performance and Charging Scheme (SES PCS) is meant for. They further agrees safety should be seen in view of the concurring initiatives from e.g. EASA. On efficiency, they note that even as the KPI is for en-route, ANSPs do focus on gate-to-gate efficiency. But the discussion of imposing terminal targets disregards there is a lot of variation at the local level and that 80% of costs are en-route. Implementing a system for terminal costs would probably run foul of the EU's Better Regulation initiative.

ANSPs have issues with the interdependencies between the four KPAs of the SES PCS. The imposition of targets in a top-down fashion makes it impossible for them to relate to the needs of their customers, for example regarding delays and flight efficiency. There are fixed yard-sticks set for these indicators without an opportunity to take into account individual customer views. A very different approach is needed with regard to this target-setting.

A representative from the an NSA further added that although the scheme does not cover general aviation, it is a problem for them that it does not even cover minor commercial aviation. An example is helicopter med-evac

operations, which require the same amount of ANS work as an aircraft, but do not pay the same. Even if every actor behaved properly, this would represent a problem. In his view, defragmentation should have been a by-effect of the Regulation.

SAFETY KPA

In response to the presentation on safety EASA remarked that there is a rigorous safety assessment system in place, outside of the SES PCS. This was validated by an NSA respresentative: NSAs cover safety as part of their job, for airports, airlines and air navigation service providers. The whole line of safety management is well-covered by NSAs, and overlooked by EASA.

The representative from the air traffic controllers remarked that it is quite an old-fashioned approach to measuring safety to state that there is no causal relation established between the PIs and safety outcomes. Another approach is to measure daily things to check whether things are going well or not. At this moment, there is indeed no relation between the Safety PIs and the level of safety. We need different indicators for that.

EASA added that we are operating in a hyper-safe environment in Europe anyway. Other than literally going in and stopping an accident just before it happens, the only way to improve safety is to work with leading indicators (as they are doing now). This is the only way to deliver sufficiently robust results. An NSA representative added that there was already a system in place to control safety. With the SES PCS a more sophisticated system was implemented.

ENVIRONMENT KPA

The main point of discussion was the avoidance of certain airspaces by airlines, because of high ANS-costs. A representative from the airspace users strongly argued that this avoidance should act as a price-signal that drives ANSPs to adopt different behaviour. If these price-signals aren't driving behaviour, then apparently something in the system is missing. The whole aim of the Regulation is to improve the behaviour of ANSPs – which means in particular the pricing.

A representative from a union responded that it would be good to include the airlines in the Performance Schemes as they are the ones who are filing in the way they want and not in the environment's best interest.

The representative from the European Commission's DG MOVE responded. First of all, it's an issue of displacement of revenues for ANSPs, not of costs to airspace users. This is a well-known problem, and has been discussed with the Network Manager. The main issue is that airlines file a plan but then fly another route, whilst being charged according to the last filed flight plan. This results in problems with capacity, as investments are based on the filed flight plans and this capacity is not used.

The representative from the airline addressed these comments. He stressed that airspace users are not choosing the 'wrong' flights – they choose the most economic flight. We should note that, overall, the effect is minimal. This has been shown in the Network Manager simulations. The cost-displacement issue is a point that is blown out of proportion to hide inefficiencies on the part of other (non-airspace user) stakeholders. To fully address it, you'd need hundreds millions of investments which is not feasible.

The representative from the Network Manager responded that this is one example of a mismatch in the margins of the system. However, the relevant question is whether the charging scheme could be formulated in such a way that there is no negative side-effect on Environment

COST EFFICIENCY

An airspace user representative stressed that one essential thing to keep in mind is that everything is measured in EUR_{2009}, whereas airspace users all work in different currencies. The hedging / FX costs are not captured in the current scheme. The analysis should start with the nominal data. There is a currency risk that needs to be accounted for – and that risk is currently fully borne by airlines

There are also questions about the reference point of 2009: are we really improving the situation with regard to baseline? The final rate in nominal euros is still above that of 2012, even with 11% more traffic. One proof of gaming is the impressive increase in profits. Many states improved their performance, but the big 5 deteriorated their performance (and this is a big driver).

There is a huge protection of ANSPs through the traffic risk-sharing mechanism: a maximum of 4.4% of the burden falls on ANSPs. The point to make here is that airlines pay all the Return on Equity for the ANSPs, but also assume all the traffic risks. The missing investments are one of the essential elements that should be addressed in the conclusions and is missing from the analysis now. Finally, there should be coherence between the Commission and Member States

CANSO stated that referring to the true costs and using this to judge the Cost-efficiency KPA is not correct, as this is not the framework of the scheme. As it stands, the DUR is the measurement. One should not term this 'gaming' behaviour. Also, recent findings on 2015 from PRB should be included:

- Traffic has risen by about 2%
- Costs have gone down by about 2%
- DUC has gone down by 4% in 2015

An airline representative responded to this. On the gaming part it is important to note: when you see that in the first year of a Reference Period the plan is really high and then all the actuals are substantially lower, and with the second RP you see an extremely high plan and then actuals that are 10% lower, what else can you call it?

The system should be much simpler. What you have to take out is the inflation adjustment. It has been pushed through by the Member States / ANSPs because they want to get as much protection as possible. Furthermore, we should do away with the traffic risk-sharing, which would be easy to do if you adopt shorter Reference Periods. The resulting simpler system would make it much easier to address performance.

An ANSP representative stated that the slides of the presentation state that ANSPs have improved economic performance. At the same time, two years into RP2, we have 4 or 5 ANSPs/States that do not have an approved performance plan. These are bigger states. Therefore, the next Regulation should give more power to the Commission to solve these kinds of issues much quicker. It is a big concern for ANSPs that try to develop their performance plan, that actually increase their performance, who then see that some other (bigger) ANSPs do not act accordingly. That is of concern to them and of concern to the entire system.

An NSA representative remarked that one of the problems of the current system is the choice of KPI. It reflects a cost-base that is different from state to state and from service provider to service provider. The level of costs is influenced by dynamics not under the control of the ANSPs. So we should formulate the KPI so that everything not under ANSP control is taken out, such as pension costs. Even if the Commission chooses a parameter like the "true costs", not all elements are inside the control of the service provider.

CAPACITY

A representative from the airspace users reflected that the role of the Network Manager is currently missing, although this is key in the system. The more he is positioned in the network, the better. A large issue of underperformance is shortage of staff in the weekend, which is almost unbelievable. In the current situation, one actor is proposing something for the system, another is implementing, and yet another is checking. The coherence here should be improved

A representative from an ANSP commented that capacity relates to cost-efficiency. The team must realise that one size does not fit all. The intention of the performance scheme was to have the targets on FAB-level.

A union representative added that measuring capacity in delay is putting the whole concept upside down. It should measure how many aircrafts you put through a sector. You cannot compare ANSPs that move 90 aircraft per hour through a sector with ANSPs that move 30 aircraft per hour through a sector, simply based on the delay.

A representative from the airspace users expressed her support for everything mentioned by another airspace user. She stressed that what is needed is a gate-to-gate approach. This would help improve inefficiencies in all the KPAs.

Another representative from the Network Manager stated that in order to analyse the effectiveness of all the criteria, it should be established how much

can be improved in the different KPAs. This is currently missing. You set targets, improve partially, and then you should analyse whether targets were correctly set, and if you do not reach them why you do not do so. As Network Manager, they use additional measures in their work which are published monthly and yearly. This expresses the reasons for diverging performance. He mentioned the possibility for the study team to have a meeting.

A representative from an airport argued that the current system does not provide enough flexibility in Capacity-respect, as also stated in the report. This could be improved. At the same time, a lot has happened in FABEC / French ACCs. She was supported by another representative from the ANSPs. The current capacity framework is not perfect but works fine. Staff issues raised by the airspace user representative should be dealt with by ANSPs, but these are in the framework so ANSPs are penalized if they exceed the targets. A Gate-to-gate approach runs into many local issues.

The airspace user representative responded that managing capacity and putting people in place in the right times is the responsibility of ANSPs. There is no common understanding between the ANSP representative and the airspace users here. As it stands we have 28+2 incentive systems that are not managed by the Network Manager nor is it evaluated. All KPAs are trade-offs (also in relation to investments). The Network Manager has a role to play in reconciling these. If the investments are not being made, then something needs to happen. It is essential these issues are addressed for RP3. Furthermore, the gate-to-gate approach is important. We need to have the global picture, cutting costs up is an artificial measure.

PRB SET-UP

The airspace user representative elaborated that the PRB was put in a schizophrenic situation: on the one hand, it needs to supervise an economic Regulation on service providers, but on the other it needs to report back to those same states that are regulated. Therefore, we need a robust PRB. You can recognize that there has been an effective performance on their part, but that is given within the framework they are operating in. You need to look at the framework. Another airspace user representative added that the Commission should look not only to the role, but also to expanding the tasks of the PRB.

The ANSP representative replied that independence is a loaded term. We'll have an opportunity to improve the system from 2017 onwards. Let's look at how to improve given the context provided.

EFFICIENCY AND EQUITY

The airspace user representative mentioned that one benefit that is currently missing is the transparency that is starting to be built in the system, on which you can base rational discussions. It should be noted that all costs for ANSPs, NSAs, and the Network Manager are paid for by airspace users. The additional admin burden because we have 28+2 NSAs is quite substantial. The

monetisation of delay is very hard. It is noted that in the report of the study team, costs and benefits are expressed in nominal terms – which is preferred. Finally, when you see a massive increase in traffic in face of a massive recession, that raises some questions. In this case, 2011 is the wrong baseline, and you need to go back a bit further.

In response to a question of the study team, the ANSP representative replied that from the association level, it is very hard to say if the estimation of additional FTE due to the SES PCS is a correct estimation. For one of the ANSPs, it is corroborated: all the tasks including data cleaning etc. take up about 3.5 FTE. Another ANSP stated they have 1.5 – 2 people working on the scheme, but there is a lot of double reporting. A representative from an NSA added that they have 1.1 FTE dealing with the SES PCS.

One of the airspace users representatives argued that there are definitely possibilities to streamline the costs of the system. However, the alternative of no Economic Regulation would be much more expensive.

GENERAL (PRELIMINARY) CONCLUSIONS

The airspace users representative stressed that the SES PCS targets are considered (by airspace users at least) as the incentives. We are talking about a market structure where incentives do not play a role. Formally, there are incentives in the system. However, the penalties are lacking. Monopolies need to be regulated, not incentivised.

Annex 6 Findings of Desk Research

In this Annex we report on the main findings from the data collection and desk research activities (not including the stakeholder consultation data collection; see Annex 7 for these results). The following supporting data are presented in the remaining sub-chapters:

- Traffic evolution, forecasted versus realised (Annex 6.1)
- Return on Equity (Annex 6.2) Determined unit costs and calculations on the share of traffic and total costs (Annex 6.3)
- Evolution of en-route and terminal costs from 2012 to 2014 (Annex 6.4)
- Data from (Revised) Performance Plans 2015 (Annex 6.5)
- Analysis of CAPEX expenditures, planned versus spent (Annex 6.6)
- Overview of CAPEX expenditures per ANSP (Annex 6.7)

6.1 Traffic

Traffic higher than forecasted over RP1	
Malta	20.90%
Norway	13.41%
Bulgaria	11.32%
Cyprus	3.00%
Lithuania	1.47%
Hungary	1.06%
Romania	0.76%
Slovakia	0.51%
Latvia	0.48%

Traffic lower than forecasted over RP1	
Ireland	-1.66%
Netherlands	-1.85%
Poland	-2.58%
Belgium-Luxembourg	-2.63%
Czech Republic	-2.74%
France	-2.81%
Sweden	-2.87%
Portugal	-3.07%
Slovenia	-3.50%
Union-wide	*-4.87%*
Estonia	-5.13%
Denmark	-5.21%
Italy	-6.85%
Switzerland	-8.16%
Germany	-8.22%
United Kingdom	-8.38%
Greece	-9.64%

Traffic more than 10 per cent lower than forecasted over RP1	
Austria	-10.74%
Spain(continent)	-11.17%
Spain(Canarias)	-12.96%
Finland	-13.55%

Table 6.1 Analysis of flight service units, targets and realised

	2012		**Over/under performance**	**2013**		**Over/under performance**	**2014**		**Over/under performance**	RP1 years traffic was less than planned	**Average change in reference to target, 2012-2014**
	Target	Realised		Target	Realised		Target	Realised			
Union-wide	108,359,738	103,461,763	-4.52%	111,461,030	105,171,669	-5.64%	114,964,695	109,836,773	-4.46%	3	-4.87%
Austria	2,720,000	2,469,156	-9.22%	2,814,000	2,456,012	-12.72%	2,947,000	2,645,392	-10.23%	3	-10.73%
Bulgaria	1,966,102	2,020,149	2.75%	2,043,942	2,057,979	0.69%	2,117,995	2,743,606	29.54%	0	10.99%
Cyprus	1,305,000	1,303,262	-0.13%	1,320,000	1,326,579	0.50%	1,340,000	1,454,224	8.52%	1	2.96%
Czech Republic	2,351,760	2,304,641	-2.00%	2,419,960	2,374,021	-1.90%	2,499,820	2,393,408	-4.26%	3	-2.72%
Denmark	1,553,042	1,428,735	-8.00%	1,572,317	1,523,724	-3.09%	1,605,336	1,532,003	-4.57%	3	-5.22%
Sweden	3,209,000	3,126,197	-2.58%	3,302,000	3,208,684	-2.83%	3,393,000	3,284,841	-3.19%	3	-2.86%
Estonia	760,800	724,536	-4.77%	791,232	740,986	-6.35%	825,255	789,800	-4.30%	3	-5.14%
Belgium-Luxembour	2,283,649	2,231,537	-2.28%	2,349,875	2,277,014	-3.10%	2,422,721	2,362,038	-2.50%	3	-2.63%

	2012		Over/u	2013		Over/	2014		Over/	RP1	Average
g											
France	17,987,000	17,515,047	-2.62%	18,436,674	17,899,945	-2.91%	19,045,084	18,496,754	-2.88%	3	-2.80%
Germany	13,308,820	12,442,470	-6.51%	13,708,080	12,506,062	-8.77%	14,119,320	12,806,143	-9.30%	3	-8.19%
Netherlands	2,681,000	2,587,398	-3.49%	2,733,000	2,701,735	-1.14%	2,794,000	2,767,312	-0.96%	3	-1.86%
Switzerland	1,492,274	1,398,574	-6.28%	1,527,979	1,384,957	-9.36%	1,564,541	1,427,068	-8.79%	3	-8.14%
Finland	878,000	790,296	-9.99%	908,000	770,452	-15.15%	940,000	795,764	-15.34%	3	-13.49%
Greece	4,698,000	4,357,569	-7.25%	4,860,000	4,215,705	-13.26%	5,041,000	4,617,799	-8.40%	3	-9.63%
Hungary	2,122,692	2,023,649	-4.67%	2,154,532	2,101,186	-2.48%	2,186,850	2,407,742	10.10%	2	0.99%
Ireland	3,826,000	3,805,985	-0.52%	3,906,000	3,812,940	-2.38%	4,004,000	3,922,499	-2.04%	3	-1.65%
Italy	8,525,114	8,139,130	-4.53%	8,780,867	8,117,393	-7.56%	9,070,636	8,313,546	-8.35%	3	-6.81%
Latvia	701,000	707,109	0.87%	731,000	733,633	0.36%	765,000	766,861	0.24%	0	0.49%
Lithuania	431,858	429,631	-0.52%	448,700	450,551	0.41%	467,097	487,218	4.31%	1	1.40%
Malta	544,747	641,289	17.72%	588,338	735,327	24.98%	607,164	727,375	19.80%	0	20.83%
Norway	1,753,798	1,845,568	5.23%	1,797,642	2,050,929	14.09%	1,842,584	2,220,734	20.52%	0	13.28%
Poland	3,898,889	3,854,458	-1.14%	4,021,000	3,983,698	-0.93%	4,161,000	3,930,688	-5.54%	3	-2.53%
Portugal	2,950	2,782,	-5.70%	2,984,8	2,876,7	-3.62%	3,018,5	3,019,6	0.04%	2	-3.10%

	2012		Over/u	2013		Over/	2014		Over/	RP1	Average
	,581	280		08	53		36	11			
Romania	3,612,000	3,575,195	-1.02%	3,802,000	3,751,523	-1.33%	4,008,000	4,181,845	4.34%	2	0.66%
Slovakia	940,852	921,643	-2.04%	977,545	984,989	0.76%	1,017,625	1,044,343	2.63%	1	0.45%
Slovenia	426,792	425,205	-0.37%	441,730	411,103	-6.93%	473,976	459,206	-3.12%	3	-3.47%
Spain (continent)	9,400,616	8,443,969	-10.18%	9,626,232	8,447,044	-12.25%	9,857,260	8,767,769	-11.05%	3	-11.16%
Spain (Canarias)	1,705,420	1,559,207	-8.57%	1,746,350	1,515,812	-13.20%	1,795,248	1,491,781	-16.90%	3	-12.89%
United Kingdom	10,324,932	9,607,878	-6.94%	10,667,227	9,754,933	-8.55%	11,034,647	9,979,403	-9.56%	3	-8.35%

Source: PRB Annual Monitoring Reports, Ecorys

Number of countries that experienced, on average, a decrease in traffic over Reference Period 1: 19.[1]
Number of countries that experienced, on average an increase in traffic over Reference Period 1: 9

[1] Spain (Continental) and Spain (Canarias) have been counted as one country, as the direction was the same.

6.2 Return on Equity

Table 6.2 Return on Equity (in %), post-ex, pre-tax

	2012			2013			2014					
	Target	Achieved	Performance	Target	Achieved	Over/under performance	Target	Achieved	Over/under performance	Years RoE > target, 2012-2014	Performance in regard to target, 2012-2014	Change in RoE, 2012 – 2014
Union-wide	6.40 %	9.00%	40.63%	6.50 %	11.20 %	72.31%	6.40 %	11.80 %	84.38%	3	65.77%	31.11 %
Austria	4.50 %	12.29 %	173.11%	4.50 %	14.69 %	226.44%	4.50 %	22.32 %	396.00%	3	265.19 %	81.61 %
Bulgaria	7.00 %	13.09 %	87.00%	7.00 %	16.27 %	132.43%	7.00 %	9.00%	28.57%	3	82.67%	-31.25 %
Cyprus	6.05 %	8.85%	46.28%	6.06 %	10.19 %	68.15%	6.10 %	13.01 %	113.28%	3	75.90%	47.01 %
Czech Republic	7.04 %	10.00 %	42.05%	7.04 %	9.71%	37.93%	7.04 %	8.14%	15.63%	3	31.87%	-18.60 %
Denmark	5.00 %	8.60%	72.00%	5.00 %	15.40 %	208.00%	5.00 %	17.80 %	256.00%	3	178.67 %	106.98 %
Sweden	5.40 %	2.00%	-62.96%	5.40 %	6.30%	16.67%	5.40 %	-	n/a	1	-23.15%	215.00 %
Estonia	8.90 %	14.40 %	61.80%	8.90 %	12.20 %	37.08%	8.90 %	13.50 %	51.69%	3	50.19%	-6.25%
Belgium-Luxembourg	6.00 %	10.90 %	81.67%	5.30 %	4.30%	-18.87%	5.00 %	11.60 %	132.00%	2	64.93%	6.42%
France	8.00	18.50	131.25%	8.00	23.40	192.50%	8.00	11.10	38.75%	3	120.83	-

	2012			2013			2014					
	%	%		%	%		%	%			%	40.00 %
Germany	7.80 %	-1.60%	-120.51%	7.80 %	5.40%	-30.77%	7.80 %	3.30%	-57.69%	0	-69.66%	-306.25 %
Netherlands[2]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Switzerland	2.20 %	0.80%	-63.64%	2.20 %	7.50%	240.91%	2.20 %	8.10%	268.18%	2	148.48 %	912.50 %
Finland	5.90 %	0.40%	-93.22%	5.90 %	14.30 %	142.37%	5.90 %	2.70%	-54.24%	1	-1.69%	575.00 %
Greece	3.20 %	7.00%	118.75%	3.30 %	7.50%	127.27%	3.30 %	9.30%	181.82%	3	142.61 %	32.86 %
Hungary	10.50 %	23.20 %	120.95%	10.50 %	24.20 %	130.48%	10.50 %	44.00 %	319.05%	3	190.16 %	89.66 %
Ireland	9.80 %	18.20 %	85.71%	10.30 %	22.90 %	122.33%	10.50 %	25.20 %	140.00%	3	116.01 %	38.46 %
Italy	2.70 %	4.90%	81.48%	2.90 %	5.80%	100.00%	2.80 %	4.40%	57.14%	3	79.54%	-10.20 %
Latvia	6.90 %	7.80%	13.04%	5.80 %	9.70%	67.24%	5.00 %	8.60%	72.00%	3	50.76%	10.26 %
Lithuania	3.00 %	4.40%	46.67%	3.00 %	2.60%	-13.33%	3.00 %	7.40%	146.67%	2	60.00%	68.18 %
Malta	4.80 %	17.40 %	262.50%	7.60 %	5.90%	-22.37%	7.40 %	-19.40 %	-362.16%	1	-40.68%	-211.49 %
Norway	11.00 %	40.00 %	263.64%	11.00 %	-9.50%	-186.36%	11.00 %	1.80%	-83.64%	1	-2.12%	-95.50 %

[2] The Return on Equity calculations are not applicable for the Netherlands as the Dutch ANSP is fully debt-financed.

	2012			2013			2014					
Poland	3.50 %	10.50 %	200.00%	3.50 %	15.70 %	348.57%	0.30 %	-6.20%	-2166.67 %	2	-539.37 %	-159.05 %
Portugal	7.60 %	26.10 %	243.42%	7.60 %	27.30 %	259.21%	7.60 %	31.20 %	310.53%	3	271.05 %	19.54 %
Romania	8.00 %	-4.20%	-152.50%	8.00 %	6.70%	-16.25%	8.00 %	11.00 %	37.50%	1	-43.75%	-361.90 %
Slovakia	7.20 %	6.90%	-4.17%	7.60 %	10.90 %	43.42%	7.50 %	9.70%	29.33%	2	22.86%	40.58 %
Slovenia	6.90 %	21.70 %	214.49%	6.90 %	11.60 %	68.12%	6.90 %	8.00%	15.94%	3	99.52%	-63.13 %
Spain	11.30 %	14.90 %	31.86%	11.30 %	24.90 %	120.35%	11.40 %	21.50 %	88.60%	3	80.27%	44.30 %
United Kingdom	11.50 %	17.40 %	51.30%	11.50 %	9.70%	-15.65%	11.50 %	29.20 %	153.91%	2	63.19%	67.82 %

Source: PRB Annual Monitoring Reports, Ecorys

Countries with a Return on Equity that was larger than the target for Reference Period 1: 20
Countries with a Return on Equity that was smaller than the target for Reference Period 1: 7

6.3 *Determined Unit Costs*

Table 6.3 DUC for en-route ANS versus actual unit costs charged to users

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Union-wide	DUC for en-route ANS	€ 57.88	€ 58.43	€ 55.87	€ 56.55	€ 53.92	€ 54.13	-€ 4.30	-7.36%
	Actual unit costs incurred by airspace users (EUR2009)	n/a	€ 59.33	n/a	€ 58.34	n/a	€ 55.68	€ -3.65	-6.15%
Austria	DUC for en-route ANS (EUR2009)	€ 64.48	€ 66.17	€ 63.45	€ 66.37	€ 60.10	€ 60.31		
	Actual unit costs charged to users (EUR2009)		€ 64.51		€ 63.35		€ 65.41		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 69.29		€ 66.12	€ 1.62	2.51%
Bulgaria	DUC for en-route ANS (EUR2009)	€ 37.15	€ 33.68	€ 36.56	€ 32.21	€ 34.57	€ 27.05		
	Actual unit costs charged to users (EUR2009)	.	€ 33.38	.	€ 33.19	.	€ 34.71		
	Actual unit costs incurred by users (in that year, EUR2009)	.	.	.	€ 36.44	.	€ 27.53	-€ 5.84	-17.51%
Cyprus	DUC for en-route ANS (EUR2009)	€ 33.41	€ 33.57	€ 32.88	€ 32.27	€ 32.70	€ 30.06		
	Actual unit costs charged to users (EUR2009)		€ 34.29		€ 34.22		€ 35.08		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 33.26		€ 31.50	-€ 2.79	-8.14%

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Czech Republic	DUC for en-route ANS (EUR2009)	€ 41.72	€ 40.08	€ 41.31	€ 40.21	€ 40.80	€ 41.27		
	Actual unit costs charged to users (EUR2009)		€ 39.80		€ 40.40		€ 41.54		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 41.31		€ 41.50	€ 1.70	4.28%
Denmark	DUC for en-route ANS (EUR2009)	€ 63.15	€ 63.18	€ 63.28	€ 59.15	€ 61.30	€ 57.17		
	Actual unit costs charged to users (EUR2009)		€ 66.53		€ 68.11		€ 65.91		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 63.39		€ 61.33	-€ 5.20	-7.81%
Sweden	DUC for en-route ANS (EUR2009)	€ 56.20	€ 65.52	€ 54.26	€ 54.59	€ 51.98	€ 48.53		
	Actual unit costs charged to users (EUR2009)		€ 60.15		€ 60.04		€ 57.78		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 58.70		€ 45.04	-€ 15.11	-25.12%
Estonia	DUC for en-route ANS (EUR2009)	€ 20.31	€ 20.42	€ 19.78	€ 19.82	€ 19.84	€ 19.80		
	Actual unit costs charged to users (EUR2009)		€ 19.93		€ 19.63		€ 20.49		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 20.59		€ 20.11	€ 0.18	0.91%

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Belgium-Luxembourg	DUC for en-route ANS (EUR2009)	€ 67.86	€ 65.56	€ 65.47	€ 64.90	€ 63.21	€ 59.72		
	Actual unit costs charged to users (EUR2009)		€ 67.99		€ 61.79		€ 65.25		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 65.11		€ 63.41	-€ 4.58	-6.74%
France	DUC for en-route ANS (EUR2009)	€ 62.78	€ 61.27	€ 61.54	€ 60.09	€ 59.99	€ 59.27		
	Actual unit costs charged to users (EUR2009)		€ 60.61		€ 60.16		€ 60.84		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 61.81		€ 60.08	-€ 0.53	-0.87%
Germany	DUC for en-route ANS (EUR2009)	€ 71.42	€ 76.36	€ 69.81	€ 73.47	€ 67.81	€ 73.12		
	Actual unit costs charged to users (EUR2009)		€ 70.06		€ 71.10		€ 71.26		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 73.62		€ 72.17	€ 2.11	3.01%
The Netherlands	DUC for en-route ANS (EUR2009)	€ 58.86	€ 61.92	€ 57.47	€ 58.29	€ 56.84	€ 58.59		
	Actual unit costs charged to users (EUR2009)		€ 61.64		€ 59.87		€ 60.70		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 57.56		€ 57.96	-€ 3.67	-5.96%

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Switzerland	DUC for en-route ANS (EUR2009)	€ 71.68	€ 75.99	€ 71.10	€ 72.50	€ 71.04	€ 72.63		
	Actual unit costs charged to users (EUR2009)		€ 78.84		€ 78.76		€ 80.40		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 73.71		€ 74.82	-€ 4.02	-5.10%
Finland	DUC for en-route ANS (EUR2009)	€ 47.56	€ 51.57	€ 46.54	€ 51.29	€ 44.43	€ 49.66		
	Actual unit costs charged to users (EUR2009)		€ 46.13		€ 44.80		€ 46.44		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 52.04		€ 49.85	€ 3.72	8.07%
Greece	DUC for en-route ANS (EUR2009)	€ 32.55	€ 32.73	€ 31.36	€ 33.00	€ 30.02	€ 29.55		
	Actual unit costs charged to users (EUR2009)		€ 32.44		€ 31.24		€ 32.42		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 34.30		€ 31.02	-€ 1.42	-4.37%
Hungary	DUC for en-route ANS (EUR2009)	€ 38.74	€ 37.78	€ 39.44	€ 36.78	€ 38.40	€ 31.79		
	Actual unit costs charged to users (EUR2009)		€ 38.37		€ 37.26		€ 38.25		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 38.27		€ 34.34	-€ 4.03	-10.51%

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Ireland	DUC for en-route ANS (EUR2009)	€ 30.77	€ 28.48	€ 30.00	€ 27.26	€ 29.31	€ 25.59		
	Actual unit costs charged to users (EUR2009)		€ 29.64		€ 27.65		€ 29.93		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 30.12		€ 29.16	-€ 0.48	-1.61%
Italy	DUC for en-route ANS (EUR2009)	€ 71.38	€ 71.11	€ 69.13	€ 69.55	€ 66.78	€ 72.07		
	Actual unit costs charged to users (EUR2009)		€ 72.99		€ 72.06		€ 71.86		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 73.47		€ 71.38	-€ 1.61	-2.21%
Latvia	DUC for en-route ANS (EUR2009)	€ 28.43	€ 27.97	€ 27.34	€ 26.36	€ 26.64	€ 25.74		
	Actual unit costs charged to users (EUR2009)		€ 28.16		€ 27.35		€ 26.78		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 27.08		€ 26.29	-€ 1.87	-6.64%
Lithuania	DUC for en-route ANS (EUR2009)	€ 47.00	€ 45.84	€ 45.37	€ 45.59	€ 44.23	€ 41.49		
	Actual unit costs charged to users (EUR2009)		€ 43.70		€ 42.11		€ 41.54		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 44.94		€ 42.00	-€ 1.70	-3.88%

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Malta	DUC for en-route ANS (EUR2009)	€ 25.86	€ 20.62	€ 23.88	€ 20.07	€ 22.92	€ 22.09		
	Actual unit costs charged to users (EUR2009)		€ 25.69		€ 28.90		€ 25.15		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 19.85		€ 19.90	-€ 5.79	-22.54%
Norway	DUC for en-route ANS (EUR2009)	€ 55.34	€ 50.71	€ 53.58	€ 51.54	€ 51.18	€ 45.46		
	Actual unit costs charged to users (EUR2009)		€ 54.04		€ 46.77		€ 45.83		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 48.92		€ 44.46	-€ 9.59	-17.74%
Poland	DUC for en-route ANS (EUR2009)	€ 33.68	€ 31.81	€ 33.56	€ 30.20	€ 31.75	€ 34.99		
	Actual unit costs charged to users (EUR2009)		€ 32.47		€ 31.15		€ 30.53		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 32.53		€ 31.75	-€ 0.72	-2.21%
Portugal	DUC for en-route ANS (EUR2009)	€ 34.49	€ 39.29	€ 34.49	€ 35.06	€ 34.14	€ 32.71		
	Actual unit costs charged to users (EUR2009)		€ 30.48		€ 31.83		€ 35.80		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 36.96		€ 35.15	€ 4.67	15.31%

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Romania	DUC for en-route ANS (EUR2009)	€ 35.78	€ 40.44	€ 34.51	€ 35.02	€ 33.26	€ 32.16		
	Actual unit costs charged to users (EUR2009)		€ 36.45		€ 34.08		€ 32.83		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 34.53		€ 32.78	-€ 3.67	-10.06%
Slovakia	DUC for en-route ANS (EUR2009)	€ 56.51	€ 56.25	€ 55.45	€ 53.35	€ 53.12	€ 51.73		
	Actual unit costs charged to users (EUR2009)		€ 56.02		€ 55.10		€ 55.29		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 54.48		€ 52.33	-€ 3.68	-6.58%
Slovenia	DUC for en-route ANS (EUR2009)	€ 67.26	€ 61.36	€ 65.37	€ 65.83	€ 60.30	€ 59.95		
	Actual unit costs charged to users (EUR2009)		€ 66.41		€ 61.15		€ 61.72		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 67.96		€ 60.72	-€ 5.69	-8.57%
Spain (Continental)	DUC for en-route ANS (EUR2009)	€ 70.08	€ 73.08	€ 69.44	€ 67.63	€ 66.92	€ 63.83		
	Actual unit costs charged to users (EUR2009)		€ 66.57		€ 65.59		€ 65.71		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 77.26		€ 70.33	€ 3.76	5.64%

		2012		2013		2014		EUR2009 change, 2012 - 2014	Achieved percentage change, 2012 - 2014
		Target	Achieved	Target	Achieved	Target	Achieved		
Spain (Canarias)	DUC for en-route ANS (EUR2009)	€ 70.08	€ 73.08	€ 69.44	€ 67.63	€ 66.92	€ 63.83		
	Actual unit costs charged to users (EUR2009)		€ 54.21		€ 53.39		€ 53.50		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 62.00		€ 61.91	€ 7.70	14.21%
United Kingdom	DUC for en-route ANS (EUR2009)	€ 68.99	€ 69.34	€ 69.13	€ 73.25	€ 66.36	€ 65.19		
	Actual unit costs charged to users (EUR2009)		€ 70.14		€ 71.25		€ 68.44		
	Actual unit costs incurred by users (in that year, EUR2009)		.		€ 83.25		€ 72.49	€ 2.35	3.35%

6.3.1 Calculations for selected countries – share of traffic and total costs

Table 6.4 Daily En-route Service Units

	2012		2013		2014	
	planned	actual	planned	actual	planned	actual
EU	**108.776.000**	**103.501.763**	**111.605.000**	**105.171.670**	**114.610.000**	**109.836.771**
DE	13.308.820	12.442.470	13.708.080	12.506.062	14.119.320	12.806.143
EU share	12,24%	12,02%	12,28%	11,89%	12,32%	11,66%
UK	10.324.932	9.607.878	10.667.227	9.754.933	11.034.647	9.979.403
EU share	9,49%	9,28%	9,56%	9,28%	9,63%	9,09%
ES (Cont)	9.400.616	8.443.969	9.626.232	8.447.044	9.857.260	8.767.769
EU share	8,64%	8,16%	8,63%	8,03%	8,60%	7,98%
ES (Can)	1.705.420	1.559.207	1.746.350	1.515.812	1.795.248	1.491.781
EU share	1,57%	1,51%	1,56%	1,44%	1,57%	1,36%
Total	**31,94%**	**30,97%**	**32,03%**	**30,64%**	**32,11%**	**30,09%**

Table 6.5 Total en-route costs

	2012		2013		2014	
	planned	actual	planned	actual	planned	actual
EU	**6.258.122.341**	**6.047.812.097**	**6.318.609.442**	**5.947.919.729**	**6.304.761.101**	**5.945.539.166**
DE	950.552.096	950.149.542	956.959.866	918.853.308	957.495.395	936.388.826
EU share	*15,19%*	*15,71%*	*15,15%*	*15,45%*	*15,19%*	*15,75%*
UK	712.272.572	666.244.648	737.453.822	714.512.075	732.233.071	650.603.781
EU share	*11,38%*	*11,02%*	*11,67%*	*12,01%*	*11,61%*	*10,94%*
ES (Cont)	658.817.012	617.110.293	668.421.934	571.235.442	659.664.833	559.666.454
EU share	*10,53%*	*10,20%*	*10,58%*	*9,60%*	*10,46%*	*9,41%*
ES (Can)	104.849.562	103.217.433	103.977.695	97.656.608	102.035.656	95.440.753
EU share	*1,68%*	*1,71%*	*1,65%*	*1,64%*	*1,62%*	*1,61%*
Total	**38,77%**	**38,64%**	**39,04%**	**38,71%**	**38,88%**	**37,71%**

6.4 Evolution of en-route and terminal costs, 2012 – 2014

6.4.1 Union-level total costs data, 2009 - 2014

Table 6.6 Evolution of total en-route and terminal costs at Union-level, 2009-2014

	2009	2010	2011	2012		2013		2014	
Union-wide	Actual	Actual	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Total en-route costs	6,248,000,000	6,072,000,000	5,972,000,000	6,258,122,341	6,047,812,097	6,318,609,442	5,947,919,729	6,304,761,101	5,945,539,166
Total terminal costs	1,454,000,000	1,416,000,000	1,459,000,000	1,476,675,685	1,395,162,571	1,469,589,294	1,343,328,825	1,475,519,179	1,348,795,857
Total costs	8,094,000,000	7,878,000,000	7,914,000,000	7,734,798,026	7,442,974,668	7,788,198,736	7,291,248,554	7,780,280,280	7,294,335,023
Percentage terminal costs of total costs	17.96%	17.97%	18.44%	19.09%	18.74%	18.87%	18.42%	18.96%	18.49%
Total service units	98,000,000	100,000,000	105,000,000	108,776,000	103,501,763	111,605,000	105,171,670	114,610,000	109,836,771
Unit price	€63.70	€60.40	€56.90	€57.88	€58.43	€55.87	€56.55	€53.92	€54.13

6.4.2 Evolution of total en-route and terminal costs at national level, 2012 - 2014

Table 6.7 Evolution of total en-route and terminal costs at national level, 2012-2014

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Union-wide	Total en-route costs	6,258,122,341	6,047,812,097	6,318,609,442	5,947,919,729	6,304,761,101	5,945,539,166	
	Total terminal costs	1,476,675,685	1,395,162,571	1,469,589,294	1,343,328,825	1,475,519,179	1,348,795,857	
	Percentage terminal costs vis-à-vis total costs	19.09%	18.74%	18.87%	18.42%	18.96%	18.49%	-0.25%
Austria	Total en-route costs	175,389,738	163,382,797	178,548,762	162,993,728	177,105,559	159,544,503	
	Total terminal costs	38,584,916	33,873,071	39,768,366	35,347,438	39,631,963	32,978,083	
	Percentage terminal costs vis-à-vis total costs	18.03%	17.17%	18.22%	17.82%	18.29%	17.13%	-0.04%
Bulgaria	Total en-route costs	73,044,674	68,031,607	74,730,825	66,291,469	73,228,686	74,225,737	
	Total terminal costs	9,960,149	10,756,874	10,009,708	9,840,683	10,193,273	9,467,545	
	Percentage terminal costs vis-à-vis total costs	12.00%	13.65%	11.81%	12.93%	12.22%	11.31%	-2.34%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Cyprus	Total en-route costs	43,606,147	43,744,375	43,403,173	42,811,624	43,824,563	43,713,356	
	Total terminal costs	7,190,979	6,991,651	6,920,167	6,815,760	6,911,161	6,893,810	
	Percentage terminal costs vis-à-vis total costs	14.16%	13.78%	13.75%	13.73%	13.62%	13.62%	-0.16%
Czech Republic	Total en-route costs	2,591,793,272	2,617,061,700	2,640,413,951	2,742,724,750	2,694,140,585	2,849,274,443	
	Total terminal costs	20,865,138	18,717,609	21,013,861	18,353,328	21,178,633	18,513,604	
	Percentage terminal costs vis-à-vis total costs	0.80%	0.71%	0.79%	0.66%	0.78%	0.65%	-0.06%
Denmark	Total en-route costs	98,069,776	90,263,657	99,491,449	90,125,111	98,405,608	87,591,881	
	Total terminal costs	25,508,227	24,560,250	25,399,157	21,482,933	25,269,483	21,079,273	
	Percentage terminal costs vis-à-vis total costs	20.64%	21.39%	20.34%	19.25%	20.43%	19.40%	-1.99%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Sweden	Total en-route costs	180,354,005	204,833,128	179,172,360	175,165,752	176,362,168	159,404,054	
	Total terminal costs	19,413,902	21,388,541	19,466,910	18,281,515	19,447,741	14,198,032	
	Percentage terminal costs vis-à-vis total costs	9.72%	9.45%	9.80%	9.45%	9.93%	8.18%	-1.28%
Estonia	Total en-route costs	15,453,845	14,795,616	15,648,936	14,684,470	16,372,402	15,635,356	
	Total terminal costs	1,685,095	1,761,708	1,682,713	1,775,633	1,750,405	1,754,063	
	Percentage terminal costs vis-à-vis total costs	9.83%	10.64%	9.71%	10.79%	9.66%	10.09%	-0.55%
Belgium-Luxembourg	Total en-route costs	154,976,604	146,303,396	153,849,521	147,768,257	153,143,830	141,060,776	
	Total terminal costs	36,383,924	32,426,748	34,110,399	30,523,833	33,019,021	30,510,704	
	Percentage terminal costs vis-à-vis total costs	19.01%	18.14%	18.15%	17.12%	17.74%	17.78%	-0.36%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
France	Total en-route costs	1,129,169,700	1,073,170,666	1,134,547,984	1,075,524,778	1,142,421,216	1,096,261,226	
	Total terminal costs	230,917,767	217,272,818	232,162,040	216,214,835	233,536,708	221,430,296	
	Percentage terminal costs vis-à-vis total costs	16.98%	16.84%	16.99%	16.74%	16.97%	16.80%	-0.03%
Germany	Total en-route costs	950,552,096	950,149,542	956,959,866	918,853,308	957,495,395	936,388,826	
	Total terminal costs	219,694,999	223,097,900	217,575,147	202,747,343	220,142,456	207,396,868	
	Percentage terminal costs vis-à-vis total costs	18.77%	19.02%	18.52%	18.08%	18.69%	18.13%	-0.88%
The Netherlands	Total en-route costs	157,808,687	160,221,735	157,057,143	157,470,657	158,821,835	162,150,304	
	Total terminal costs	53,478,099	48,319,121	52,743,927	49,205,442	53,203,435	51,102,985	
	Percentage terminal costs vis-à-vis total costs	25.31%	23.17%	25.14%	23.81%	25.09%	23.96%	0.79%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Switzerland	Total en-route costs	106,967,697	106,283,578	108,634,286	100,415,924	111,146,010	103,649,283	
	Total terminal costs	62,228,289	60,931,830	63,024,058	62,713,473	63,615,403	65,526,155	
	Percentage terminal costs vis-à-vis total costs	36.78%	36.44%	36.71%	38.44%	36.40%	38.73%	2.29%
Finland	Total en-route costs	41,754,278	40,758,308	42,258,623	39,517,523	41,761,230	39,514,732	
	Total terminal costs	13,817,164	13,516,219	13,937,025	12,709,122	13,871,158	12,980,599	
	Percentage terminal costs vis-à-vis total costs	24.86%	24.90%	24.80%	24.33%	24.93%	24.73%	-0.18%
Greece	Total en-route costs	152,928,670	142,612,925	152,420,985	139,122,219	151,322,256	136,453,451	
	Total terminal costs	23,795,255	19,264,187	23,557,290	16,906,062	23,335,602	16,190,644	
	Percentage terminal costs vis-à-vis total costs	13.46%	11.90%	13.39%	10.84%	13.36%	10.61%	-1.29%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Hungary	Total en-route costs	82,224,708	76,458,245	84,977,223	77,290,186	83,968,263	76,535,939	
	Total terminal costs	16,115,377	14,612,429	16,981,585	13,729,047	17,262,001	13,397,144	
	Percentage terminal costs vis-à-vis total costs	16.39%	16.05%	16.66%	15.08%	17.05%	14.90%	-1.15%
Ireland	Total en-route costs	117,709,295	108,380,730	117,165,564	103,932,921	117,340,321	100,392,616	
	Total terminal costs	24,791,412	22,826,799	24,588,223	21,643,417	24,893,264	21,288,705	
	Percentage terminal costs vis-à-vis total costs	17.40%	17.40%	17.35%	17.24%	17.50%	17.50%	0.10%
Italy	Total en-route costs	608,529,861	578,756,115	607,048,027	564,555,390	605,746,111	599,185,784	
	Total terminal costs	222,229,653	210,558,730	230,028,198	206,516,071	232,337,617	208,681,684	
	Percentage terminal costs vis-à-vis total costs	26.75%	26.68%	27.48%	26.78%	27.72%	25.83%	-0.84%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Latvia	Total en-route costs	19,932,105	19,777,889	19,983,169	19,341,645	20,381,458	19,740,354	
	Total terminal costs	7,927,882	6,182,554	1,932,468	5,725,270	8,297,626	5,662,122	
	Percentage terminal costs vis-à-vis total costs	28.46%	23.82%	8.82%	22.84%	28.93%	22.29%	-1.53%
Lithuania	Total en-route costs	20,295,346	19,695,661	20,355,595	20,542,758	20,660,023	20,212,242	
	Total terminal costs	3,623,599	3,690,954	3,708,457	4,022,149	3,907,316	4,466,737	
	Percentage terminal costs vis-à-vis total costs	15.15%	15.78%	15.41%	16.37%	15.90%	18.10%	2.32%
Malta	Total en-route costs	14,088,564	13,220,319	14,049,457	14,760,172	13,916,358	16,068,199	
	Total terminal costs	3,723,288	2,469,663	3,954,973	2,868,819	3,737,689	3,737,598	
	Percentage terminal costs vis-à-vis total costs	20.90%	15.74%	21.97%	16.27%	21.17%	18.87%	3.13%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Norway	Total en-route costs	97,049,431	93,591,647	96,323,478	105,698,954	94,298,162	100,958,793	
	Total terminal costs	48,390,270	45,309,900	46,063,758	53,155,652	45,881,855	51,341,249	
	Percentage terminal costs vis-à-vis total costs	33.27%	32.62%	32.35%	33.46%	32.73%	33.71%	1.09%
Poland	Total en-route costs	131,308,155	122,612,087	134,953,753	120,315,956	132,113,074	137,531,071	
	Total terminal costs	23,363,468	22,321,526	23,272,983	21,516,831	23,177,424	25,042,974	
	Percentage terminal costs vis-à-vis total costs	15.11%	15.40%	14.71%	15.17%	14.93%	15.40%	0.00%
Portugal	Total en-route costs	101,759,123	109,324,017	102,943,223	100,871,366	103,039,195	98,769,915	
	Total terminal costs	24,785,292	27,389,120	24,597,937	25,593,112	24,739,965	23,623,856	
	Percentage terminal costs vis-à-vis total costs	19.59%	20.03%	19.29%	20.24%	19.36%	19.30%	-0.73%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Romania	Total en-route costs	129,221,267	144,568,020	131,189,171	131,383,472	133,320,444	134,508,128	
	Total terminal costs	7,688,242	8,469,122	7,975,492	9,908,462	8,040,886	12,006,614	
	Percentage terminal costs vis-à-vis total costs	5.62%	5.53%	5.73%	7.01%	5.69%	8.19%	2.66%
Slovakia	Total en-route costs	53,164,947	51,841,258	54,205,547	52,545,006	54,057,812	54,018,988	
	Total terminal costs	5,747,881	5,407,699	5,810,835	6,683,103	5,820,272	6,170,204	
	Percentage terminal costs vis-à-vis total costs	9.76%	9.45%	9.68%	11.28%	9.72%	10.25%	0.81%
Slovenia	Total en-route costs	28,705,125	26,091,432	28,877,550	27,063,062	28,581,573	27,529,078	
	Total terminal costs	3,050,394	2,843,048	3,185,946	2,748,608	3,224,779	2,926,075	
	Percentage terminal costs vis-à-vis total costs	9.61%	9.83%	9.94%	9.22%	10.14%	9.61%	-0.22%

		2012		2013		2014		Δ 2012-2014
		Planned	Actual	Planned	Actual	Planned	Actual	(percentage points)
Spain (Continental)	Total en-route costs	658,817,012	617,110,293	668,421,934	571,235,442	659,664,833	559,666,454	
	Total terminal costs	171,722,217	159,039,639	158,106,620	133,477,192	154,564,453	128,957,854	
	Percentage terminal costs vis-à-vis total costs	20.68%	20.49%	19.13%	18.94%	18.98%	18.73%	-1.76%
Spain (Canarias)	Total en-route costs	104,849,562	103,217,433	103,977,695	97,656,608	102,035,656	95,440,753	
	Total terminal costs	171,722,217	159,039,639	158,106,620	133,477,192	154,564,453	128,957,854	
	Percentage terminal costs vis-à-vis total costs	62.09%	60.64%	60.33%	57.75%	60.24%	57.47%	-3.17%
United Kingdom	Total en-route costs	712,272,572	666,244,648	737,453,822	714,512,075	732,233,071	650,603,781	
	Total terminal costs	149,992,807	131,162,863	152,011,053	132,823,692	154,527,591	132,470,378	
	Percentage terminal costs vis-à-vis total costs	17.40%	16.45%	17.09%	15.68%	17.43%	16.92%	0.47%

6.5 Data from (Revised) Performance Plans (2015)[3]

Table 6.8 Initial Performance Plan (June 2014)

Key figures: en-route	Value in	2014F	2015D	2016D	2017D	2018D	2019D	2011-19	2014-2019	2015-2019
Determined costs	M EUR_{2009}	6,250	6,279	6,258	6,250	6,206	6,159	0.2%	-0.3%	-0.5%
Service units	'000s	108,944	111,802	113,849	115,763	117,857	120,159	1.5%	2.0%	1.8%
Determined Unit cost	EUR_{2009}	57.37	56.16	54.97	53.99	52.66	51.26	-1.2%	-2.2%	-2.3%

Table 6.9 EC Decision (March 2015) on non-compliance of the RP2 cost-efficiency target

Key figures: en-route	Value expressed in	2014F	2015D	2016D	2017D	2018D	2019D	2015-2019
Determined costs	M EUR_{2009}		6,276	6,263	6,259	6,216	6,168	-0.4%
Service units	'000s		112,669	114,413	116,792	118,614	120,970	1.8%
Determined Unit cost	EUR_{2009}		55.7	54.74	53.73	52.41	50.99	-2.2%

Table 6.10 Revised Performance Plan (July 2015)

Key figures: en-route	Value	2014F	2015D	2016D	2017D	2018D	2019D	2011-19	2014-2019	2015-2019
Determined costs	M EUR_{2009}	6,019	6,235	6,193	6,190	6,136	6,060	0.0%	0.1%	-0.7%
Service units	'000s	111,597	112,688	115,027	117,111	119,329	121,692	1.7%	1.7%	1.9%
Determined Unit cost	EUR_{2009}	53.93	55.33	53.84	52.86	51.42	49.8	-1.6%	-1.6%	-2.6%

[3] Source for tables below: PRB Assessment of RP2 FAB Revised Performance Targets. Union-wide view assessment report. To be found here: http://www.eusinglesky.eu/Documents/PRB%20Reports/Reference%20Period%20Two/Union-wide+view+-+PRB+Assessment+of+RP2+FAB+Revised+Performance+Targets+-+FIN.pdf.

Table 6.11 Targets set for RP2

Key figures: en-route	Value	2015	2016	2017	2018	2019
Determined costs	M EUR_{2009}	6,148	6,056	5,904	5,757	5,613
Service units	'000s	108,541	110,196	111,436	112,884	114,305
Determined Unit cost	EUR_{2009}	56.64	54.95	52.98	51.00	49.10

Source: COMMISSION IMPLEMENTING DECISION of 11 March 2014 setting the Union-wide performance targets for the air traffic management network and alert thresholds for the second reference period 2015-19

6.6 Analysis of CAPEX expenditures, planned versus spent

In this annex 6.6 we report on indicators on capex expenditures during RP1. These indicators are required to answer the evaluation questions on investments, However, the data was not reported in Interim Report 1, while it is now available. Please note that a full overview of CAPEX data per ANSP can be found in Annex 6.7 below. The source of the raw data which has been used for the various calculations is the PRB's Annual Monitoring Report 2014, Volume 3 Report on Capital Expenditure.

6.6.1 Union level

As shown in table 6.12 below, at EU-level actual capital expenditures have been less than the planned capital expenditures in the aggregated National Performance Plans throughout RP1. The difference was biggest in 2013, with almost 28 per cent less spent than planned, and averaged almost 25 per cent over the whole period. This corresponds to an investment expenditure shortfall of more than 750 million $EUR_{2009.}$

Table 6.12 CAPEX at EU level

	2012	**2013**	**2014**	**RP1**
Total planned CAPEX from NPPs (M,EUR2009)	1080.6	999.65	974.51	3054.76
Total actual CAPEX (M,EUR2009)	807.6	720.91	767.85	2296.37
Difference (M,EUR2009)	**-272.99**	**-278.73**	**-206.66**	**-758.39**
Difference (%)	**-25.26 %**	**-27.88 %**	**-21.21 %**	**-24.83 %**

Table 6.13 below shows a broadly consistent picture when considering capital expenditures into 'main projects', with investments consistently lower than planned albeit that the shortfall is somewhat less severe. In this case, 2012 saw the biggest discrepancy with over 24 per cent less investment than planned. On average, some 21 per cent less was spent on investments into 'main projects' than planned, amounting to about 386 million $EUR_{2009.}$

Table 6.13 CAPEX in 'main projects' at EU level

	2012	**2013**	**2014**	**RP1**
Total planned CAPEX in 'main projects' from NPPs (M,EUR2009)	634.56	555.25	547.36	1737.17
Total actual CAPEX in 'main projects' (M,EUR2009)	480.33	446.78	440.03	1367.14
Difference (M,EUR2009)	**-156.89**	**120.53**	**-109.21**	**-386.63**
Difference (%)	**-24.31 %**	**-19.54 %**	**-19.61 %**	**-21.30 %**

6.6.2 FAB level

Table 6.14 below shows the total CAPEX (planned and actual) per Functional Airspace Block (FAB) during RP1.[4] The BLUE MED FAB (Italy, Greece, Cyprus and Malta)[5] saw the smallest deviation with 6 per cent or almost 24 million EUR_{2009} investments less than planned, and the SW FAB (Spain and Portugal) saw the biggest with 62 percent or over 310 million EUR_{2009} less than planned.

Table 6.14 CAPEX total at FAB level, RP1

FAB	**Total planned CAPEX from NPPs** (M,EUR_{2009})	**Total actual CAPEX** (M,EUR_{2009})	**Difference** (M,EUR_{2009})	**Difference** (%)
BALTIC FAB	86.33	56.39	-29.94	-34.68%
BLUE MED	372.88	349.09	-23.79	-6.38%
DANUBE FAB	122.17	57.65	-64.52	-52.81%
DK-SE FAB	59.78	47.63	-12.15	-20.32%
FAB CE	285.26	225.07	-57.63	-21.10%
FABEC	1073.93	931.51	-142.42	-13.26%
NEFAB	106.45	69.42	-37.03	-34.79%
SW FAB	498.66	188.18	-310.48	-62.26%
UK-IRELAND FAB	449.29	371.41	-77.88	-17.33%
Total	**3054.75**	**2296.35**	**-755.84**	**-24.83 %**

Table 6.15 below shows the CAPEX in 'main projects' (planned and actual) per Functional Airspace Block (FAB) during RP1.[6] The DK-SE FAB (Denmark and Sweden) saw the smallest deviation with almost 8 per cent or more than 2 million EUR_{2009} investments less than planned, and the BALTIC FAB (Lithuania and Poland) saw the biggest with 44 percent or over 27 million EUR_{2009} less than planned.

Table 6.15 CAPEX in 'main projects' at FAB level, RP1

FAB	**Total planned CAPEX from NPPs** (M,EUR_{2009})	**Total actual CAPEX** (M,EUR_{2009})	**Difference** (M,EUR_{2009})	**Difference** (%)
BALTIC FAB	63.44	35.82	-27.62	-43.54%

[4] Calculated by summing all individual FAB members' CAPEX.

[5] Please note that data on capital investments is only available from Italy.

[6] Calculated by summing all individual FAB members' CAPEX.

BLUE MED	244.7	217.38	-27.32	-11.16%
DANUBE FAB	110.55	30.75	-79.8	-72.18%
DK-SE FAB	30.26	27.89	-2.37	-7.83%
FAB CE	158.44	121.1	-53.94	-23.57%
FABEC	599.9	526.69	-73.21	-12.20%
NEFAB	78.95	58.59	-20.36	-25.79%
SW FAB	96.68	37.14	-59.54	-61.58%
UK-IRELAND FAB	354.25	311.78	-42.47	-11.99%
Total	**1737.17**	**1367.14**	**-386.63**	**-21.30 %**

The distribution per year for both total and 'main projects' capital expenditures can be found in the Annex below.

6.6.3 ANSP level

For these calculations, we have used the available data on ANSP level from the PRB Annual Monitoring Reports. Rounding of numbers makes that the totals slightly deviate from the totals given in the previous EU-level section.

As shown in table 6.16 below, the total capital expenditures by ANSPs over RP1 amounted to almost 2.3 billion EUR_{2009}, whereas investments were planned in the National Performance Plans for a little over 3 billion EUR_{2009}.[7] This amounts to an investment expenditure shortfall of almost 25 per cent.

Considerable variation can be observed between ANSPs. In four countries, the ANSP spent more than planned: Slovenia (50.37%), Germany (33.64%), Lithuania (11.85%) and Switzerland (0.18%). The rest spent less than planned, with 8 ANSPs spending more than 50 per cent less than indicated. This is listed in the overview and table below:

More than planned	
Slovenia	50.37%
Germany	33.64%
Lithuania	11.85%
Switzerland	0.18%

[7] Data for Greece and Malta are missing, as their ANSPs did not report capital expenditure data.

Between 0 – 20 per cent less than planned	
Austria	-1.56%
Italy	-6.38%
Estonia	-14.54%
Denmark	-15.03%
United Kingdom	-15.17%
Slovakia	-17.86%
Latvia	-19.92%

Between 20 – 50 per cent less than planned	
Norway	-20.56%
France	-22.61%
Sweden	-23.70%
Hungary	-31.25%
Bulgaria	-35.73%
Poland	-37.68%
Czech Republic	-43.14%

More than 50 per cent less than planned	
Ireland	-53.38%
Belgium	-54.01%
MUAC	-55.59%
Netherlands	-58.31%
Romania	-60.12%
Spain	-61.82%
Finland	-66.42%
Portugal	-66.45%

Table 6.16 Total CAPEX over RP1, by ANSP (M EUR_{2009})

	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Austria	82.06	80.78	1.28	-1.56%
Belgium	29.29	13.47	-15.82	-54.01%
Bulgaria	36.61	23.53	-13.08	-35.73%
Czech Republic	82.89	47.13	-35.76	-43.14%
Denmark	23.28	19.78	-3.50	-15.03%
Estonia	8.46	7.23	-1.23	-14.54%
Finland	34.37	11.54	-22.83	-66.42%
France	517.5	400.47	-117.03	-22.61%
Germany	251.62	336.26	84.64	33.64%
Greece	-	-	-	-
Hungary	61.05	41.97	-19.08	-31.25%
Ireland	25.42	11.85	-13.57	-53.38%
Italy	372.88	349.09	-23.79	-6.38%
Latvia	17.27	13.83	-3.44	-19.92%

	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Lithuania	5.23	5.85	0.62	11.85%
Malta	-	-	-	-
MUAC	58.09	25.8	-32.29	-55.59%
Netherlands	106.53	44.41	-62.12	-58.31%
Norway	46.35	36.82	-9.53	-20.56%
Poland	81.1	50.54	-30.56	-37.68%
Portugal	47.81	16.04	-31.77	-66.45%
Romania	85.56	34.12	-51.44	-60.12%
Slovakia	49.71	40.83	-8.88	-17.86%
Slovenia	9.55	14.36	4.81	50.37%
Spain	450.85	172.14	-278.71	-61.82%
Sweden	36.5	27.85	-8.65	-23.70%
Switzerland	110.9	111.1	0.20	0.18%
United Kingdom	423.87	359.56	-64.31	-15.17%
Total	**3054.75**	**2296.35**	**-755.84**	**-24.83%**

This changes somewhat when we look at the capital expenditures for 'Main Projects' during RP1. The total capital expenditures into what are labelled 'main projects' by ANSPs over RP1 amounted to almost 1.4 billion $EUR_{2009,}$ whereas investments worth over 1.7 billion EUR_{2009} were planned. This amounts to an investment expenditure shortfall of over 21 per cent for 'main projects'.

Considerable variation is present here as well, with the same four countries 'overspending', complemented by Austria and Lithuania: Slovenia (67.09%), Germany (51.51%), Switzerland (33.05%), Austria (27.69%), Latvia (9.99%) and Lithuania (5.74%). The rest spent less than planned on main projects. Ten ANSPs spent more than 50 per cent less than planned, of which 2 even 75 per cent less than planned. This is listed in the overview and Table 6.17 below:

More than planned	
Slovenia	67.09%
Germany	51.51%
Switzerland	33.05%
Austria	27.69%
Latvia	9.99%
Lithuania	5.74%

Between 0 – 20 per cent less than planned	
Slovakia	-3.61%
Denmark	-5.97%
United Kingdom	-9.59%
Sweden	-9.80%

Italy	-11.16%
France	-16.19%

Between 20 – 50 per cent less than planned

Norway	-20.56%
Estonia	-31.44%
Hungary	-33.60%
Poland	-47.96%

Between 50 – 75 per cent less than planned

MUAC	-51.83%
Finland	-52.88%
Ireland	-55.78%
Belgium	-56%
Spain	-56.10%
Bulgaria	-56%
Portugal	-68.46%
Netherlands	-70.71%

More than 75 per cent less than planned

Czech Republic	-76.03%
Romania	-78.66%

Table 6.17 Main CAPEX, by ANSP (M EUR_{2009})

	Planned	Actual	Difference. EUR_{2009}	Difference (%)
Austria	29.98	38.28	-8.3	27.69%
Belgium	25.4	11.21	-14.19	-56%
Bulgaria	32.17	14.02	-18.15	-56%
Czech Republic	49.02	11.75	-37.27	-76.03%
Denmark	15.57	14.64	-0.93	-5.97%
Estonia	8.46	5.8	-2.66	-31.44%
Finland	16.83	7.93	-8.90	-52.88%
France	297.26	249.14	-48.12	-16.19%
Germany	132.98	201.48	68.50	51.51%
Greece				
Hungary	36.9	24.5	-12.40	-33.60%
Ireland	18.43	8.15	-10.28	-55.78%
Italy	244.7	217.38	-27.32	-11.16%
Latvia	7.31	8.04	0.73	9.99%
Lithuania	5.23	5.53	0.30	5.74%
Malta				
MUAC	41.27	19.88	-21.39	-51.83%
Netherlands	88.71	25.98	-62.73	-70.71%
Norway	46.35	36.82	-9.53	-20.56%
Poland	58.21	30.29	-27.92	-47.96%
Portugal	42.87	13.52	-29.35	-68.46%
Romania	78.38	16.73	-61.65	-78.66%
Slovakia	34.67	33.42	-1.25	-3.61%
Slovenia	7.87	13.15	5.28	67.09%
Spain	53.81	23.62	-30.19	-56.10%
Sweden	14.69	13.25	-1.44	-9.80%
Switzerland	14.28	19	4.72	33.05%
United Kingdom	335.82	303.63	-32.19	-9.59%
Total	**1737.17**	**1367.14**	**-386.63**	**-21.30%**

6.7 Overview of CAPEX expenditures, per ANSP

6.7.1 EU level CAPEX

Table 6.18 Total CAPEX, by ANSP (M EUR$_{2009}$)

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Austria	32.97	37.72	-4.75	14%	27.67	26.62	1.05	-4%	21.42	16.44	4.98	-23%	82.06	80.78	1.28	-2%
Belgium	15.59	6.39	-9.20	-59%	10.38	4.89	-5.49	-53%	3.32	2.19	-1.13	-34%	29.29	13.47	-15.82	-54%
Bulgaria	23.67	7.63	-16.04	-68%	8.45	4.71	-3.74	-44%	4.49	11.19	6.70	149%	36.61	23.53	-13.08	-36%
Czech Republic	34.32	14.88	-19.44	-56.64%	22.46	14.29	-8.17	-36.38%	26.11	17.96	-8.15	-31.21%	82.89	47.13	-35.76	-43.14%
Denmark	7.75	6.5	-1.25	-16.13%	7.72	7.49	-0.23	-2.98%	7.81	5.79	-2.02	-25.86%	23.28	19.78	-3.50	-15.03%
Estonia	3.36	1.95	-1.41	-41.96%	2.74	2.34	-0.40	-14.60%	2.36	2.94	0.58	24.58%	8.46	7.23	-1.23	-14.54%
Finland	14.1	5.09	-9.01	-63.90	11.07	2.98	-8.09	-73.08	9.2	3.47	-5.73	-62.28	34.37	11.54	-22.83	-66.42

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
				%				%				%				%
France	163.12	132.99	-30.13	-18.47 %	166.3	117.41	-48.89	-29.40 %	188.08	150.07	-38.01	-20.21 %	517.5	400.47	-117.03	-22.61 %
Germany	85.57	105.14	19.57	22.87 %	83.86	120.76	36.90	44.00 %	82.19	110.36	28.17	34.27 %	251.62	336.26	84.64	33.64 %
Greece																
Hungary	28.78	20.87	-7.91	-27.48 %	19.2	8.57	-10.63	-55.36 %	13.07	12.53	-0.54	-4.13%	61.05	41.97	-19.08	-31.25 %
Ireland	3.54	3.41	-0.13	-3.67%	10.75	2.74	-8.01	-74.51 %	11.13	5.7	-5.43	-48.79 %	25.42	11.85	-13.57	-53.38 %
Italy	134.65	102.45	-32.20	-23.91 %	130.15	131.39	1.24	0.95%	108.08	115.25	7.17	6.63%	372.88	349.09	-23.79	-6.38%
Latvia	6.05	4.08	-1.97	-32.56 %	5.57	4.44	-1.13	-20.29 %	5.65	5.31	-0.34	-6.02%	17.27	13.83	-3.44	-19.92 %
Lithuania	2.52	3.45	0.93	36.90 %	1.19	0.74	-0.45	-37.82 %	1.52	1.66	0.14	9.21%	5.23	5.85	0.62	11.85 %

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Malta																
MUAC	16.46	9.19	-7.27	-44.17%	20.04	11.79	-8.25	-41.17%	21.59	4.82	-16.77	-77.67%	58.09	25.8	-32.29	-55.59%
Netherlands	26.93	21.2	-5.73	-21.28%	33.77	11.07	-22.70	-67.22%	45.83	12.14	-33.69	-73.51%	106.53	44.41	-62.12	-58.31%
Norway	18.82	10.44	-8.38	-44.53%	12.12	12.58	0.46	3.80%	15.41	13.8	-1.61	-10.45%	46.35	36.82	-9.53	-20.56%
Poland	29.03	16.4	-12.63	-43.51%	29.26	12.13	-17.13	-58.54%	22.81	22.01	-0.80	-3.51%	81.1	50.54	-30.56	-37.68%
Portugal	19.47	3.85	-15.62	-80.23%	14.37	5.16	-9.21	-64.09%	13.97	7.03	-6.94	-49.68%	47.81	16.04	-31.77	-66.45%
Romania	24.12	8.98	-15.14	-62.77%	32.79	8.82	-23.97	-73.10%	28.65	16.32	-12.33	-43.04%	85.56	34.12	-51.44	-60.12%
Slovakia	37.23	30.85	-6.38	-17.14%	6.27	6.16	-0.11	-1.75%	6.21	3.82	-2.39	-38.49%	49.71	40.83	-8.88	-17.86%

	2012				2013				2014				RP1			
	Planned	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**
Slovenia	5.49	9.76	4.27	77.78 %	2.41	2.12	-0.29	-12.03 %	1.65	2.48	0.83	50.30 %	9.55	14.36	4.81	50.37 %
Spain	152.4	83.06	-69.34	-45.50 %	150.35	47.63	-102.72	-68.32 %	148.1	41.45	-106.65	-72.01 %	450.85	172.14	-278.71	-61.82 %
Sweden	12.01	9.1	-2.91	-24.23 %	12.48	7.98	-4.50	-36.06 %	12.01	10.77	-1.24	-10.32 %	36.5	27.85	-8.65	-23.70 %
Switzerland	35.76	32.86	-2.90	-8.11%	36.94	38.56	1.62	4.39%	38.2	39.68	1.48	3.87%	110.9	111.1	0.20	0.18%
United Kingdom	146.91	119.34	-27.57	-18.77 %	141.3	107.55	-33.75	-23.89 %	135.66	132.67	-2.99	-2.20%	423.87	359.56	-64.31	-15.17 %
Total	**530.18**	**384.83**	**-145.35**	**-27.42 %**	**455**	**313.28**	**-141.72**	**-31.15 %**	**454.12**	**396.75**	**-57.37**	**-12.63 %**	**1439.3**	**1094.86**	**-344.44**	**-23.93 %**

Table 6.19 Main CAPEX, by ANSP (M EUR$_{2009}$)

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Austria	17.37	18.7	-1.33	8%	8.09	14.12	-6.03	75%	4.52	5.46	-0.94	21%	29.98	38.28	-8.3	27.69%
Belgium	13.52	5.51	-8.01	-59%	9.38	4.02	-5.36	-57%	2.5	1.68	-0.82	-33%	25.4	11.21	-14.19	-56%
Bulgaria	22.3	6.53	-15.77	-71%	6.67	3	-3.67	-55%	3.2	4.49	1.29	40%	32.17	14.02	-18.15	-56%
Czech Republic	21.75	4.63	-17.12	-78.71%	11.45	3.22	-8.23	-71.88%	15.82	3.9	-11.92	-75.35%	49.02	11.75	-37.27	-76.03%
Denmark	5.21	4.25	-0.96	-18.43%	5.48	6.07	0.59	10.77%	4.88	4.32	-0.56	-11.48%	15.57	14.64	-0.93	-5.97%
Estonia	3.36	1.64	-1.72	-51.19%	2.74	1.22	-1.52	-55.47%	2.36	2.94	0.58	24.58%	8.46	5.8	-2.66	-31.44%
Finland	7.03	4.19	-2.84	-40.40%	6.72	2.08	-4.64	-69.05%	3.08	1.66	-1.42	-46.10%	16.83	7.93	-8.90	-52.88%
France	89.37	69.67	-19.70	-22.04%	88.39	72.06	-16.33	-18.47%	119.5	107.41	-12.09	-10.12%	297.26	249.14	-48.12	-16.19%

	2012				2013				2014				RP1			
	Planned	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**
Germany	46.41	68.73	22.32	48.09%	42.45	85.27	42.82	100.87%	44.12	47.48	3.36	7.62%	132.98	201.48	68.50	51.51%
Greece																
Hungary	20.34	17.88	-2.46	-12.09%	11.3	3.28	-8.02	-70.97%	5.26	3.34	-1.92	-36.50%	36.9	24.5	-12.40	-33.60%
Ireland	0.65	2.26	1.61	247.69%	9.01	1.92	-7.09	-78.69%	8.77	3.97	-4.80	-54.73%	18.43	8.15	-10.28	-55.78%
Italy	86.65	60.37	-26.28	-30.33%	88.75	92.74	3.99	4.50%	69.3	64.27	-5.03	-7.26%	244.7	217.38	-27.32	-11.16%
Latvia	3.45	2.6	-0.85	-24.64%	1.98	2.28	0.30	15.15%	1.88	3.16	1.28	68.09%	7.31	8.04	0.73	9.99%
Lithuania	2.52	3.45	0.93	36.90%	1.19	0.61	-0.58	-48.74%	1.52	1.47	-0.05	-3.29%	5.23	5.53	0.30	5.74%
Malta																
MUAC	10.94	7.09	-3.85	-35.19%	13.32	9.58	-3.74	-28.08%	17.01	3.21	-13.80	-81.13%	41.27	19.88	-21.39	-51.83%

	2012				2013				2014				RP1			
	Planned	**Actual**	**Difference, EUR2009**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR2009**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR2009**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR2009**	**Difference (%)**
Netherlands	20.37	15.66	-4.71	-23.12 %	28.18	5.53	-22.65	-80.38 %	40.16	4.79	-35.37	-88.07 %	88.71	25.98	-62.73	-70.71 %
Norway	18.82	10.44	-8.38	-44.53 %	12.12	12.58	0.46	3.80%	15.41	13.8	-1.61	-10.45 %	46.35	36.82	-9.53	-20.56 %
Poland	20.61	10.94	-9.67	-46.92 %	22.84	5.64	-17.20	-75.31 %	14.76	13.71	-1.05	-7.11%	58.21	30.29	-27.92	-47.96 %
Portugal	17.24	2.58	-14.66	-85.03 %	12.57	5.16	-7.41	-58.95 %	13.06	5.78	-7.28	-55.74 %	42.87	13.52	-29.35	-68.46 %
Romania	21.35	2.45	-18.90	-88.52 %	31.17	4.12	-27.05	-86.78 %	25.86	10.16	-15.70	-60.71 %	78.38	16.73	-61.65	-78.66 %
Slovakia	31.89	29.84	-2.05	-6.43%	2.78	1.75	-1.03	-37.05 %	0	1.83	1.83	#DIV/0!	34.67	33.42	-1.25	-3.61%
Slovenia	4.98	9.24	4.26	85.54 %	1.55	1.8	0.25	16.13 %	1.34	2.11	0.77	57.46 %	7.87	13.15	5.28	67.09 %
Spain	17.04	12.16	-4.88	-28.64	14.65	5.46	-9.19	-62.73	22.12	6	-16.12	-72.88	53.81	23.62	-30.19	-56.10

	2012				2013				2014				RP1			
	Planned	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**	**Planned**	**Actual**	**Difference, EUR$_{2009}$**	**Difference (%)**
				%				%				%				%
Sweden	5.65	6.28	0.63	11.15 %	5.68	4.17	-1.51	-26.58 %	3.36	2.8	-0.56	-16.67 %	14.69	13.25	-1.44	-9.80%
Switzerland	9.05	7.16	-1.89	-20.88 %	5.18	6.64	1.46	28.19 %	0.05	5.2	5.15	10300.00%	14.28	19	4.72	33.05 %
United Kingdom	116.69	96.08	-20.61	-17.66 %	111.61	92.46	-19.15	-17.16 %	107.52	115.09	7.57	7.04%	335.82	303.63	-32.19	-9.59%
Total	**634.56**	**480.33**	**-156.89**	**-24.31 %**	**555.25**	**446.78**	**-120.53**	**-19.54 %**	**547.36**	**440.03**	**-109.21**	**-19.61 %**	**1737.17**	**1367.14**	**-386.63**	**-21.30 %**

6.7.2 FAB level CAPEX

Table 6.20 CAPEX total, by FAB

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
BALTIC FAB	31.55	19.85	-11.7	-37.08%	30.45	12.87	-17.58	-57.73%	24.33	23.67	-0.66	-2.71%	86.33	56.39	-29.94	-34.68%
BLUE MED	134.65	102.45	-32.2	-23.91%	130.15	131.39	1.24	0.95%	108.08	115.25	7.17	6.63%	372.88	349.09	-23.79	-6.38%
DANUBE FAB	47.79	16.61	-31.18	-65.24%	41.24	13.53	-27.71	-67.19%	33.14	27.51	-5.63	-16.99%	122.17	57.65	-64.52	-52.81%
DK-SE FAB	19.76	15.6	-4.16	-21.05%	20.2	15.47	-4.73	-23.42%	19.82	16.56	-3.26	-16.45%	59.78	47.63	-12.15	-20.32%
FAB CE	138.79	114.08	-34.21	-17.80%	78.01	57.76	-18.15	-25.96%	68.46	53.23	-5.27	-22.25%	285.26	225.07	-57.63	-21.10%
FABEC	343.43	307.77	-35.66	-10.38%	351.29	304.48	-46.81	-13.33%	379.21	319.26	-60	-15.81%	1073.93	931.51	-142.42	-13.26%
NEFAB	42.33	21.56	-	-	31.5	22.34	-9.16	-	32.62	25.52	-7.1	-	106.4	69.42	-	-

			20.77	49.07 %				29.08 %				21.77 %	5		37.03	34.79 %
SW FAB	171.87	86.91	-84.96	-49.43 %	164.72	52.79	-111.93	-67.95 %	162.07	48.48	-114	-70.09 %	498.66	188.18	-310.48	-62.26 %
UK-IRELAND FAB	150.45	122.75	-27.7	-18.41 %	152.05	110.29	-41.76	-27.46 %	146.79	138.37	-8.42	-5.74 %	449.29	371.41	-77.88	-17.33 %
Total	**1080.62**	**807.58**	**-282.54**	**-25.27%**	**999.61**	**720.92**	**-276.59**	**-27.88%**	**974.52**	**767.85**	**-197**	**-21.21%**	**3054.75**	**2296.35**	**-755.84**	**-24.83%**

Table 6.21 CAPEX 'main projects', by FAB

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
BALTIC FAB	23.13	14.39	-8.74	-37.79%	24.03	6.25	-17.78	-73.99%	16.28	15.18	-1.1	-6.76%	63.44	35.82	-27.62	-43.54%
BLUE MED	86.65	60.37	-26.28	-30.33%	88.75	92.74	3.99	4.50%	69.3	64.27	-5.03	-7.26%	244.7	217.38	-27.32	-11.16%
DANUBE FAB	43.65	8.98	-34.67	-79.43%	37.84	7.12	-30.72	-81.18%	29.06	14.65	-14.41	-49.59%	110.55	30.75	-79.8	-72.18%
DK-SE FAB	10.86	10.53	-0.33	-3.04%	11.16	10.24	-0.92	-8.24%	8.24	7.12	-1.12	-13.59%	30.26	27.89	-2.37	-7.83%
FAB CE	96.33	80.29	-18.7	-16.65%	35.17	24.17	-23.06	-31.28%	26.94	16.64	-12.18	-38.23%	158.44	121.1	-53.94	-23.57%
FABEC	189.66	173.82	-15.84	-8.35%	186.9	183.1	-3.8	-2.03%	223.34	169.77	-53.57	-23.99%	599.9	526.69	-73.21	-12.20%
NEFAB	32.66	18.87	-13.79	-42.22%	23.56	18.16	-5.4	-22.92%	22.73	21.56	-1.17	-5.15%	78.95	58.59	-20.36	-25.79%

SW FAB	34.28	14.74	-19.54	-57.00%	27.22	10.62	-16.6	-60.98%	35.18	11.78	-23.4	-66.52%	96.68	37.14	-59.54	-61.58%
UK-IRELAND FAB	117.34	98.34	-19	-16.19%	120.62	94.38	-26.24	-21.75%	116.29	119.06	2.77	2.38%	354.25	311.78	-42.47	-11.99%
Total	**634.56**	**480.33**	**-156.89**	**-24.31%**	**555.25**	**446.78**	**-120.53**	**-19.54%**	**547.36**	**440.03**	**-109.21**	**-19.61%**	**1737.17**	**1367.14**	**-386.63**	**-21.30%**

Table 6.21 Intra-FAB under-/Overspending on CAPEX

FAB	ANSPs	RP1 under-/overspending (M, EUR2009)	RP1 under-/overspending (%)
BALTIC FAB	Oro Navigacija	0.62	11.90%
BALTIC FAB	PANSA	-30.56	-37.70%
FAB CE	ANS Czech Republic	-35.76	-43.10%
FAB CE	Austro Control	-1.28	-1.60%
FAB CE	LPS	-8.88	-17.90%
FAB CE	HungaroControl	-19.07	-31.20%
FAB CE	Slovenia Control	4.81	50.30%
DANUBE FAB	BULATSA	-13.08	-35.70%
DANUBE FAB	ROMATSA	-51.43	-60.10%
BLUE MED FAB	MATS	-	-
BLUE MED FAB	DGCA Cyprus	-	-
BLUE MED FAB	ENAV	-23.78	-6.40%
BLUE MED FAB	HCAA Greece	-	-
SW FAB	NAV Portugal	-31.77	-66.40%
SW FAB	ENAIRE	-278.71	-61.80%
FABEC	Belgocontrol	-15.81	-54.00%
FABEC	DFS	84.64	33.60%
FABEC	DSNA	-117.04	-22.60%

FAB	ANSPs	RP1 under-/overspending (M, EUR2009)	RP1 under-/overspending (%)
FABEC	Skyguide	0.19	0.20%
FABEC	LVNL	-62.13	-58.30%
FABEC	MUAC	-31.68	-55.10%
DK-SE FAB	NAVIAR	-3.50	-15.00%
DK-SE FAB	LFV	-8.65	-23.70%
NEFAB	Avinor	-9.53	-20.60%
NEFAB	EANS	-1.23	-14.50%
NEFAB	Finavia	-22.83	-66.40%
NEFAB	LGS	-3.44	-19.90%
UK-IRELAND FAB	IAA	-13.57	-54.30%
UK-IRELAND FAB	NATS	-64.31	-15.20%

6.7.3 ANSP level CAPEX

Austria, Austrocontrol

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	32,97	37,72	-4,75	14%	27,67	26,62	1,05	-4%	21,42	16,44	4,98	-23%	82,06	80,78	1,28	-2%
Main CAPEX (M, EUR2009)	17,37	18,7	-1,33	8%	8,09	14,12	-6,03	75%	4,52	5,46	-0,94	21%	29,98	38,28	-8,3	28%
% Main into Total CAPEX	52,68%	49,58%	3,11%	-5,90%	29,24%	53,04%	-23,81%	81,42%	21,10%	33,21%	-12,11%	57,39%	36,53%	47,39%	-10,85%	29,71%
Real gate-to-gate ANSP costs (M, EUR2009)	184,61	167,43	17,18	-9%	189,32	168,28	21,04	-11%	188,04	162,69	25,35	-13%	561,97	498,4	63,57	-11%
% of CAPEX into Real gate-to-gate ANSP costs	17,86%	22,53%	-4,67%	26%	14,62%	15,82%	-1,20%	8%	11,39%	10,11%	1,29%	-11%	14,60%	16,21%	-1,61%	11%

Belgium, Belgocontrol

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	15,59	6,39	-9,20	-59%	10,38	4,89	-5,49	-53%	3,32	2,19	-1,13	-34%	29,29	13,47	-15,82	-54%
Main CAPEX (M, EUR2009)	13,52	5,51	-8,01	-59%	9,38	4,02	-5,36	-57%	2,5	1,68	-0,82	-33%	25,4	11,21	-14,19	-56%
% Main into Total CAPEX	86,72%	86,23%	-0,49%	-0,57%	90,37%	82,21%	-8,16%	-9,03%	75,30%	76,71%	1,41%	1,87%	86,72%	83,22%	-3,50%	-4,03%
Real gate-to-gate ANSP costs (M, EUR2009)	135,07	124,62	-10,45	-8%	131,03	126,31	-4,72	-4%	127,56	117,34	-10,22	-8%	393,66	368,27	-25,39	-6%
% of CAPEX into Real gate-to-gate ANSP costs	11,54%	5,13%	-6,41%	-56%	7,92%	3,87%	-4,05%	-51%	2,60%	1,87%	-0,74%	-28%	7,44%	3,66%	-3,78%	-51%

Bulgaria, Bulatsa

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	23,67	7,63	-16,04	-68%	8,45	4,71	-3,74	-44%	4,49	11,19	6,70	149%	36,61	23,53	-13,08	-36%
Main CAPEX (M, EUR2009)	22,3	6,53	-15,77	-71%	6,67	3	-3,67	-55%	3,2	4,49	1,29	40%	32,17	14,02	-18,15	-56%
% Main into Total CAPEX	94,21%	85,58%	-8,63%	-9,16%	78,93%	63,69%	-15,24%	-19,31%	71,27%	40,13%	-31,14%	-43,70%	87,87%	59,58%	-28,29%	-32,19%
Real gate-to-gate ANSP costs (M, EUR2009)	78,5	74,56	-3,94	-5%	80,26	71,64	-8,62	-11%	78,99	79,34	0,35	0%	237,75	225,54	-12,21	-5%
% of CAPEX into Real gate-to-gate ANSP costs	30,15%	10,23%	-19,92%	-66%	10,53%	6,57%	-3,95%	-38%	5,68%	14,10%	8,42%	148%	15,40%	10,43%	-4,97%	-32%

Czech Republic, ANS Czech Republic

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	34,32	14,88	-19,44	-56,64%	22,46	14,29	-8,17	-36,38%	26,11	17,96	-8,15	-31,21%	82,89	47,13	-35,76	-43,14%
Main CAPEX (M, EUR2009)	21,75	4,63	-17,12	-78,71%	11,45	3,22	-8,23	-71,88%	15,82	3,9	-11,92	-75,35%	49,02	11,75	-37,27	-76,03%
% Main into Total CAPEX	63,37%	31,12%	-32,26%	-50,90%	50,98%	22,53%	-28,45%	-55,80%	60,59%	21,71%	-38,87%	-64,16%	59,14%	24,93%	-34,21%	-57,84%
Real gate-to-gate ANSP costs (M, EUR2009)	87,75	100,54	12,79	14,58%	89,51	102,58	13,07	14,60%	91,56	105,7	14,14	15,44%	268,82	308,82	40,00	14,88%
% of CAPEX into Real gate-to-gate ANSP costs	39,11%	14,80%	-24,31%	-62,16%	25,09%	13,93%	-11,16%	-44,48%	28,52%	16,99%	-11,53%	-40,42%	30,83%	15,26%	-15,57%	-50,51%

Denmark, NAVIAIR

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	7,75	6,5	-1,25	-16,13%	7,72	7,49	-0,23	-2,98%	7,81	5,79	-2,02	-25,86%	23,28	19,78	-3,50	-15,03%
Main CAPEX (M, EUR2009)	5,21	4,25	-0,96	-18,43%	5,48	6,07	0,59	10,77%	4,88	4,32	-0,56	-11,48%	15,57	14,64	-0,93	-5,97%
% Main into Total CAPEX	67,23%	65,38%	-1,84%	-2,74%	70,98%	81,04%	10,06%	14,17%	62,48%	74,61%	12,13%	19,41%	66,88%	74,01%	7,13%	10,66%
Real gate-to-gate ANSP costs (M, EUR2009)	106,82	100,15	-6,67	-6,24%	108,36	96,34	-12,02	-11,09%	107,47	93,75	-13,72	-12,77%	322,65	290,24	-32,41	-10,04%
% of CAPEX into Real gate-to-gate ANSP costs	7,26%	6,49%	-0,76%	-10,54%	7,12%	7,77%	0,65%	9,13%	7,27%	6,18%	-1,09%	-15,01%	7,22%	6,82%	-0,40%	-5,55%

Estonia, EANS

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Total CAPEX (M, EUR2009)	3,36	1,95	-1,41	-41,96%	2,74	2,34	-0,40	-14,60%	2,36	2,94	0,58	24,58%	8,46	7,23	-1,23	-14,54%
Main CAPEX (M, EUR2009)	3,36	1,64	-1,72	-51,19%	2,74	1,22	-1,52	-55,47%	2,36	2,94	0,58	24,58%	8,46	5,8	-2,66	-31,44%
% Main into Total CAPEX	100,00%	84,10%	-15,90%	-15,90%	100,00%	52,14%	-47,86%	-47,86%	100,00%	100,00%	0,00%	0,00%	100,00%	80,22%	-19,78%	-19,78%
Real gate-to-gate ANSP costs (M, EUR2009)	13,66	12,6	-1,06	-7,76%	13,86	12,77	-1,09	-7,86%	14,65	13,71	-0,94	-6,42%	42,17	39,08	-3,09	-7,33%
% of CAPEX into Real gate-to-gate ANSP costs	24,60%	15,48%	-9,12%	-37,08%	19,77%	18,32%	-1,44%	-7,31%	16,11%	21,44%	5,33%	33,12%	20,06%	18,50%	-1,56%	-7,78%

Finland, FINAVIA

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	14,1	5,09	-9,01	-63,90%	11,07	2,98	-8,09	-73,08%	9,2	3,47	-5,73	-62,28%	34,37	11,54	-22,83	-66,42%
Main CAPEX (M, EUR2009)	7,03	4,19	-2,84	-40,40%	6,72	2,08	-4,64	-69,05%	3,08	1,66	-1,42	-46,10%	16,83	7,93	-8,90	-52,88%
% Main into Total CAPEX	49,86%	82,32%	32,46%	65,10%	60,70%	69,80%	9,09%	14,98%	33,48%	47,84%	14,36%	42,89%	48,97%	68,72%	19,75%	40,33%
Real gate-to-gate ANSP costs (M, EUR2009)	47,48	46,34	-1,14	-2,40%	47,9	44,38	-3,52	-7,35%	47,9	45,46	-2,44	-5,09%	143,28	136,18	-7,10	-4,96%
% of CAPEX into Real gate-to-gate ANSP costs	29,70%	10,98%	-18,71%	-63,01%	23,11%	6,71%	-16,40%	-70,95%	19,21%	7,63%	-11,57%	-60,26%	23,99%	8,47%	-15,51%	-64,67%

France, DSNA

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Total CAPEX (M, EUR2009)	163,12	132,99	-30,13	-18,47%	166,3	117,41	-48,89	-29,40%	188,08	150,07	-38,01	-20,21%	517,5	400,47	-117,03	-22,61%
Main CAPEX (M, EUR2009)	89,37	69,67	-19,70	-22,04%	88,39	72,06	-16,33	-18,47%	119,5	107,41	-12,09	-10,12%	297,26	249,14	-48,12	-16,19%
% Main into Total CAPEX	54,79%	52,39%	-2,40%	-4,38%	53,15%	61,37%	8,22%	15,47%	63,54%	71,57%	8,04%	12,65%	57,44%	62,21%	4,77%	8,30%
Real gate-to-gate ANSP costs (M, EUR2009)	1186,36	1125,66	-60,70	-5,12%	1195,38	1125,9	-69,48	-5,81%	1206,49	1154,5	-51,99	-4,31%	3588,23	3406,06	-182,17	-5,08%
% of CAPEX into Real gate-to-gate ANSP costs	13,75%	11,81%	-1,94%	-14,07%	13,91%	10,43%	-3,48%	-25,04%	15,59%	13,00%	-2,59%	-16,62%	14,42%	11,76%	-2,66%	-18,48%

Germany, DFS

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Total CAPEX (M, EUR2009)	85,57	105,14	19,57	22,87%	83,86	120,76	36,90	44,00%	82,19	110,36	28,17	34,27%	251,62	336,26	84,64	33,64%
Main CAPEX (M, EUR2009)	46,41	68,73	22,32	48,09%	42,45	85,27	42,82	100,87%	44,12	47,48	3,36	7,62%	132,98	201,48	68,50	51,51%
% Main into Total CAPEX	54,24%	65,37%	11,13%	20,53%	50,62%	70,61%	19,99%	39,49%	53,68%	43,02%	-10,66%	-19,85%	52,85%	59,92%	7,07%	13,37%
Real gate-to-gate ANSP costs (M, EUR2009)	982,92	996,32	13,40	1,36%	988,45	947,38	-41,07	-4,15%	989,9	963,31	-26,59	-2,69%	2961,27	2907,01	-54,26	-1,83%
% of CAPEX into Real gate-to-gate ANSP costs	8,71%	10,55%	1,85%	21,22%	8,48%	12,75%	4,26%	50,24%	8,30%	11,46%	3,15%	37,98%	8,50%	11,57%	3,07%	36,13%

Greece, HCAA

No data available.

Hungary, Hungarocontrol

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	28,78	20,87	-7,91	-27,48%	19,2	8,57	-10,63	-55,36%	13,07	12,53	-0,54	-4,13%	61,05	41,97	-19,08	-31,25%
Main CAPEX (M, EUR2009)	20,34	17,88	-2,46	-12,09%	11,3	3,28	-8,02	-70,97%	5,26	3,34	-1,92	-36,50%	36,9	24,5	-12,40	-33,60%
% Main into Total CAPEX	70,67%	85,67%	15,00%	21,22%	58,85%	38,27%	-20,58%	-34,97%	40,24%	26,66%	-13,59%	-33,77%	60,44%	58,38%	-2,07%	-3,42%
Real gate-to-gate ANSP costs (M, EUR2009)	90,21	83,41	-6,80	-7,54%	93,92	83,64	-10,28	-10,95%	93,31	82,49	-10,82	-11,60%	277,44	249,54	-27,90	-10,06%
% of CAPEX into Real gate-to-gate ANSP costs	31,90%	25,02%	-6,88%	-21,57%	20,44%	10,25%	-10,20%	-49,88%	14,01%	15,19%	1,18%	8,44%	22,00%	16,82%	-5,19%	-23,57%

Ireland, IAA

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	3,54	3,41	-0,13	-3,67%	10,75	2,74	-8,01	-74,51%	11,13	5,7	-5,43	-48,79%	25,42	11,85	-13,57	-53,38%
Main CAPEX (M, EUR2009)	0,65	2,26	1,61	247,69%	9,01	1,92	-7,09	-78,69%	8,77	3,97	-4,80	-54,73%	18,43	8,15	-10,28	-55,78%
% Main into Total CAPEX	18,36%	66,28%	47,91%	260,95%	83,81%	70,07%	-13,74%	-16,39%	78,80%	69,65%	-9,15%	-11,61%	72,50%	68,78%	-3,73%	-5,14%
Real gate-to-gate ANSP costs (M, EUR2009)	124,31	111,24	-13,07	-10,51%	123,69	105,97	-17,72	-14,33%	124,11	102,87	-21,24	-17,11%	372,11	320,08	-52,03	-13,98%
% of CAPEX into Real gate-to-gate ANSP costs	2,85%	3,07%	0,22%	7,65%	8,69%	2,59%	-6,11%	-70,25%	8,97%	5,54%	-3,43%	-38,21%	6,83%	3,70%	-3,13%	-45,81%

Italy, ENAV

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	134,65	102,45	-32,20	-23,91%	130,15	131,39	1,24	0,95%	108,08	115,25	7,17	6,63%	372,88	349,09	-23,79	-6,38%
Main CAPEX (M, EUR2009)	86,65	60,37	-26,28	-30,33%	88,75	92,74	3,99	4,50%	69,3	64,27	-5,03	-7,26%	244,7	217,38	-27,32	-11,16%
% Main into Total CAPEX	64,35%	58,93%	-5,43%	-8,43%	68,19%	70,58%	2,39%	3,51%	64,12%	55,77%	-8,35%	-13,03%	65,62%	62,27%	-3,35%	-5,11%
Real gate-to-gate ANSP costs (M, EUR2009)	723,8	685	-38,80	-5,36%	730,78	668,38	-62,40	-8,54%	731,54	700,87	-30,67	-4,19%	2186,12	2054,25	-131,87	-6,03%
% of CAPEX into Real gate-to-gate ANSP costs	18,60%	14,96%	-3,65%	-19,60%	17,81%	19,66%	1,85%	10,38%	14,77%	16,44%	1,67%	11,30%	17,06%	16,99%	-0,06%	-0,37%

Latvia, LGS

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Total CAPEX (M, EUR2009)	6,05	4,08	-1,97	-32,56%	5,57	4,44	-1,13	-20,29%	5,65	5,31	-0,34	-6,02%	17,27	13,83	-3,44	-19,92%
Main CAPEX (M, EUR2009)	3,45	2,6	-0,85	-24,64%	1,98	2,28	0,30	15,15%	1,88	3,16	1,28	68,09%	7,31	8,04	0,73	9,99%
% Main into Total CAPEX	57,02%	63,73%	6,70%	11,75%	35,55%	51,35%	15,80%	44,46%	33,27%	59,51%	26,24%	78,85%	42,33%	58,13%	15,81%	37,34%
Real gate-to-gate ANSP costs (M, EUR2009)	24,05	22,53	-1,52	-6,32%	24,03	21,38	-2,65	-11,03%	24,69	21,58	-3,11	-12,60%	72,77	65,49	-7,28	-10,00%
% of CAPEX into Real gate-to-gate ANSP costs	25,16%	18,11%	-7,05%	-28,01%	23,18%	20,77%	-2,41%	-10,41%	22,88%	24,61%	1,72%	7,53%	23,73%	21,12%	-2,61%	-11,02%

Lithuania, Oro Navigacija

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR2009	Difference (%)	Planned	Actual	Difference, EUR2009	Difference (%)	Planned	Actual	Difference, EUR2009	Difference (%)	Planned	Actual	Difference, EUR2009	Difference (%)
Total CAPEX (M, EUR2009)	2,52	3,45	0,93	36,90%	1,19	0,74	-0,45	-37,82%	1,52	1,66	0,14	9,21%	5,23	5,85	0,62	11,85%
Main CAPEX (M, EUR2009)	2,52	3,45	0,93	36,90%	1,19	0,61	-0,58	-48,74%	1,52	1,47	-0,05	-3,29%	5,23	5,53	0,30	5,74%
% Main into Total CAPEX	100,00%	100,00%	0,00%	0,00%	100,00%	82,43%	-17,57%	-17,57%	100,00%	88,55%	-11,45%	-11,45%	100,00%	94,53%	-5,47%	-5,47%
Real gate-to-gate ANSP costs (M, EUR2009)	21,79	21,35	-0,44	-2,02%	22,03	22,52	0,49	2,22%	22,49	22,57	0,08	0,36%	66,31	66,44	0,13	0,20%
% of CAPEX into Real gate-to-gate ANSP costs	11,56%	16,16%	4,59%	39,73%	5,40%	3,29%	-2,12%	-39,17%	6,76%	7,35%	0,60%	8,82%	7,89%	8,80%	0,92%	11,64%

Malta, MATS

No data available.

Luxembourg, Belgium, the Netherlands, Germany, MUAC

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Total CAPEX (M, EUR2009)	16,46	9,19	-7,27	-44,17%	20,04	11,79	-8,25	-41,17%	21,59	4,82	-16,77	-77,67%	58,09	25,8	-32,29	-55,59%
Main CAPEX (M, EUR2009)	10,94	7,09	-3,85	-35,19%	13,32	9,58	-3,74	-28,08%	17,01	3,21	-13,80	-81,13%	41,27	19,88	-21,39	-51,83%
% Main into Total CAPEX	66,46%	77,15%	10,68%	16,08%	66,47%	81,26%	14,79%	22,25%	78,79%	66,60%	-12,19%	-15,47%	71,04%	77,05%	6,01%	8,46%
Real gate-to-gate ANSP costs (M, EUR2009)	136,71	133,34	-3,37	-2,47%	139,29	126,24	-13,05	-9,37%	144,07	132,98	-11,09	-7,70%	420,07	392,56	-27,51	-6,55%
% of CAPEX into Real gate-to-gate ANSP costs	12,04%	6,89%	-5,15%	-42,76%	14,39%	9,34%	-5,05%	-35,09%	14,99%	3,62%	-11,36%	-75,81%	13,83%	6,57%	-7,26%	-52,47%

Netherlands, LVNL

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Total CAPEX (M, EUR2009)	26,93	21,2	-5,73	-21,28%	33,77	11,07	-22,70	-67,22%	45,83	12,14	-33,69	-73,51%	106,53	44,41	-62,12	-58,31%
Main CAPEX (M, EUR2009)	20,37	15,66	-4,71	-23,12%	28,18	5,53	-22,65	-80,38%	40,16	4,79	-35,37	-88,07%	88,71	25,98	-62,73	-70,71%
% Main into Total CAPEX	75,64%	73,87%	-1,77%	-2,34%	83,45%	49,95%	-33,49%	-40,14%	87,63%	39,46%	-48,17%	-54,97%	83,27%	58,50%	-24,77%	-29,75%
Real gate-to-gate ANSP costs (M, EUR2009)	155,32	153,59	-1,73	-1,11%	153,89	157,17	3,28	2,13%	155,6	161,88	6,28	4,04%	464,81	472,64	7,83	1,68%
% of CAPEX into Real gate-to-gate ANSP costs	17,34%	13,80%	-3,54%	-20,39%	21,94%	7,04%	-14,90%	-67,90%	29,45%	7,50%	-21,95%	-74,54%	22,92%	9,40%	-13,52%	-59,00%

Norway, Avinor

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	18,82	10,44	-8,38	-44,53%	12,12	12,58	0,46	3,80%	15,41	13,8	-1,61	-10,45%	46,35	36,82	-9,53	-20,56%
Main CAPEX (M, EUR2009)	18,82	10,44	-8,38	-44,53%	12,12	12,58	0,46	3,80%	15,41	13,8	-1,61	-10,45%	46,35	36,82	-9,53	-20,56%
% Main into Total CAPEX	100,00%	100,00%	0,00%	0,00%	100,00%	100,00%	0,00%	0,00%	100,00%	100,00%	0,00%	0,00%	100,00%	100,00%	0,00%	0,00%
Real gate-to-gate ANSP costs (M, EUR2009)	136,48	130,12	-6,36	-4,66%	133,35	149,6	16,25	12,19%	131,2	142,52	11,32	8,63%	401,03	422,24	21,21	5,29%
% of CAPEX into Real gate-to-gate ANSP costs	13,79%	8,02%	-5,77%	-41,82%	9,09%	8,41%	-0,68%	-7,48%	11,75%	9,68%	-2,06%	-17,56%	11,56%	8,72%	-2,84%	-24,55%

Poland, PANSA

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)	Planned	Actual	Difference, EUR$_{2009}$	Difference (%)
Total CAPEX (M, EUR2009)	29,03	16,4	-12,63	-43,51%	29,26	12,13	-17,13	-58,54%	22,81	22,01	-0,80	-3,51%	81,1	50,54	-30,56	-37,68%
Main CAPEX (M, EUR2009)	20,61	10,94	-9,67	-46,92%	22,84	5,64	-17,20	-75,31%	14,76	13,71	-1,05	-7,11%	58,21	30,29	-27,92	-47,96%
% Main into Total CAPEX	71,00%	66,71%	-4,29%	-6,04%	78,06%	46,50%	-31,56%	-40,43%	64,71%	62,29%	-2,42%	-3,74%	71,78%	59,93%	-11,84%	-16,50%
Real gate-to-gate ANSP costs (M, EUR2009)	137,89	127,81	-10,08	-7,31%	141,28	124,46	-16,82	-11,91%	138,32	145,33	7,01	5,07%	417,49	397,6	-19,89	-4,76%
% of CAPEX into Real gate-to-gate ANSP costs	21,05%	12,83%	-8,22%	-39,05%	20,71%	9,75%	-10,96%	-52,94%	16,49%	15,14%	-1,35%	-8,16%	19,43%	12,71%	-6,71%	-34,56%

Portugal, NAV Portugal

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	19,47	3,85	-15,62	-80,23%	14,37	5,16	-9,21	-64,09%	13,97	7,03	-6,94	-49,68%	47,81	16,04	-31,77	-66,45%
Main CAPEX (M, EUR2009)	17,24	2,58	-14,66	-85,03%	12,57	5,16	-7,41	-58,95%	13,06	5,78	-7,28	-55,74%	42,87	13,52	-29,35	-68,46%
% Main into Total CAPEX	88,55%	67,01%	-21,53%	-24,32%	87,47%	100,00%	12,53%	14,32%	93,49%	82,22%	-11,27%	-12,05%	89,67%	84,29%	-5,38%	-6,00%
Real gate-to-gate ANSP costs (M, EUR2009)	109,78	136,71	26,93	24,53%	110,77	126,46	15,69	14,16%	110,9	110,9	0,00	0,00%	331,45	374,07	42,62	12,86%
% of CAPEX into Real gate-to-gate ANSP costs	17,74%	2,82%	-14,92%	-84,12%	12,97%	4,08%	-8,89%	-68,55%	12,60%	6,34%	-6,26%	-49,68%	14,42%	4,29%	-10,14%	-70,27%

Romania, ROMATSA

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	24,12	8,98	-15,14	-62,77%	32,79	8,82	-23,97	-73,10%	28,65	16,32	-12,33	-43,04%	85,56	34,12	-51,44	-60,12%
Main CAPEX (M, EUR2009)	21,35	2,45	-18,90	-88,52%	31,17	4,12	-27,05	-86,78%	25,86	10,16	-15,70	-60,71%	78,38	16,73	-61,65	-78,66%
% Main into Total CAPEX	88,52%	27,28%	-61,23%	-69,18%	95,06%	46,71%	-48,35%	-50,86%	90,26%	62,25%	-28,01%	-31,03%	91,61%	49,03%	-42,58%	-46,48%
Real gate-to-gate ANSP costs (M, EUR2009)	127,29	142,47	15,18	11,93%	129,7	131,64	1,94	1,50%	132,88	136,8	3,92	2,95%	389,87	410,91	21,04	5,40%
% of CAPEX into Real gate-to-gate ANSP costs	18,95%	6,30%	-12,65%	-66,74%	25,28%	6,70%	-18,58%	-73,50%	21,56%	11,93%	-9,63%	-44,67%	21,95%	8,30%	-13,64%	-62,16%

Slovakia, LPS

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	37,23	30,85	-6,38	-17,14%	6,27	6,16	-0,11	-1,75%	6,21	3,82	-2,39	-38,49%	49,71	40,83	-8,88	-17,86%
Main CAPEX (M, EUR2009)	31,89	29,84	-2,05	-6,43%	2,78	1,75	-1,03	-37,05%	0	1,83	1,83	#DIV/0!	34,67	33,42	-1,25	-3,61%
% Main into Total CAPEX	85,66%	96,73%	11,07%	12,92%	44,34%	28,41%	-15,93%	-35,93%	0,00%	47,91%	47,91%	#DIV/0!	69,74%	81,85%	12,11%	17,36%
Real gate-to-gate ANSP costs (M, EUR2009)	52,78	51,27	-1,51	-2,86%	53,61	52,88	-0,73	-1,36%	53,54	53,66	0,12	0,22%	159,93	157,81	-2,12	-1,33%
% of CAPEX into Real gate-to-gate ANSP costs	70,54%	60,17%	-10,37%	-14,70%	11,70%	11,65%	-0,05%	-0,40%	11,60%	7,12%	-4,48%	-38,62%	31,08%	25,87%	-5,21%	-16,76%

Slovenia, Slovenia Control

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR2009	Difference (%)	Planned	Actual	Difference, EUR2009	Difference (%)	Planned	Actual	Difference, EUR2009	Difference (%)	Planned	Actual	Difference, EUR2009	Difference (%)
Total CAPEX (M, EUR2009)	5,49	9,76	4,27	77,78%	2,41	2,12	-0,29	-12,03%	1,65	2,48	0,83	50,30%	9,55	14,36	4,81	50,37%
Main CAPEX (M, EUR2009)	4,98	9,24	4,26	85,54%	1,55	1,8	0,25	16,13%	1,34	2,11	0,77	57,46%	7,87	13,15	5,28	67,09%
% Main into Total CAPEX	90,71%	94,67%	3,96%	4,37%	64,32%	84,91%	20,59%	32,01%	81,21%	85,08%	3,87%	4,76%	82,41%	91,57%	9,17%	11,12%
Real gate-to-gate ANSP costs (M, EUR2009)	27,83	25,08	-2,75	-9,88%	28,13	26,1	-2,03	-7,22%	27,86	26,81	-1,05	-3,77%	83,82	77,99	-5,83	-6,96%
% of CAPEX into Real gate-to-gate ANSP costs	19,73%	38,92%	19,19%	97,27%	8,57%	8,12%	-0,44%	-5,19%	5,92%	9,25%	3,33%	56,19%	11,39%	18,41%	7,02%	61,61%

Spain, ENAIRE

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	152,4	83,06	-69,34	-45,50%	150,35	47,63	-102,72	-68,32%	148,1	41,45	-106,65	-72,01%	450,85	172,14	-278,71	-61,82%
Main CAPEX (M, EUR2009)	17,04	12,16	-4,88	-28,64%	14,65	5,46	-9,19	-62,73%	22,12	6	-16,12	-72,88%	53,81	23,62	-30,19	-56,10%
% Main into Total CAPEX	11,18%	14,64%	3,46 %	30,94%	9,74 %	11,46%	1,72 %	17,65%	14,94%	14,48%	-0,46 %	-3,08 %	11,94%	13,72%	1,79 %	14,97%
Real gate-to-gate ANSP costs (M, EUR2009)	797,62	749,21	-48,41	-6,07 %	792,46	676,56	-115,90	-14,63%	778,53	653,54	-124,99	-16,05%	2368,61	2079,31	-289,30	-12,21%
% of CAPEX into Real gate-to-gate ANSP costs	19,11%	11,09%	-8,02 %	-41,98%	18,97%	7,04 %	-11,93%	-62,89%	19,02%	6,34 %	-12,68%	-66,66%	19,03%	8,28 %	-10,76%	-56,51%

Sweden, LFV

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	12,01	9,1	-2,91	-24,23%	12,48	7,98	-4,50	-36,06%	12,01	10,77	-1,24	-10,32%	36,5	27,85	-8,65	-23,70%
Main CAPEX (M, EUR2009)	5,65	6,28	0,63	11,15%	5,68	4,17	-1,51	-26,58%	3,36	2,8	-0,56	-16,67%	14,69	13,25	-1,44	-9,80%
% Main into Total CAPEX	47,04%	69,01%	21,97%	46,69%	45,51%	52,26%	6,74%	14,82%	27,98%	26,00%	-1,98%	-7,07%	40,25%	47,58%	7,33%	18,21%
Real gate-to-gate ANSP costs (M, EUR2009)	170,42	196,79	26,37	15,47%	169,68	166,69	-2,99	-1,76%	167,14	138,74	-28,40	-16,99%	507,24	502,22	-5,02	-0,99%
% of CAPEX into Real gate-to-gate ANSP costs	7,05%	4,62%	-2,42%	-34,38%	7,36%	4,79%	-2,57%	-34,91%	7,19%	7,76%	0,58%	8,03%	7,20%	5,55%	-1,65%	-22,94%

Switzerland, Skyguide

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	35,76	32,86	-2,90	-8,11%	36,94	38,56	1,62	4,39%	38,2	39,68	1,48	3,87%	110,9	111,1	0,20	0,18%
Main CAPEX (M, EUR2009)	9,05	7,16	-1,89	-20,88%	5,18	6,64	1,46	28,19%	0,05	5,2	5,15	10300,00%	14,28	19	4,72	33,05%
% Main into Total CAPEX	25,31%	21,79%	-3,52%	-13,90%	14,02%	17,22%	3,20%	22,80%	0,13%	13,10%	12,97%	9912,10%	12,88%	17,10%	4,23%	32,81%
Real gate-to-gate ANSP costs (M, EUR2009)	149,44	147,52	-1,92	-1,28%	152,12	143,98	-8,14	-5,35%	155,14	149,88	-5,26	-3,39%	456,7	441,38	-15,32	-3,35%
% of CAPEX into Real gate-to-gate ANSP costs	23,93%	22,27%	-1,65%	-6,91%	24,28%	26,78%	2,50%	10,29%	24,62%	26,47%	1,85%	7,52%	24,28%	25,17%	0,89%	3,66%

United Kingdom, NATS

	2012				2013				2014				RP1			
	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)	Planned	Actual	Difference, EUR_{2009}	Difference (%)
Total CAPEX (M, EUR2009)	146,91	119,34	-27,57	-18,77%	141,3	107,55	-33,75	-23,89%	135,66	132,67	-2,99	-2,20%	423,87	359,56	-64,31	-15,17%
Main CAPEX (M, EUR2009)	116,69	96,08	-20,61	-17,66%	111,61	92,46	-19,15	-17,16%	107,52	115,09	7,57	7,04%	335,82	303,63	-32,19	-9,59%
% Main into Total CAPEX	79,43%	80,51%	1,08%	1,36%	78,99%	85,97%	6,98%	8,84%	79,26%	86,75%	7,49%	9,45%	79,23%	84,44%	5,22%	6,59%
Real gate-to-gate ANSP costs (M, EUR2009)	768,26	710,38	-57,88	-7,53%	797,16	759,75	-37,41	-4,69%	795,11	699	-96,11	-12,09%	2360,53	2169,13	-191,40	-8,11%
% of CAPEX into Real gate-to-gate ANSP costs	19,12%	16,80%	-2,32%	-12,15%	17,73%	14,16%	-3,57%	-20,14%	17,06%	18,98%	1,92%	11,24%	17,96%	16,58%	-1,38%	-7,69%

6.8 Data 2015

Table 6.22 DUC and unit cost data, 2015

		2015			
		Target	Achieved	Delta (nominal)	Delta (%)
Union-wide	DUC for en-route ANS	55.33	52.85	-2.48	-4.5%
	Actual unit costs charged to users (EUR2009)[8]	n/a	56.73	1.4	2.5%
	Actual unit costs incurred by airspace users (EUR2009)[9]	n/a	54.34	-0.99	-1.8%
Austria	DUC for en-route ANS (EUR2009)	61.23	57.23	-4	-6.5%
	Actual unit costs charged to users (EUR)		73.34	12.11	19.8%
	Actual unit costs incurred by users (in that year, EUR)		67.25	6.02	9.8%
Bulgaria	DUC for en-route ANS (EUR2009)	29.49	25.89	-3.6	-12.2%
	Actual unit costs charged to users (BGN)		60.4	30.91	104.8%
	Actual unit costs incurred by users (in that year, BGN)		51.93	22.44	76.1%
Cyprus	DUC for en-route ANS (EUR2009)	33.46	30.59	-2.87	-8.6%
	Actual unit costs charged to users (EUR)		36.91	3.45	10.3%
	Actual unit costs incurred by users (in that year, EUR)		33.51	0.05	0.1%
Czech Republic	DUC for en-route ANS (EUR2009)	40.28	38.85	-1.43	-3.6%
	Actual unit costs charged to users (CZK)		1,184.60	1,144.32	2840.9 %
	Actual unit costs incurred by users (in that year, CZK)		1,165.98	1,125.70	2794.7 %
Denmark	DUC for en-route ANS (EUR2009)	56.34	56.24	-0.1	-0.2%
	Actual unit costs charged to users (DKK)		471.12	414.78	736.2%
	Actual unit costs incurred by users (in that year, DKK)		454.88	398.54	707.4%
Sweden	DUC for en-route ANS (EUR2009)	53.25	63.05	9.8	18.4%

[8] Calculated by dividing the total costs by the forecast en-route service units total. The actual total costs charged to users (EUR2009) amounted to 6,393.3 million EUR_{2009} in 2015. In total, 112,687,532 en-route service units were forecast for 2015. Source: PRB Annual Monitoring Report 2015, Volume I: p.45.

[9] Calculated by dividing the total costs by the actual en-route service units total. The actual total costs incurred by airspace users users (EUR2009) amounted to 6,249.3 million EUR_{2009} in 2015. In total, 114,994,014 en-route service units were handled in 2015. Source: PRB Annual Monitoring Report 2015, Volume I: p.45.

	Actual unit costs charged to users (SEK)		609.06	555.81	1043.8 %
	Actual unit costs incurred by users (in that year, SEK)		718.7	665.45	1249.7 %
Estonia	DUC for en-route ANS (EUR2009)	24.19	21.25	-2.94	-12.2%
	Actual unit costs charged to users (EUR)		31.1	6.91	28.6%
	Actual unit costs incurred by users (in that year, EUR)		27.73	3.54	14.6%
Belgium-Luxembourg	DUC for en-route ANS (EUR2009)	61.79	58.98	-2.81	-4.5%
	Actual unit costs charged to users (EUR)		68.76	6.97	11.3%
	Actual unit costs incurred by users (in that year, EUR)		66.97	5.18	8.4%
France	DUC for en-route ANS (EUR2009)	63.91	60.36	-3.55	-5.6%
	Actual unit costs charged to users (EUR)		69.34	5.43	8.5%
	Actual unit costs incurred by users (in that year, EUR)		68.28	4.37	6.8%
Germany	DUC for en-route ANS (EUR2009)	75.97	71.23	-4.74	-6.2%
	Actual unit costs charged to users (EUR)		88.22	12.25	16.1%
	Actual unit costs incurred by users (in that year, EUR)		82.4	6.43	8.5%
The Netherlands	DUC for en-route ANS (EUR2009)	59.57	55.1	-4.47	-7.5%
	Actual unit costs charged to users (EUR)		66.57	7	11.8%
	Actual unit costs incurred by users (in that year, EUR)		63.82	4.25	7.1%
Switzerland	DUC for en-route ANS (EUR2009)	72.82	71.29	-1.53	-2.1%
	Actual unit costs charged to users (EUR)		118.97	46.15	63.4%
	Actual unit costs incurred by users (in that year, EUR)		109.03	36.21	49.7%
Finland	DUC for en-route ANS (EUR2009)	49.67	52.76	3.09	6.2%
	Actual unit costs charged to users (EUR)		56.23	6.56	13.2%
	Actual unit costs incurred by users (in that year, EUR)		53.89	4.22	8.5%
Greece	DUC for en-route ANS (EUR2009)	32.36	28.2	-4.16	-12.9%

	Actual unit costs charged to users (EUR)		38.38	6.02	18.6%
	Actual unit costs incurred by users (in that year, EUR)		30.52	-1.84	-5.7%
Hungary	DUC for en-route ANS (EUR2009)	34.32	30.25	-4.07	-11.9%
	Actual unit costs charged to users (HUF)		11,197.73	11,163.41	32527.4%
	Actual unit costs incurred by users (in that year, HUF)		10,127.46	10,093.14	29408.9%
Ireland	DUC for en-route ANS (EUR2009)	28.45	24.93	-3.52	-12.4%
	Actual unit costs charged to users (EUR)		29.6	1.15	4.0%
	Actual unit costs incurred by users (in that year, EUR)		28.74	0.29	1.0%
Italy	DUC for en-route ANS (EUR2009)	71.16	71.89	0.73	1.0%
	Actual unit costs charged to users (EUR)		80.49	9.33	13.1%
	Actual unit costs incurred by users (in that year, EUR)		80.64	9.48	13.3%
Latvia	DUC for en-route ANS (EUR2009)	25.79	24.83	-0.96	-3.7%
	Actual unit costs charged to users (EUR)		27.58	1.79	6.9%
	Actual unit costs incurred by users (in that year, EUR)		27.4	1.61	6.2%
Lithuania	DUC for en-route ANS (EUR2009)	42.07	42.9	0.83	2.0%
	Actual unit costs charged to users (EUR)		46.82	4.75	11.3%
	Actual unit costs incurred by users (in that year, EUR)		44.85	2.78	6.6%
Malta	DUC for en-route ANS (EUR2009)	26.02	19.22	-6.8	-26.1%
	Actual unit costs charged to users (EUR)		22.33	-3.69	-14.2%
	Actual unit costs incurred by users (in that year, EUR)		22.21	-3.81	-14.6%
Norway	DUC for en-route ANS (EUR2009)	46.03	43.99	-2.04	-4.4%
	Actual unit costs charged to users (NOK)		426.94	380.91	827.5%
	Actual unit costs incurred by users (in that year, NOK)		442.66	396.63	861.7%
Poland	DUC for en-route ANS (EUR2009)	30.14	33.02	2.88	9.6%
	Actual unit costs charged to users (PLN)		143.89	113.75	377.4%

	Actual unit costs incurred by users (in that year, PLN)		155.95	125.81	417.4%
Portugal	DUC for en-route ANS (EUR2009)	32.55	32.39	-0.16	-0.5%
	Actual unit costs charged to users (EUR)		68.76	36.21	111.2%
	Actual unit costs incurred by users (in that year, EUR)		66.97	34.42	105.7%
Romania	DUC for en-route ANS (EUR2009)	32.02	28.78	-3.24	-10.1%
	Actual unit costs charged to users (RON)		164.6	132.58	414.1%
	Actual unit costs incurred by users (in that year, RON)		149.6	117.58	367.2%
Slovakia	DUC for en-route ANS (EUR2009)	49.86	48.87	-0.99	-2.0%
	Actual unit costs charged to users (EUR)		54.99	5.13	10.3%
	Actual unit costs incurred by users (in that year, EUR)		54.83	4.97	10.0%
Slovenia	DUC for en-route ANS (EUR2009)	59.56	61.6	2.04	3.4%
	Actual unit costs charged to users (EUR)		68.36	8.8	14.8%
	Actual unit costs incurred by users (in that year, EUR)		65.33	5.77	9.7%
Spain (Continental)	DUC for en-route ANS (EUR2009)	63.2	60.68	-2.52	-4.0%
	Actual unit costs charged to users (EUR)		71.69	8.49	13.4%
	Actual unit costs incurred by users (in that year, EUR)		66.36	3.16	5.0%
Spain (Canarias)	DUC for en-route ANS (EUR2009)	58.21	64.81	6.6	11.3%
	Actual unit costs charged to users (EUR)		58.36	0.15	0.3%
	Actual unit costs incurred by users (in that year, EUR)		58.91	0.7	1.2%
United Kingdom	DUC for en-route ANS (EUR2009)	63.63	62.88	-0.75	-1.2%
	Actual unit costs charged to users (GBP)		73.11	9.48	14.9%
	Actual unit costs incurred by users (in that year, GBP)		65.65	2.02	3.2%
Croatia	DUC for en-route ANS (EUR2009)	47.42	44.9	-2.52	-5.3%
	Actual unit costs charged to users (HRK)		351	303.58	640.2%

	Actual unit costs incurred by users (in that year, HRK)		346.06	298.64	629.8%

Source: PRB Annual Monitoring Report 2015, Volumes I and II.
Please note: Actual unit costs charged to users and Actual unit costs incurred by users in that year are denominated in nominal terms, whereas the DUC is denoted in EUR2009 terms.

Table 6.23 Planned and realised flight service units, 2015

	Target	Realised	Delta (nominal)	Delta (%)
Union-wide	112,687,532	114,994,014	2,306,482	2.0%
Austria	2,693,000	2,739,285	46,285	1.7%
Bulgaria	2,627,000	3,222,750	595,750	22.7%
Cyprus	1,395,081	1,547,646	152,565	10.9%
Czech Republic	2,548,000	2,531,815	-16,185	-0.6%
Denmark	1,553,000	1,583,445	30,445	2.0%
Sweden	3,257,000	3,354,938	97,938	3.0%
Estonia	774,641	815,544	40,903	5.3%
Belgium-Luxembourg	2,440,000	2,454,178	14,178	0.6%
France	18,662,000	18,867,771	205,771	1.1%
Germany	12,801,000	12,906,339	105,339	0.8%
Netherlands	2,806,192	2,892,654	86,462	3.1%
Switzerland	1,452,683	1,454,786	2,103	0.1%
Finland	792,600	760,383	-32,217	-4.1%
Greece	4,231,888	4,898,818	666,930	15.8%
Hungary	2,457,201	2,695,944	238,743	9.7%
Ireland	4,000,000	4,182,450	182,450	4.6%
Italy	8,557,964	8,171,509	-386,455	-4.5%
Latvia	802,000	801,836	-164	0.0%
Lithuania	490,928	492,283	1,355	0.3%
Malta	609,000	823,344	214,344	35.2%
Norway	2,287,878	2,313,891	26,013	1.1%
Poland	4,362,840	3,880,013	-482,827	-11.1%
Portugal	3,095,250	3,150,186	54,936	1.8%
Romania	4,012,887	4,570,684	557,797	13.9%
Slovakia	1,078,000	1,071,382	-6,618	-0.6%
Slovenia	481,500	466,264	-15,236	-3.2%
Spain (continent)	8,880,000	8,997,417	117,417	1.3%
Spain (Canarias)	1,531,000	1,402,349	-128,651	-8.4%
United Kingdom	10,244,000	10,153,900	-90,100	-0.9%
Croatia	1,763,000	1,790,210	27,210	1.5%

Table 6.24 EU-wide en-route costs and service units, 2015

	Planned	Actual	Delta (nominal)	Delta (%)
En-route costs (EUR2009)	6,235,113,277	6,077,537,050	-157,576,227	-2.5%
En-route service units	112,687,532	114,994,014	2,306,482	2.0%
DUC (EUR2009)	55.33	52.85	-2.48	-4.5%

Table 6.25 EU-wide terminal costs and service units, 2015

	Planned	Actual	Delta (nominal)	Delta (%)
Terminal costs	1,118,019,472	1,084,905,609	-33,113,863	-3.0%
Terminal service units	6,181,013	6,318,950	137,937	2.2%
Real terminal costs per service unit	€ 180.88	€ 171.96	-€ 8.92	-4.9%

Table 6.26 Return on Equity performance, pre-tax, 2015

	Planned RoE	Actual RoE	Delta Actual v Planned (%)
Union-wide	6.9	12.6	182.6%
Austria	4	7.9	197.5%
Bulgaria	7	4	57.1%
Cyprus	13.5	16.5	122.2%
Czech Republic	6.5	10.1	155.4%
Denmark	5	4.4	88.0%
Sweden	3.6	10.2	283.3%
Estonia	8.9	22.6	253.9%
Belgium-Luxembourg	4.2	8.1	192.9%
France	8.6	26.2	304.7%
Germany	7.5	19.4	258.7%
Netherlands[10]	-	-	-
Switzerland	2.6	5	192.3%
Finland	8.6	2.2	25.6%
Greece	8.9	96.9	1088.8%

[10] The Return on Equity calculations are not applicable for the Netherlands as the Dutch ANSP is fully debt-financed.

Hungary	7.9	18.1	229.1%
Ireland	10.7	32.5	303.7%
Italy	5.8	7.6	131.0%
Latvia	6.6	12	181.8%
Lithuania	3	2	66.7%
Malta	6.9	11.8	171.0%
Norway	10.9	26.9	246.8%
Poland	6	4.6	76.7%
Portugal	6.4	8.3	129.7%
Romania	6.6	8.6	130.3%
Slovakia	6.2	9.1	146.8%
Slovenia	8	2.1	26.3%
Spain	6.9	8	115.9%
United Kingdom	10.9	14.3	131.2%
Croatia	3.4	13.5	397.1%

Annex 7 Findings of Stakeholder Consultation Activities

Annex 7 presents the results of the field research activities conducted for this evaluation study. The field research consists of three main streams of stakeholder consultation activities:

- The Open Public Consultation, which ran from 7 June 2016 to 4 September 2016.
- The targeted survey, which ran from 7 July 2016 to 4 September 2016.
- The interview programme with selected stakeholders.

The outputs of these three streams are reported in the following three sub-chapters.

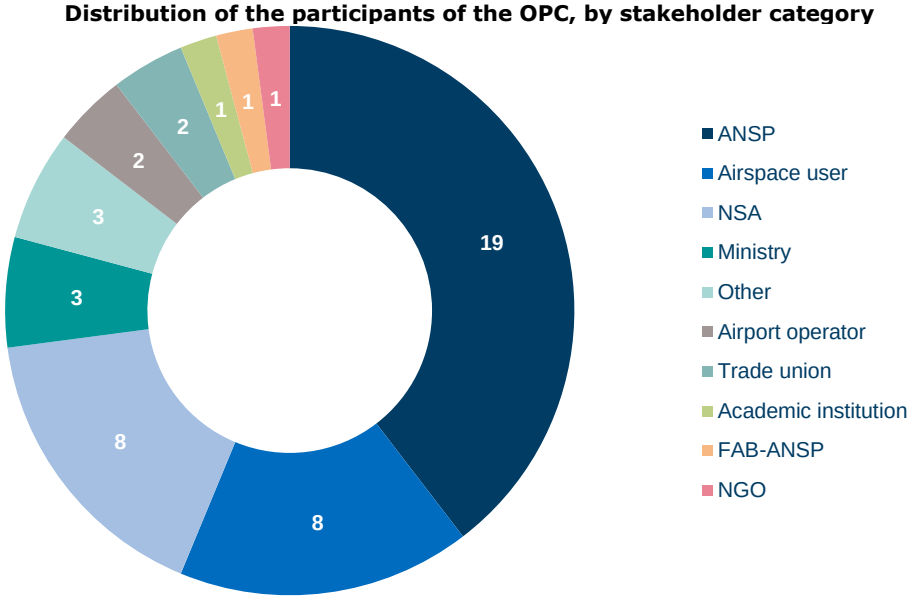
1 Key findings of the Open Public Consultation

1.1 *Introduction*

The open public consultation ran for three months from 7 June 2016 until 4 September 2016. In total 48 stakeholders responded to the public consultation distributed over the stakeholder groups as indicated in Figure 1.1 below. The largest respondent group was ANSPs (19 responses) followed by NSAs and airspace users (8 responses each). Three responses came from ministries, two responses from airport operators and trade unions. The rest (academic institutions, FAB-ANSP, NGO) provided just one response each.

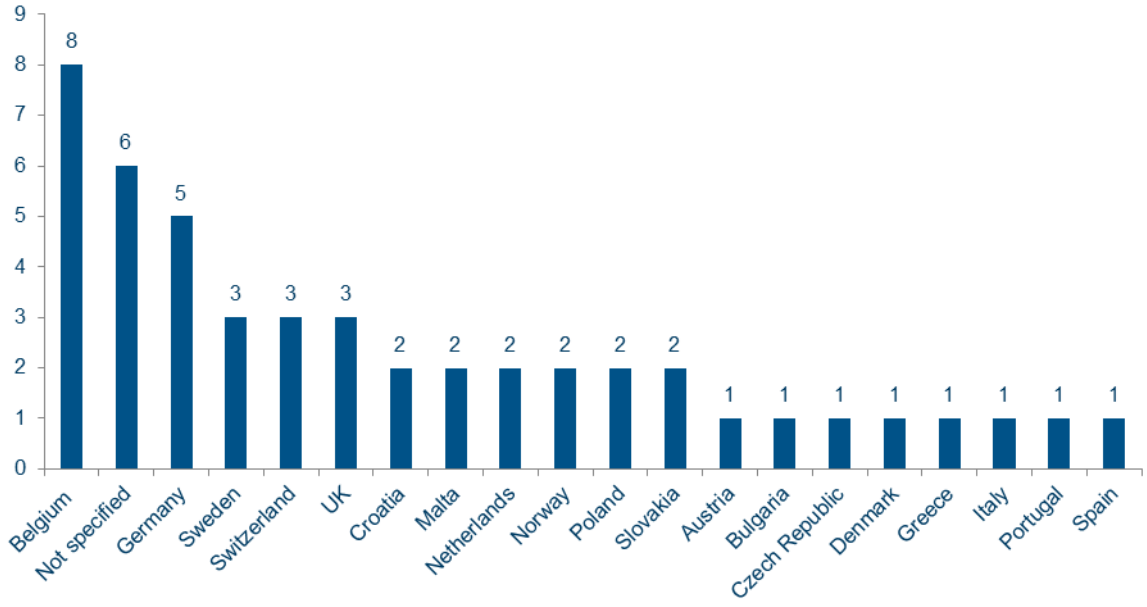
It should be noted that there is, to a limited extent, duplication in the responses received and analysed from the OPC and from the targeted survey, due to a number of respondents having answered to both.

Figure 1.1 Distribution of the participants of the OPC, by stakeholder category



Stakeholders from 19 Member States responded to the public consultation distributed as presented in Figure 1.2 below. The largest respondent group came from Belgium (8 participants) followed by Germany (5 respondents) and Sweden, Switzerland and the UK (3 respondents each). Six participants made no indication with regard to the Member State of their origin.

Figure 1.2 Distribution of respondents by Member State

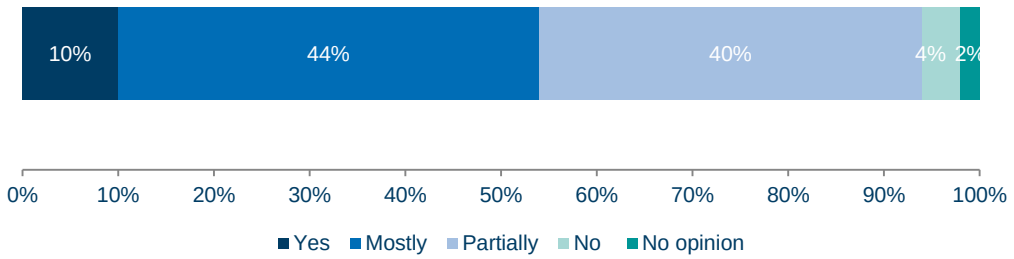


1.2 *Relevance*

Regulation (EU) 390/2013 ("the Performance Regulation") and Regulation (EU) 391/2013 ("the Charging Regulation") lay down the performance and charging schemes, respectively, for air navigation services (ANS) and network functions. The objectives of the SES performance and charging schemes are to improve the performance of ANS and network functions, thus to deliver better (less delay), environmentally friendly (more direct routes) and more cost-effective ANS in the context of maintaining or improving current levels of safety.

The respondents were asked whether they believe that the objectives of the SES performance and charging schemes still correspond to current needs of the aviation sector and their passenger and freight customers. Figure 1.3 below shows the distribution of the answers. The majority find that the objectives of the SES performance schemes still correspond to the needs of stakeholders: 44% state that they mostly correspond and 10% that they fully correspond.

Figure 1.3 The extent to which the objectives of the SES performance and charging schemes still correspond to current needs of the aviation sector, passengers and customers (n=48)



More specifically, the majority of respondents consider the current high-level objectives of the SES Regulations, namely cost transparency and efficiency, service quality, environment and safety, to be still valid for the Reference Period 3 (RP3). Realisation of these objectives is the primary challenge that is, however, caused by certain deficiencies in the target-setting. It is widely felt that the current objectives should be revised and/or rendered more precise to ensure a successful outcome for RP3.

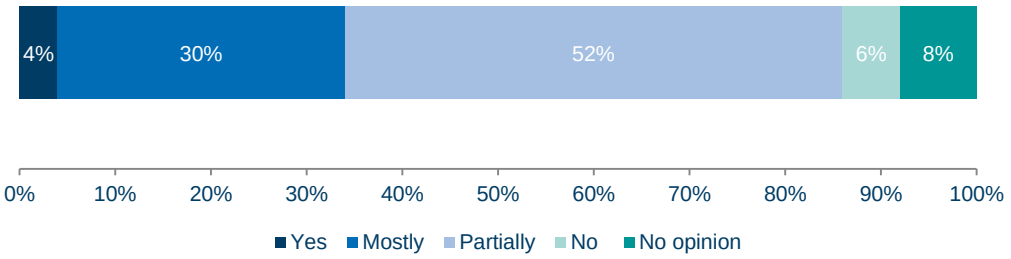
A major weakness of the current objectives, pointed out by more than a half of the respondents, is the lack of flexibility in different aspects. Specifically, it is perceived that current objectives do not allow: taking account of national/local and economic circumstances (consequences of the economic crisis, local technical possibilities); differentiating between large and smaller companies and responding to the dynamics of the business (due to overly long planning periods).

Many respondents pointed out that current objectives do not sufficiently account for interdependencies between the objectives, between KPAs/KPIs and between different types of operators. It is felt that a greater coherence of, and balance between, the objectives, KPAs/KPIs and the performance contributions of different types of operators (e.g. ANSP, airspace users, airports) would better reflect the industry reality, as well as the diversity across Member States, and positively impact the realisation of the objectives.

Several respondents feel that environmental issues (e.g. noise prevention) and interests of passengers and freight customers are neglected. Some respondents point out that the current objectives do not correspond to the needs of all stakeholders in the same way. In particular they correspond better to the needs of the aviation sector than to those of passengers and customers.
Some respondents indicate that more actions/ targeting of new areas (beyond charging and performance schemes) might be necessary. In particular, the problem of state aid and sustaining national monopolies is mentioned as slowing down the implementation of the objectives and achieving the SES.

The respondents were further asked whether they consider the two SES Regulations to be the correct response to address the needs of the aviation sector and its customers. Most respondents (52%) thought that this is only partially the case (see Figure 1.4 below for the distribution of response). 30% thought that the SES Regulations mostly correspond and only 4% that they fully correspond.

Figure 1.4 The extent to which the SES Regulations are the correct response to the needs of the aviation sector and its customers (n=48)



The majority of respondents maintain that while the concept and intent of the two Regulations are still correct, they need revision based on the lessons learned during RP1 and RP2 and in the context of the entire SES package.

The major improvement required for the regulations, according to many respondents, is to make them more flexible so that they are able to reflect various national/local and economic circumstances. The regulations should allow for fast and flexible adaptation to the changing environment, not least by adjusting the length of the currently too long planning periods.

Many stakeholders think that the regulations need to be simplified in line with the EU Better Regulation guidelines. Currently the Regulations are perceived to be too complex for the implementation at the national level (too many targets, lack of flexibility, administrative burden, poor understanding by stakeholders), which leads to the "one size fits all" situation at the implementation level.

At the same time, some respondents feel that the regulations do not go far enough in providing uniform rules necessary to avoid different interpretations and applications at the local level and to break national monopolies in order to create the SES.

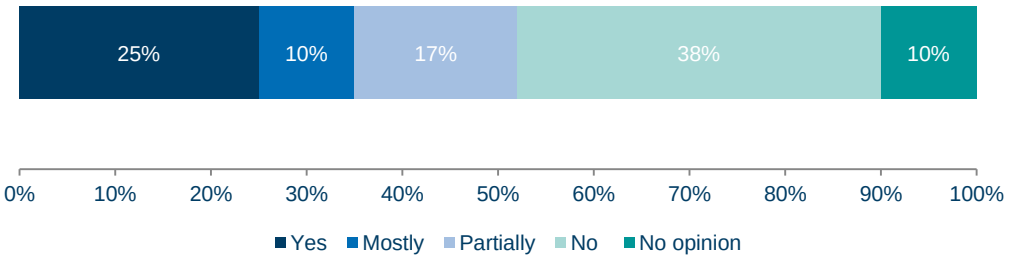
Many respondents point out the lack of consideration of interdependences between stakeholders in the current rules: in the future other stakeholders, like airports and airlines, should be targeted, for example, regarding turnaround costs and flight plan adherence, respectively. ANSPs should be responsible for what they can influence only. Also the interplay and synergies between different KPAs should be reflected in the regulations (e.g. capacity vs environment, new technology vs cost saving).

Some respondents indicate that cost-efficiency is not addressed by the current rules in a consistent way, and the current scheme even contains provisions which undermine the behaviours that price cap regulation should achieve (e.g. possibility of price adjustments). A lack of sanctions for non-compliance also does not encourage of better cost-efficiency.

With regard to representing passengers' and freight customers' interests, the respondents were asked whether they consider national supervisory authorities (NSAs) to be the right party/proxy for this. The opinions were quite divided (see Figure 1.5 below). 38% of respondents considered NSAs not to be the right place, among which were all airspace users, five ANSPs and even one NSA. 25% of respondents thought NSAs to be the right place to represent interests of passengers and customers, among which were many ANSPs and three NSAs. 17% thought that NSAs were partially the right place and 10% that they were mostly the right place, among which three NSAs were in the former group and one NSA in the latter.

Unfortunately, there were no elaborations by the respondents in answering this question.

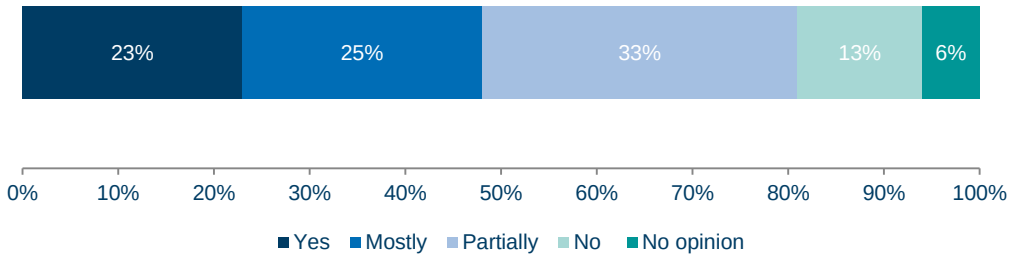
Figure 1.5 The extent to which NSAs are the right party to represent passengers and freight customers (n=48)



1.3 *European added value*

To consider the European added value of the two regulations, the respondents were asked whether they consider the SES performance and charging schemes to be useful in terms of improving ANS performance in their respective Member States, compared to what could be achieved by Member States alone at national and/or regional level. While a majority, including a great majority of NSAs and ANSPs, thought that the SES schemes were useful (23%) or mostly useful (25%), a significant part of respondents found them only partially useful (33%) or not useful (13%) – see Figure 1.6 below.

Figure 1.6 Usefulness of the SES schemes for improving individual Member State performance (n=48)



The respondents who consider that ANS performance at the national level has been improved by the SES performance and charging schemes, give the following reasons:

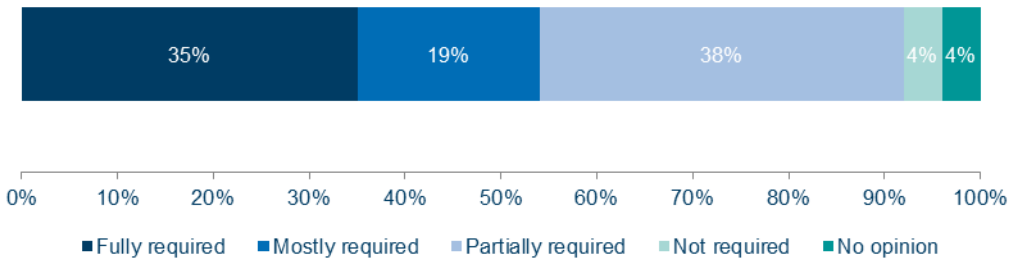
- The regulations give the necessary direction for improvement and provide a harmonised approach across the EU and the pace of reform.
- The regulations create of a reference framework, for example, of measurements that make cross-border comparisons possible).
- The pressure on performance of ATM – where ANSPs are state-owned and there may be a lack of political will and confusion of State and ANSP interests, so the regulations provide the right instrument to motivate reforms in Member States.

Some respondents viewed that the regulations were only partially or not at all useful for improving ANS performance at the national level, giving the following reasons:

- There has been a national scheme (e.g. UK) in place that has set similar targets as the EU did, so that the SES impact has been marginal.
- Deficient implementation of the schemes.
- Little impact at the local level/providers, mainly due to the failure to consider local specifics/ specifics of small companies (e.g. the trade-off (or conflict) between cost-efficiency and investments or capacity). This point is also recognised by the respondents positively assessing the impact of the SES schemes.
- Linked to the last point, the respondents noted that a national bottom-up approach could be more effective.

The respondents were also asked as to what extent EU-level action is still necessary to improve the performance of ANS and network functions. 38% of respondents, mainly ANSPs, consider that further EU-level action is "partially required" and 35%, among which are all airspace users, think that such action is "fully required" (see Figure 1.7 below).

Figure 1.7 Extent to which further EU-level action is required (n=48)



Those who think that further action at the EU level is required or mostly required give the following reasons:

- EU-level action provides the necessary encouragement for reforms, mainly due to the existence of national monopolies and lack of independence of NSAs.
- EU-level action is required due to network effects, externalities and environmental impact as the industry is mainly cross-border.
- EU-level action will improve the limited progress achieved under SES I and II and shall further provide a common European approach, aligning national policies, establishing common priorities and promoting common tools.
- Competence of regulating the domain of ATM/ANS lies fully with the EU: a proper legal framework is necessary, not a 'best efforts' scheme. EU level action in this regard is particularly important for consumers.

The majority of those who think that further action at the EU level is not required or partially required have resented three subsidiarity arguments for why they favour a bottom-up approache, with the EU in a coordinating role:

- The national regulator is better placed due to the better understanding of specific local conditions and challenges.
- The EU level lacks understanding of interdependences and specifics of the local level and this results in setting unrealistic targets.
- SES performance and charging schemes must be directly linked to the performance of ANSPs, which can be better understood at the local level.

The few respondents that think that further action at the EU level is not required or only partially required argue that the current rules are sufficient and need only some adjustments in terms of greater flexibility for Member States. They consider the implementation of the current rules to be the main issue – and this issue is dealt with at the national level:

- The current requirements are demanding enough and require a lot of effort and resources. The remaining necessary action is, therefore, at the national level and should focus on implementing the rules and adapting to local circumstances.
- All relevant ANS/ATM issues are already covered, only the implementation is lagging behind (which is a Member States responsibility). The remaining issues for the EU are the alignment of

rules on procurement and liability and continuous action in the field of environment.

1.4 *Objectives and goals*

The respondents were asked to assess the achievements in KPAs on safety, environment, capacity and cost-efficiency during RP1 and the first year of RP2, based on their experience, and to elaborate on factors that, in their opinion, hindered the achievement of expected outcomes.

Safety

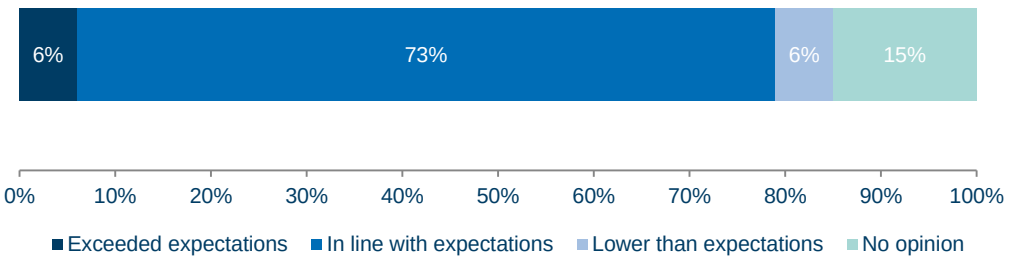
The respondents were asked whether achievements in the KPA of safety were higher or lower than they expected. The majority (73%) answered that the achievements were in line with their expectations and 6% thought that they were higher than expected (see Figure 1.8 below).

The majority of those who consider the achievements in the KPA of safety in line with what was expected provide very few grounds for their opinion. A few respondents stated that the achievements were because of the respondents' companies (internal safety targets, not necessarily related to RP1 and RP2). Some respondents stated that safety was just monitored (in order to establish future measurements and benchmarks), so any improvements are not necessarily SES-related. Linked to this, a few respondents pointed out that improvements are with regard to safety monitoring (i.e. whether certain measures have been implemented or not), not the level of safety as such.

Two of those who assessed the achievements as higher than expected spoke of "huge progress" even if full achievement cannot be claimed because safety is a large cost factor and is in fierce competition with all other targets.

The respondents who assessed achievements in the KPA of safety as lower than expected did not explain their position and one respondent linked it to the factors hindering the achievement (elaborated under the next question).

Figure 1.8 Extent to which the achievements in KPA safety met expectations (n=48)



Among the factors hindering the achievement of their expectations in KPA safety, respondents mainly named interdependences with other KPAs and financial limitations. Financial limitations were linked to the difficult economic

situation, resulting from the economic crisis in RP1. They commented that, new technology is costly by itself, and its installation, staff training and other related costs are very high. All in all, the achievement and maintenance of continuous improvement is expensive. Thus, the price of safety comes in conflict with the objective to reduce cost. They also argue that safety is interdependent with the need to increase capacity and reduce the environmental impact, all of which are difficult to reconcile for ANSPs.

Lack of political support was often named as a hindering factor. On the one hand, it was explained by the difficult post-crisis economic situation and the resulting lack of desire to spend money. On the other hand, national safety programmes were not adopted, and massive lobbying prevented the adoption of the necessary decisions.

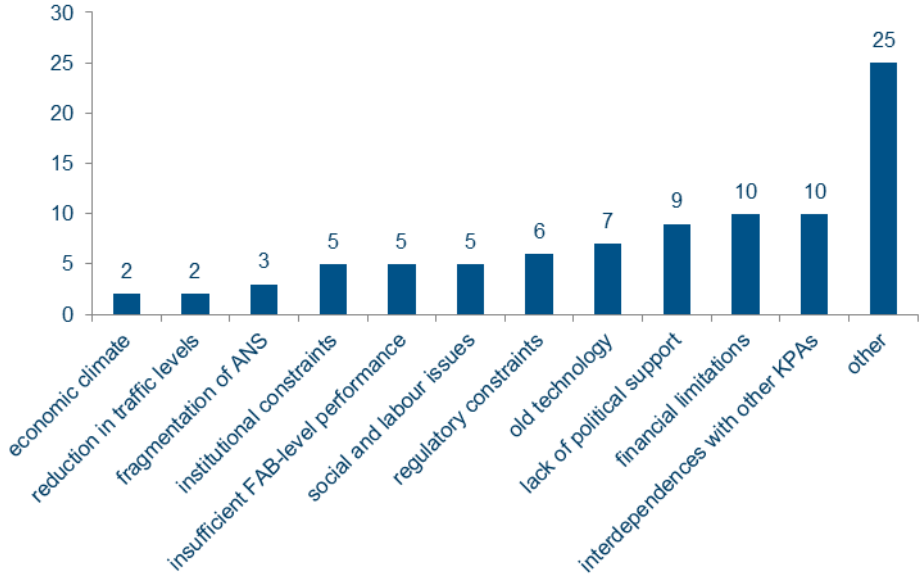
Among regulatory constraints, the respondents named a steep learning curve and lack of guidance for the regulator. Implementation of EU rules in national law was perceived to be difficult and time consuming.

Insufficient FAB-level performance was also seen as a hindering factor, mainly explained by local specifics and different organisations with different business strategies, budgets, timescales, organizational priorities and acting within different regulatory frameworks, which all contributed to different interpretation of rules.

Dependence of responsible institutions on the ministry was considered an institutional constraint.

Additionally, the respondents pointed out that changes in the work culture have been slow and a loose practice of safety rules has persisted. Additionally, the monitoring process was difficult to understand.

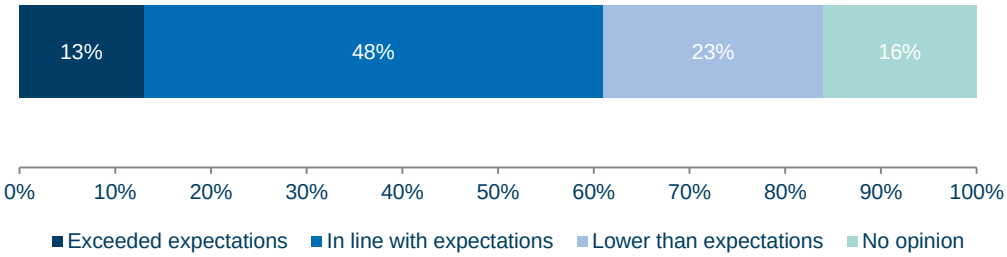
Figure 1.9 Factors hindering the achievement of respondents' expectations in KPA safety (n=48)



Environment

When asked about the achievements in the environment KPA, almost half of respondents (48%) answered that they were in line with their expectations and 13% said that they were higher than expected (see Figure 1.10 below). At the same time, 23%, among them the absolute majority of airspace users, thought that the achievements were lower than expected. Several of those with no opinion on the matter pointed out that they cannot give an answer from a national perspective.

Figure 1.10 Extent to which the achievements in KPA environment met expectations (n=48)



Those who think that achievements in the environment KPA were in line with expectations explain that this KPA was not mandatory in RP1, so expectations were very modest. Also, the ANSPs have little influence with regard to this KPA by comparison to airline operators ("who should be the proper addressees of the rules"). It was argued that in many cases the metric has been achieved because a vertical efficiency indicator has not been taken into account (it should be added for this KPA, as was pointed out in many responses). Also, it was commented that this KPA is sensitive to interdependences with other KPAs, and a lack of understanding of these interdependences means the metric does not correspond to reality.

Those who think that achievements in the environment KPA were higher than expected provide very little explanation.

Those who think that achievements in the environment KPA were lower than expected state two main reasons:

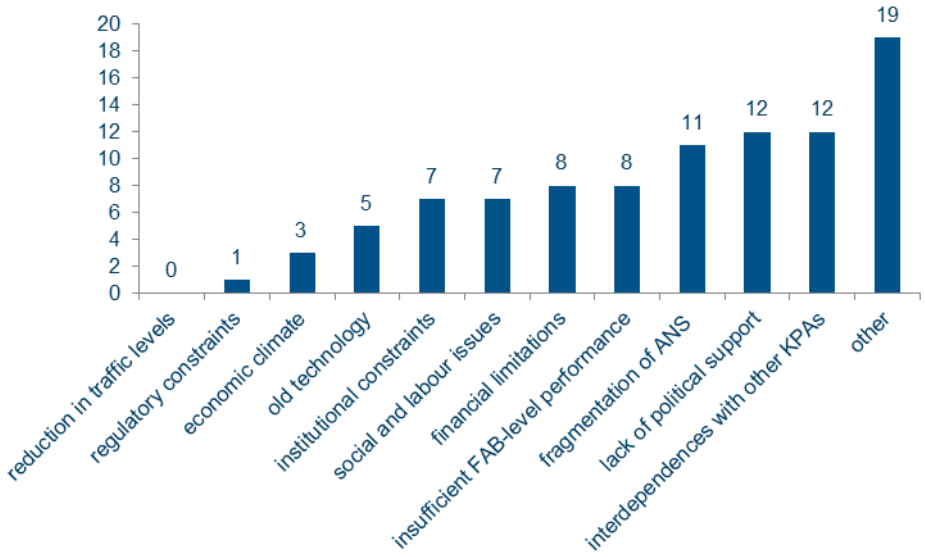
- the targets simply were not implemented at the national level, and with no consequence for Member States.
- Environment KPAs are not complete (e.g. noise prevention is lacking, flight efficiency target is set only at the network level) and the measurements employed are deficient (e.g. deviations in unit rates lead to companies using the cheapest routes instead of shortest routes).

When elaborating on what factors hindered the achievement of their expectations in KPA environment (see Figure 1.11 below), the respondents mainly pointed out a conflict with KPA cost-efficiency: to save costs, airspace users tend to choose longer routes with lower navigation charges. Lack of political support was also an important factor in this respect: there is a lack of political willingness to implement a regulatory framework to force airlines to

fly the shortest route as this opposes the goal to liberalize the ANS. In addition, the fragmentation of ANSPs, which is linked to the existence of national monopolies, renders little opportunity to change the current situation.

The respondents also named additional hindering factors, such as lack of change in ATM management skills of ANSPs and lack of focus on performance. Some also pointed out that increased traffic levels lead to longer routes, and that ANSPs cannot influence the route selection by operators. A few feel that the objectives of the KPA Environment should also address airline operators. Last but not least, a few respondents noted that environment is the last to be taken into account.

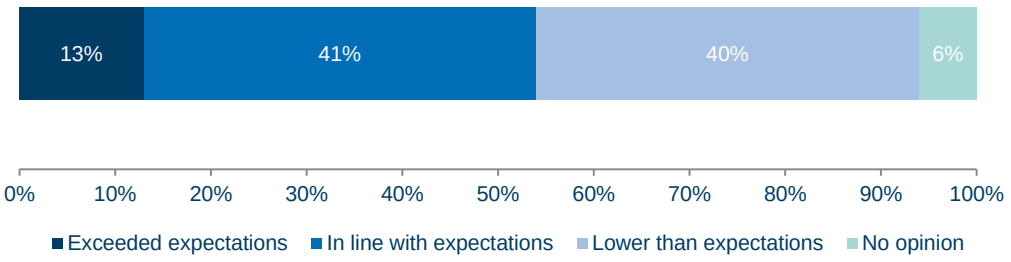
Figure 1.11 Factors hindering the achievement of respondents' expectations in KPA environment (n=48)



Capacity

The achievements on KPA capacity were judged by 41% respondents as being in line with expectations, but by 40%, among them the absolute majority of airspace users and some ANSPs, as being lower than expected. 13% respondents thought the achievements higher than expected (see Figure 1.12 below).

Figure 1.12 Extent to which the achievements in KPA capacity met expectations (n=48)



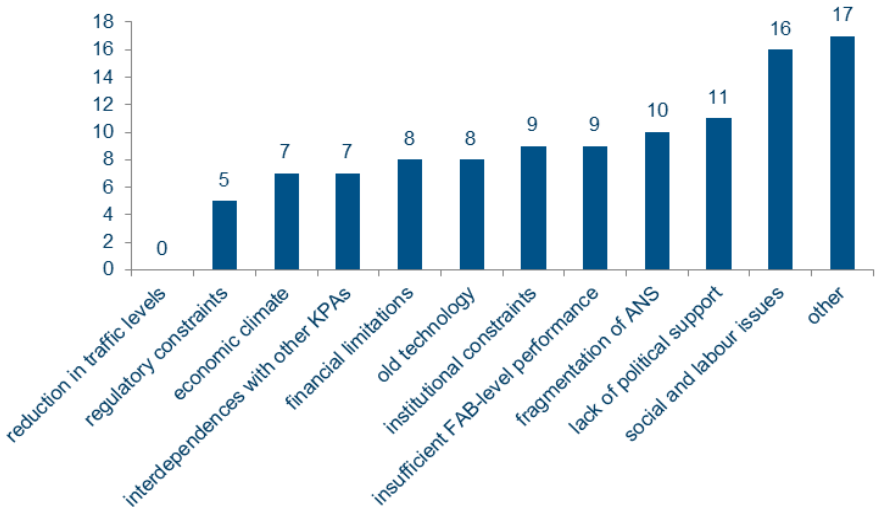
Many of those who answered that the achievements in the KPA capacity are lower than expected simply referred to data on actual performance against targets set. Many consider that Member States and operators were not pushed hard enough to make the necessary investments, from which there were no significant consequences. Also, not all relevant factors influencing capacity were believed to be addressed, including, for example, the impact of staffing issues (including industrial action) and the lack of instruments to deal with social disruptions.

Many of those who think that capacity performance was in line with expectations, point to fluctuations in traffic level and shifts in traffic patterns as decisive factors. Considering this and the fact that ANSPs can only react, but not anticipate such changes, capacity KPIs were in line with expectations. Some respondents also consider that EU-level targets were too ambitious and did not consider uncontrollable factors (like weather, strikes and war conflicts) and local circumstances. They also stated that ANSPs should not be held accountable for the underperformance of other ANSPs. Some point out that it makes more sense to measure improvements at the micro-level (i.e. how a specific ANSP has improved its performance over the RP), than to look at compliance with certain indicators. Some respondents point to the limits of the capacity KPA linked both to local specifics and to interdependences with other KPAs (e.g. cost-efficiency).

Some of those who consider the achievements in the capacity KPA higher than expected base their responses on the same factors as indicated above. They point out that the EU level targets were very ambitious and did not take into account external factors, such as the crisis in Ukraine, Libya and Syria, weather, industrial action and the limited capabilities of ANSPs to react to these events. It could happen that in such cases an ANSP 'provides' more capacity compared to a 'business as usual' scenario, but still generates delay due to high demand by rerouted traffic. Also, improvements and optimisation of capacity take time and are interdependent with other KPAs (e.g. environment).

All in all, social and labour issues were most frequently named as the factor hindering the achievement of KPIs in capacity (by the majority of airspace users, many ANSPs and even one trade union) (see Figure 1.13 below). Lack of political support was elaborated as a combination of lack of will both on the part of States and ANSPs, lobbying and lack of incentives/ sanctions for non-compliance. Fragmentation of ANS and different regulatory frameworks for ANSPs also impacted the overall performance. To overcome institutional constraints, it was commented that civil-military coordination could be improved. Due to a reduction of traffic levels and budget limitations, some said that investments were limited to save costs. Faster SESAR deployment and more automation could help to increase capacity. Additionally, few respondents mentioned the lack of change in ATM management skills in ATM and lack of focus on performance. Also, in some cases it was believed impossible to measure improvement for ANSPs where there was zero delay to begin with.

Figure 1.13 Factors hindering the achievement of respondents' expectations in KPA capacity (n=48)



Cost-efficiency

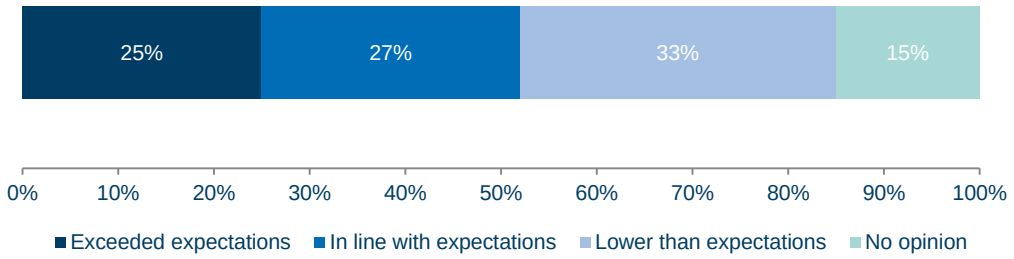
The respondents were divided on the question as to what extent the achievements in cost-efficiency KPA met their expectations (see Figure 1.14 below). 33%, including almost all airspace users, thought that the relevant achievements were lower than expected; 27% found them in line with their expectations and 25%, almost all of them ANSPs, thought than the achievements were higher.

About a half of those who answered that the achievements in KPA cost-efficiency were lower than expected but did not give any explanations. Others pointed out that cost-efficiency is difficult to assess due to the volatility of business. Some respondents consider that the target-setting was deficient (either too low or too high). At the same time, some mentioned causal factors as: deficient (slow) implementation, restrictive salary policies, institutional interdependences and lack of necessary pressure on stakeholders.

Many of those who consider achievements of the cost-efficiency KPA in line with expectations raised concerns about the adequacy of the DUC metric because, it was argued, it may not always be adequate (e.g. some countries have a naturally higher DUC; DUC is a statistical measure and part of ANSP activity) and/or additional metrics are required. Several respondents criticize that operational and economic differences among Member States are not taken into account as well as interdependences between different stakeholders and between KPAs (capacity v cost-efficiency). Special circumstances of small ANSPs are not taken into account as in some cases internal limits have been reached and only external factors can further help to improve cost-efficiency.

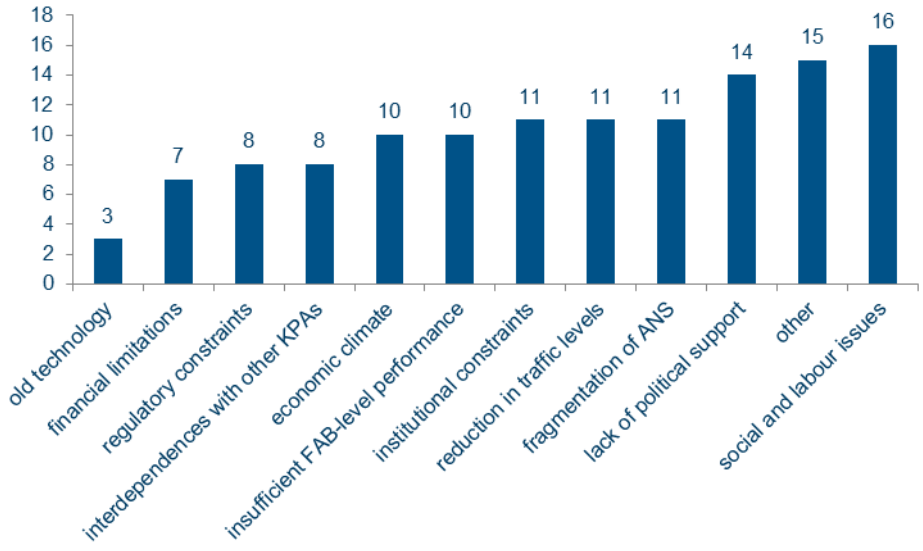
Those who assess the cost-efficiency achievements as higher than expected quote various saving mechanisms in place, primarily introduced at the EU level (such as iFACTS), including austerity measures, and sometimes also the reduction of traffic levels. Some respondents indicate that changes have taken place at the ANSP level (e.g. new ways of thinking about costs, changes in organisation).

Figure 1.14 Extent to which the achievements in KPA cost-efficiency met expectations (n=48)



Among the factors hindering the achievements in KPA cost-efficiency, social and labour issues (the latter were named by airspace users and ANSPs) lead the poll (see Figure 1.15 below). There is seen to be a lack of political will for reforms (due to vested interests), often linked to/or exacerbated by the absence of a fully independent regulator. The respondents also mentioned factors such as no possibility and /or incentives to reduce costs and lack of a reliable and accurate five-year traffic and service unit forecasts. Due to volatility of traffic volumes, there was a downturn of service units and routing changes. Few respondents think that a KPI on the network manager is necessary.

Figure 1.15 Factors hindering the achievement of respondents' expectations in KPA cost-efficiency (n=48)



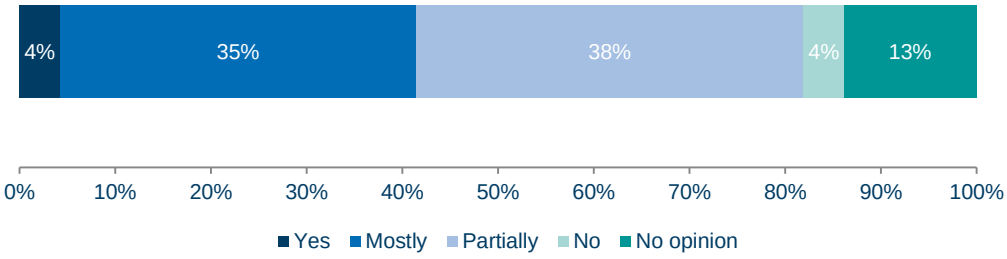
1.5 *Performance Review Body (PRB)*

The respondents were asked to assess the effectiveness and independence of the PRB and to provide recommendation for increasing PRB's effectiveness and independence.

Effectiveness

When asked whether the PRB carried out its tasks effectively, the majority, including almost all airspace users, answered "partially" (38%) or "mostly"(35%) (in the latter group were almost all NSAs). Only a small minority consisting of airspace users found the PRB to be ineffective (see Figure 1.16 below).

Figure 1.16 Effective fulfilment of its tasks by PRB (n=48)



Those who answered that the PRB was not effective quote the lack of transparency and lack of objectivity when analysing the numbers, and that the PRB fails to monitor relevant structural multilateral consultations between airlines and ANSPs.

Those who consider the PRB to be partially effective also point out a lack of transparency (e.g. insufficient consultation process) and lack of clarity of the targets set. This is thought partially to be because the data collection requirements are too broad: as detailed data monitoring makes it difficult to carry out the tasks. Several mention that assessment of performance plans and targets was not consistent, that the distribution of information was not optimal, and that some of the deadlines were not met. However, the contact to the PRB and explanations provided by it are considered to be useful. Many felt that more involvement of NSAs and greater consideration of local circumstances in general are necessary because target setting was inadequate, and assessment of traffic evolution does not take into account local specifics. Some respondents thought that the institutional organisation of the PRB had an impact on its effectiveness. It was commented that the PRB should have an independent analysis and support capability, autonomy to set targets (subject to an appropriate appeal mechanism) and tools to enforce agreed performance.

Some of the respondents who thought that PRB was mostly effective repeat the grounds given by the previous group of respondents (i.e. partially effective): Detailed monitoring duties of PRB make it difficult to verify data coming from the national level; local considerations were insufficiently taken into account and some deadlines were not met. Also, interdependences between KPAs are not considered enough for target setting and monitoring. Furthermore, several respondents point out duplication of competences or unclear delimitation of competences/roles between the PRB and other relevant bodies (e.g. EASA, PRU). It is also felt that the PRB's expert advice is not heard by the EU legislators and policy-makers. Some respondents find it

suboptimal that monitoring and enforcement functions are separated (i.e. performed by different bodies).

The respondents who consider that PRB fulfils its tasks effectively refer to useful contact and support provided by PRB and good understanding of the business.

In order to improve the effectiveness of the PRB, many respondents recommend improving transparency, involvement of stakeholders and cooperation/ coordination with other relevant organisations (EASA, EUROCONTROL, PRU) because:

- Better transparency should include more explanations and reasoning in PRB documentation, streamlined templates and use of indicators that are well accepted by all stakeholders.
- A stronger involvement of stakeholders (through workshops and consultations) should give voice to different stakeholder groups (e.g. small ANSPs), allow better consideration of their needs in target and KPI development.
- Coordination and cooperation with other organisations should eliminate duplication of processes and regulatory burden, keep reporting line independent, but more consistent (i.e. overall – better governance would be achieved).

Many respondents feel that effectiveness can be increased by improving the dissemination strategy of the PRB, for instance, by making publications more specific to different target groups and including recommendations in the publications.

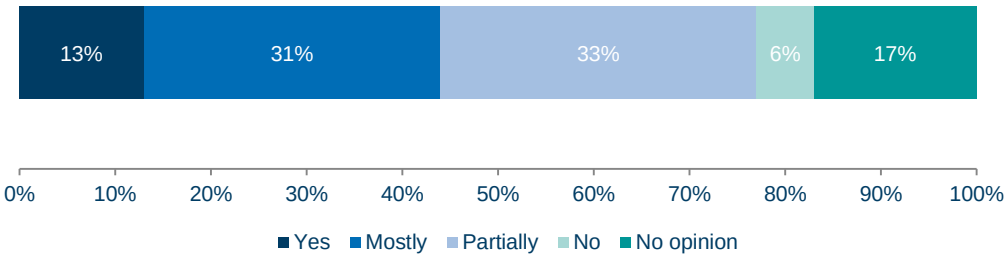
Additionally, many respondents recommend strengthening the independence and professionalism/ expertise of the PRB. Several also express the wish to see the PRB more strongly involved in the policy-making and legislative policies at the EU level (i.e. advise to the Commission and European Parliament).

Independence

On the question about fulfilment of tasks in an independent manner, respondents answered that the PRB acted partially independent (33%, among them almost all airspace users) or mostly independent (31%). Only a few (6% consisting of airspace users and a trade union) consider that the PRB did not act independently (see Figure 1.17 below) and indicated a link between the PRB and airlines.

Those who consider PRB to be partially or mostly independent point out that, while the PRB is impartial in terms of expertise, it is not completely free from interference to function effectively (e.g. interference from EUROCONTROL). In fact, several respondents consider the insufficient independence of the PRB to be the reason of being unable to set targets (e.g. terminal navigation charges (TNC)) and KPIs effectively. Two of those who consider the PRB to act in an independent manner also consider that the PRB staff are independent experts and that their actions are balanced. Most respondents gave no explanation.

Figure 1.17 Independent fulfilment of its tasks by PRB (n=48)



Many respondents recommend increasing independence through greater transparency and involvement of stakeholders. A few respondents indicated that a greater pressure from the European Commission may solve the issue or rather even the rules of designation recently proposed by the Commission. At the same time, a few respondents consider the current setting adequate and the PRB's independence from the Commission and EUROCONTROL the most important issue. There were a few suggestions to keep the current setting, but introduce supervision / oversight over the PRB.

1.6 *Horizontal issues*

The respondents were asked if they are aware of any other positive unintended effects of the schemes, not previously mentioned. Of those who answered this question positively (31%), many noticed the following:

- Due to synergies in the ANS cost basis, terminal determined cost has been reduced, even in the absence of the relevant EU wide target.
- The SES schemes influenced the ANSPs' management culture, forced them to take performance issues seriously and develop performance management approaches leading to better cost control and saving in projects, operations, manpower and contracts / purchasing.
- The SES schemes created a (FAB) pool of experts, provided a network for exchange of information and practices with other stakeholders, created a comparative framework for performance assessment and increased overall transparency.

A few respondents stated that the EU level legislation provides an incentive for and accelerated national reforms. The schemes can be a model for a similar scheme for airports.

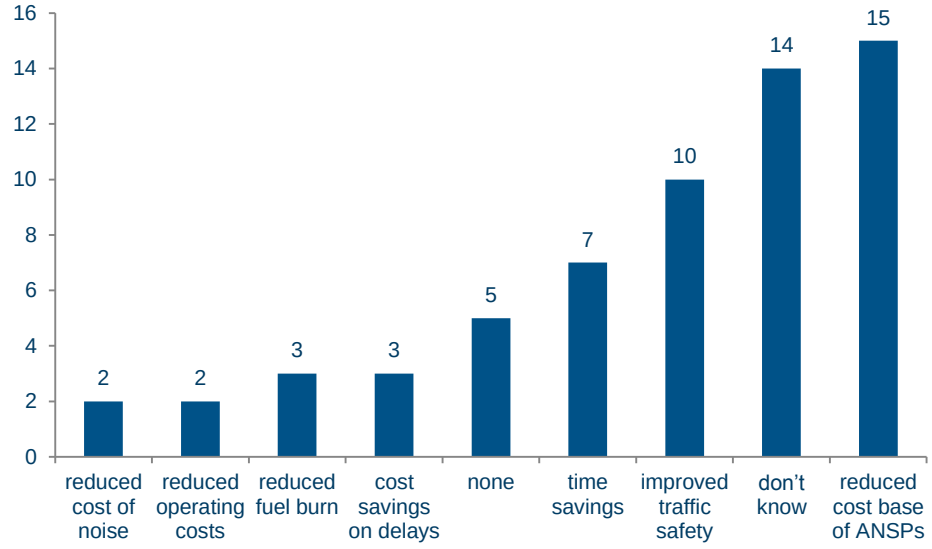
When asked about negative unintended effects of the SES schemes, 60% answered in affirmative and only 19% noticed no negative effects. The majority of respondents noticed an increased administrative burden (especially on ANSPs and NSAs) due to the complexity of the schemes. They welcome simplification of the schemes and stated that some guidance on their application is necessary.

Many respondents claim that there are too many loopholes in the schemes due to their focusing on specific issues and neglecting the complete picture (interdependences between KPAs, local circumstances, specifics of small companies etc.) or neglecting areas where no targets are set. Also the complexity of schemes and conflicts between individual targets are believed to lead to inappropriate prioritising of targets and suboptimal trade-offs. A few respondents think that short-term thinking of the schemes leads to neglect of important long-term issues, especially in relation to investments. Some respondents stated that the schemes set unrealistic targets (both too high or too low or irrelevant – due to local specifics).

1.7 *Efficiency*

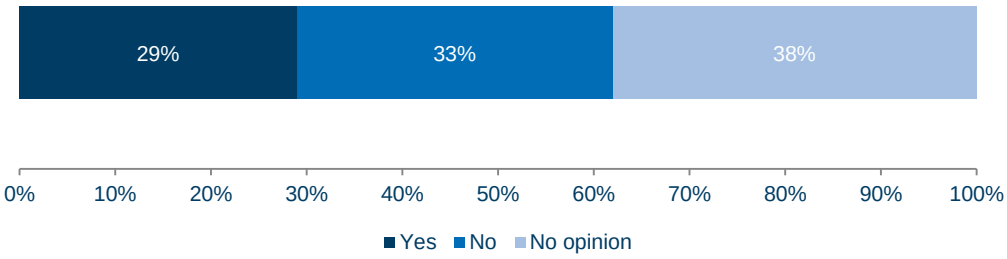
The respondents were asked whether the implementation of the SES schemes resulted in any cost savings / benefits for the respondent's organisation(s). The majority of respondents referred to the reduced cost base of ANSPs followed by improved traffic safety and time savings, as a result of better ANS service and fewer delays (see Figure 1.18 below). In addition to what is presented in Figure 1.18, the following benefits were named: improved planning, more cooperation between ANSPs and industry. At the same time, many respondents were not aware of such cost savings and/or benefits.

Figure 1.18 Cost saving and benefits from the implementation of the SES schemes (n=34)



The respondents were further asked whether they believe that the identified cost savings/ benefits achieved could have been achieved in the absence of the SES charging and performance regulation, including the EU-wide target setting for Member States / FABs. The opinions differ (see Figure 1.19 below): while 38% respondents had no opinion on the matter, 33% thought that the benefits could not have been reached without the EU and 29% did not find the EU contribution decisive. The majority of the latter explain that cost saving and benefits could have been achieved without the SES scheme due to (pre-existing) widespread cooperation between stakeholders. The evidence to this is cost saving in other countries that are not participating in the SES.

Figure 1.19 EU added value to the achieved cost savings and benefits (n=48)



1.8 *Final issues*

To the question about recommendations to **improve the performance and charging schemes** in the future, the respondents gave a wide range of answers in relation to various aspects, from target setting to implementation to assessment.

Many respondents urged to improve the quality of the applicable EU-level rules in the sense of the Better Regulation guidelines before the beginning of RP3. The language of the rules needs to be clear and unambiguous as do all definitions, and duplications should be avoided. To ensure this, the schemes should be more elaborated/ detailed, and more attention should be paid to local circumstances when developing targets and schemes. Interdependences between different KPAs should be accounted for. The KPIs should be defined more precisely and be properly prioritised and the link between KPIs and actual ANSP performance should be strengthened. A few respondents noticed that the current schemes are very target oriented while neglecting to provide proper incentives to motivate stakeholders to achieve these targets.

To enable the above, many respondents indicated that a greater engagement of other stakeholders (e.g. airports and airspace users) and experts (e.g. meteorology (MET)) is desirable in the process of preparing targets and performance planning.

Some respondents suggested very specific amendments to the KPAs/KPIs. For instance, the cost-efficiency target should be rendered more precise and, possibly, taken from the general efficiency target; it is also desirable to address it to airports and airlines by giving them relevant incentives. A measurable KPI on safety should be developed, although it is not commented to which extent the KPIs that we have in RP2 are not measurable. The respondents also recommend to prepare precise rules on investment, including control of investment, to amend the traffic risk sharing mechanism as well as some performance metrics (e.g. determined unit rate). Better rules should be developed on how charges are set by ANSPs and incentives designed for ANSPs to reduce their internal costs. Few respondents also suggested to make a link between the SESAR deployment and charging schemes.

Due to the complexities of the rules, the respondents ask for more guidance material for implementation (e.g. on calculation of financial incentives on capacity area). The respondents also ask to alleviate the administrative burden by reducing bureaucracy and streamlining reporting requirements and avoiding their duplication. Several respondents indicated that data quality and verification has been a problem, such that amendments of processes on data collection, validation and publication between relevant stakeholders are desirable in order to enhance and ensure data quality. The respondents further recommend more transparency in the assessment of achievements and more flexible approach of assessment that can take into account local circumstances and dynamics of the sector.

Many respondents recommend to increase independence to NSAs, their transparency and greater empowerment (for instance, with the possibility to impose sanctions).

Finally, the respondents also made comments regarding the requirements and corresponding implementation of the SES charging and performance schemes during RP1 and the first year of RP2.

A number of respondents felt that there were shortcoming with regard to information and communications during this time. They felt lack of guidance material for implementation of the schemes, especially available in other languages than English. They also felt that more information exchange was necessary during the process of elaboration of performance plans and that inputs from different stakeholders (ANSPs and airspace users, customers) was missing. In this context, the respondents suggest a tool for information exchange or exchange of performance plans for all stakeholders e.g. via PRB website.

Some respondents thought that the requirements were not always clear and not always applied in a consistent and independent manner (e.g. mechanisms triggering regulatory procedures as well as deadlines for approval, rules on legal recourse and sanctions). Few respondents also noted lack of objective assessment and found the lack of consistent enforcement instrument problematic.

Many respondent complained about an increased administrative burden in the form of too many reporting requirements.

For many respondents lack of flexibility in implementation and application of schemes was a problematic issue. They felt that dynamics of the market environment and local and economic circumstances could not be accounted for. There was a suggestion to introduce a mid-term review of performance plans due to market dynamics.

Specifically, the respondents pointed out difficulties in implementation of the schemes with the following issues:

- The responsibility for the price-performance ratio was misplaced and should be located with the industry.

- Effects of cost-efficiency targets cut down the development of services, the possibility of participation in large research programmes (specifically, SESAR) and of necessary adjustments (e.g. adaptation to new ICAO and EU/EASA rules).
- Disconnection of SESAR and other specific project funding from performance schemes and charges.
- Focus on cost-efficiency while neglecting financial sustainability (i.e. every actor should be able to perform on financially safe terms).
- Some factors or important actors influencing performance were ignored (traffic flows, adjustment to inflation, lack of resources of ANSPs, significant role of airports)
- Lack of positive incentives for the industry.

All in all, a great majority of respondents felt that changes to the SES schemes are necessary before RP3 starts. Some respondents noted shortcomings of implementation and suggested that no new rules should be added or introduced until the current ones are properly implemented.

2 Key findings of the targeted survey

2.1 *Introduction*

The targeted survey for this study ran from 7 July 2016 to 4 September 2016, an extended period of time to take into account the availability of respondents during the holiday period. A group of 416 respondents were invited via email to respond to the survey. To reach as many respondents and as diverse a group of stakeholders as possible, the group of 416 was derived from the following:

- subscribers to the Single European Sky newsletter gross list,
- the members of the Single Sky Committee (SSC),
- the members of the NCP Performance Workgroup,
- the members of the Industry Consultation Body (ICB).

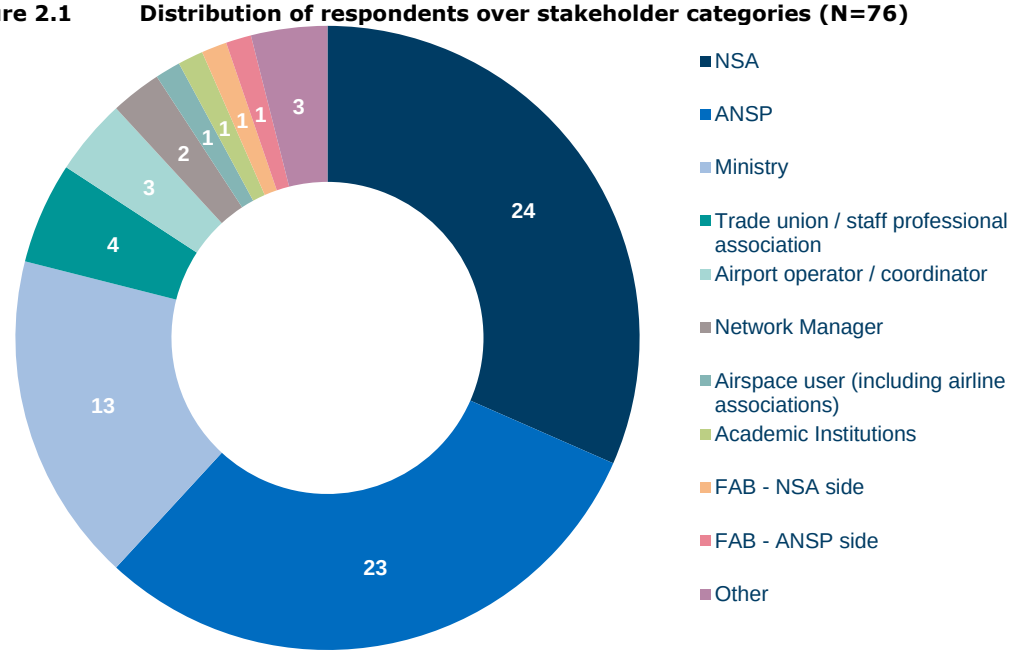
Furthermore, a hyperlink was provided to share the survey with other interested respondents that were not invited initially. Automated reminders were sent periodically to non-respondents and respondents who had started the survey but did not finished were automatically reminded after a day.

The different stakeholder groups included were the National Supervisory Authority (NSA), Air Navigation Service Provider (ANSP), Ministry, Trade union / staff professional association, Airport operator / coordinator, Network Manager, Airspace user (including airline associations), Academic Institutions, Functional Airspace Blocks (distinguished between an NSA and an ANSP side) and an 'Other' group. Depending on what stakeholder category they indicated, respondents were routed through a subgroup of questions that were relevant to their work.

In total, 76 individual responses were received on the targeted survey, distributed over the stakeholder groups as indicated in Figure 2.1 below. The largest respondent group is the NSAs, from which group 24 responses were received. This is followed by the ANSP group with 23 responses and the Ministry group with 13 responses.

Please note that the number responding does not directly correlate with the representativeness of the survey results, as a number of respondents were associations who indicated that they had consulted with their members before completing the survey.

Figure 2.1 Distribution of respondents over stakeholder categories (N=76)



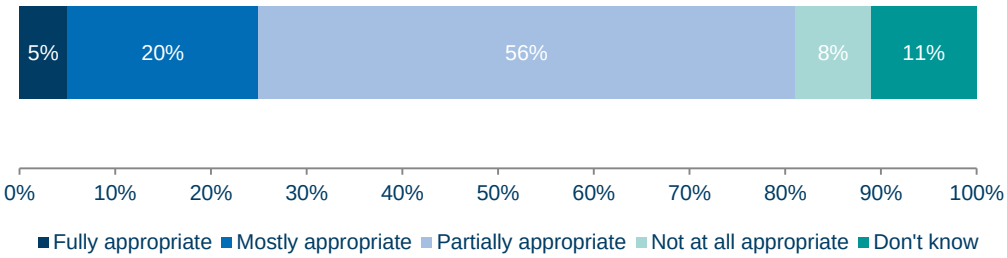
2.2 *Relevance and EU added value*

Respondents were asked to what extent the SES performance and charging initiative covers the needs of European air navigation services. Figure 2.2 shows the distribution of the answers of the 64 responses. Only 25% responded with a "Fully" or "Mostly". The majority (56%) answered "Partially". Less than 8% answered "Not at all". From the elaboration given by the respondents, it can be concluded that in general they believe that the SES performance and charging initiative has been an important driver in increased awareness and delivered some performance improvement (especially in reduction of costs), but there are a number of issues that are not sufficiently addressed or recognized, including

- Differences in local circumstances;
- Depencency on issues that cannot be controlled, i.e. inflation in the economy in general and the inflation of costs incurred by the providers
- Interdependencies between KPIs (see Section 3.6 for more details)

A respondent refered to the peformance scheme as a "first small step towards an efficient European air navigation service". Some respondents argued that the scheme has been a good achievement over its short life given the legacy factors of many ANSPs.

Figure 2.2 Extent to which the SES performance and charging scheme covers the needs for European ANS (N=64)



Interestingly, the ANSPs were less positive about the extent of covering the needs for European air navigation services compared to the Member States (NSAs and Ministry of Transports). In total 14% of the ANSP responded with a "Mostly" while for NSAs and Ministry of Transports this was 47% and 40% respectively. All the respondents that answered this question with "Not at all appropriate" were NSAs.

To elaborate on this question, 6 statements were provided about the change that the SES performance and charging initiative has resulted in. The overall list, in order of agreement, is as follows:

1. There is a trend towards more uniform and transparent reporting about ANSP performance (42 respondents agreed with this statement);
2. There is trend towards performance based management of ANSPs (21 respondents agreed with this statement);
3. The schemes gradually improve the performance of the air navigation service at a reasonable speed, given the inevitable barriers (19 respondents agreed with this statement);
4. The schemes provoke an evidence-based, challenging relation between service providers on one hand and authorities on the other hand (17 respondents agreed with this statement);
5. The schemes gradually improve the performance of the air navigation services, although not as fast as necessary (9 respondents agreed with this statement);
6. The schemes gradually improve the performance of the air navigation services, in the best possible way (4 respondents agreed with this statement).

In summary, the respondents believe that the SES performance and charging initiative has resulted in an improvement, probably as fast as possible, but there is room for improvement.

Next, the respondents were asked about the weak links in the whole set-up. There were 12 potentially weak links identified in the question. The overall list, in order of relative importance, is as follows, and we note that all stakeholder groups identified the top 3:

1. The information gathering and processing is too complex (33 respondents);
2. The KPIs only cover limited parts of the whole performance (30 respondents);

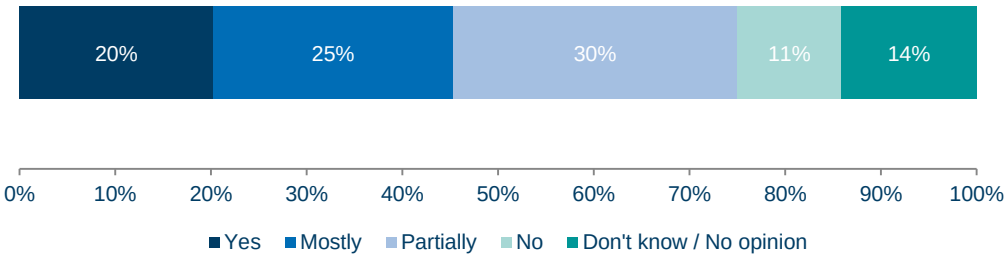
3. The ANSPs do not have the means to improve the performance that significant that fast (27 respondents);
4. The information gathering and processing is too biased (20 respondents);
5. The (dis)incentives schemes are not sufficiently stimulating in practice (18 respondents);
6. The schemes incentivise "gaming" behaviour of certain stakeholders (15 respondents);
7. The information gathering and processing is too vulnerable (9 respondents);
8. Authorities within Member States tend to favour high incomes and high autonomy for the ANSPs, which can come at the expense of low costs for the airspace users and the public (9 respondents);
9. The schemes drive the design of the air navigation schemes away from cooperation across borders (i.e., national borders and civil-military border) (8 respondents);
10. Ultimately, the targets are set by the regulated entities (8 respondents);
11. There is too much influence from the ANSPs especially on the target-setting (8 respondents);
12. There is too little influence from independent parties, e.g. EU, Performance Review Body (PRB), Network Manager (NM), EASA. (7 respondents);

Issues like complexity and degree of influence by ANSPs are frequently cited, while the target setting process and influence of independent parties are least cited as weak links.

Next, the respondents were asked if they would consider the charging and performance schemes to be useful in terms of improving ANS performance in their State, compared to what could have been achieved by Member States at regional level.

About 45% of the respondents consider the SES performance and charging scheme of added value (20% answered "Yes" and 25% answered "Mostly"). Only 11% did not agree. Figure 2.3 provides the distribution of the answers.

Figure 2.3 EU Added Value of the SES Performance and Charging Scheme (N=64)



In the elaboration, some respondents stated that the SES Performance and Charging Scheme helped in improving the cost-efficiency and that nothing would have happened without it, while some others argue that Member States probably would have achieved the same result but on a much longer timescale.

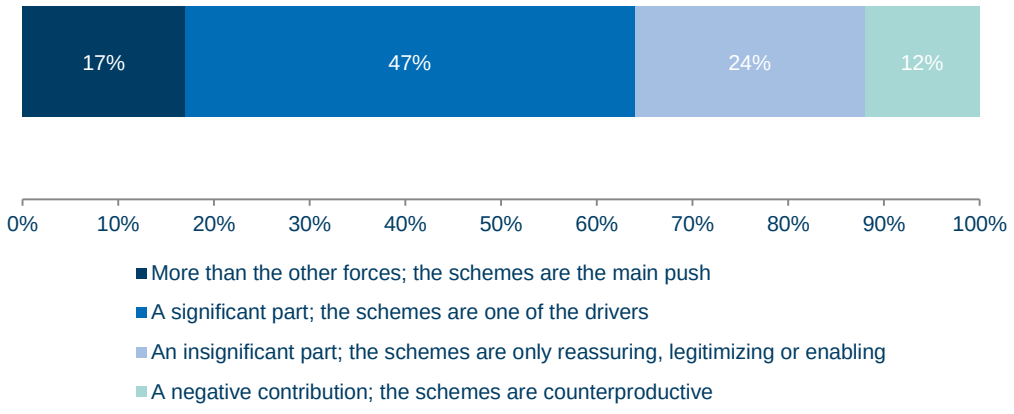
2.3 *Objectives and goals*

2.3.1 *General*

Impact of the performance schemes
Respondents were asked to indicate what fraction of the performance improvements from 2012 onwards were attributable to the SES performance schemes, when taking into consideration other motivators such as customers satisfaction, pressure from society, own ambitions for sustainability and reputation, employee satisfaction, and financial considerations.

As shown in Figure 2.4, of the 59 respondents, 10 (16.9%) indicated the schemes were the main motivator and 28 (47.5%) indicated that they explain a significant part of the performance improvements. Negative views on the performance schemes were held by a sizable minority of 21 respondents (35.6%), of which 14 (23.7%) attributed a negligible role and 7 (11.9%) attributed a negative role to them. Overall, the schemes are seen as a positive and substantial factor in improving performance.

Figure 2.4 Performance scheme as driver of performance improvements (N=59)



Across respondent groups, some variation can be discerned: a majority of NSA and a small majority of ANSP respondents (58%) stated the schemes were either the most important or a significantly important driver.
Respondents from the Ministries overwhelmingly (89%) saw the schemes as dominant or significant drivers. Respondents from staff bodies saw it as an insignificant (25%) or even a counterproductive (50%) driver.

Two ways were mentioned in which the schemes benefitted performance: one is through the application of a coherent, consistent framework at Union-level, the other is through shortening the timeline for performance improvements (that would have been implemented in any case). A number of NSA-respondents reiterate that the performance improvements would have taken place in the context of national programmes anyway.

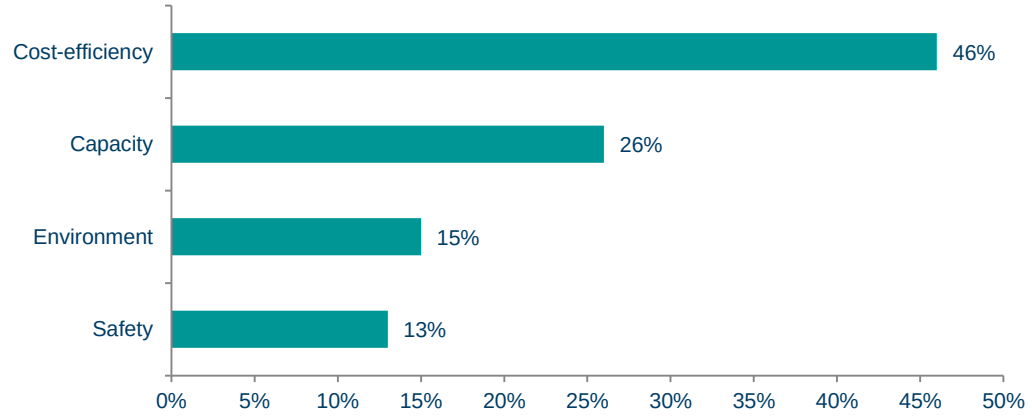
Impact on Key Performance Areas, now and in the future

In the survey it has been asked for which KPA have the schemes had the most impact to this point and in future. |Impacts of the schemes are differentiated across the various KPAs. Whereas the schemes helped cost-efficiency and safety (the 'Just Culture' PI), one of the respondents argued it was counterproductive for capacity and that the environment was too complex in nature to be properly measured.

Up to this point, the impact of the performance scheme has mostly been felt in the KPA of Cost-efficiency, receiving a score of 46 per cent from the 59 respondents. Safety is the least impacted according to respondents, with a score of just 13 per cent. The ranking is shown in Figure 2.5 below.

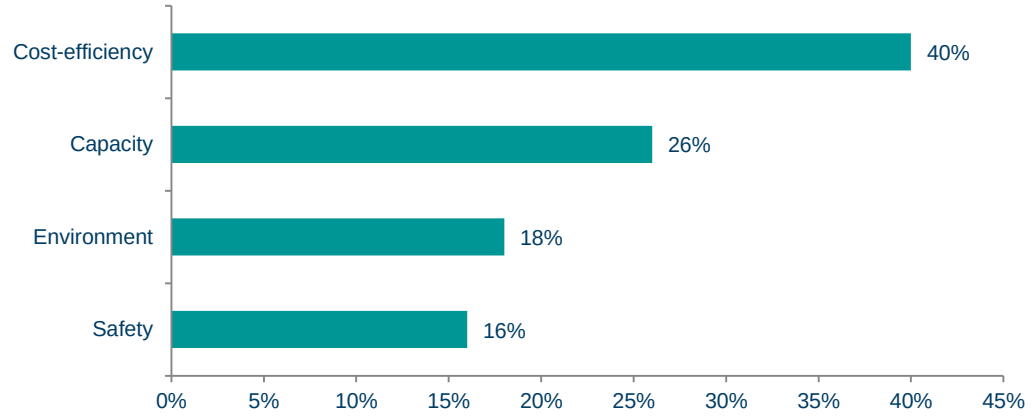
This ranking is uniform throughout the various respondent groups, with variations of 3 per cent or less. One exception to this is the Network Manager, which rated Environment as the most impacted, followed by Cost-efficiency, Capacity and Safety.

Figure 2.5 Impact on KPAs to date



The picture is more or less the same when looking at the expected impact of the KPAs in the future, as shown in Figure 2.6 below. Again, the Network Manager is the exception, expecting Safety to be most impacted in the future, followed by Capacity, Cost-efficiency and the Environment.

Figure 2.6 Expected impact on KPAs in the future



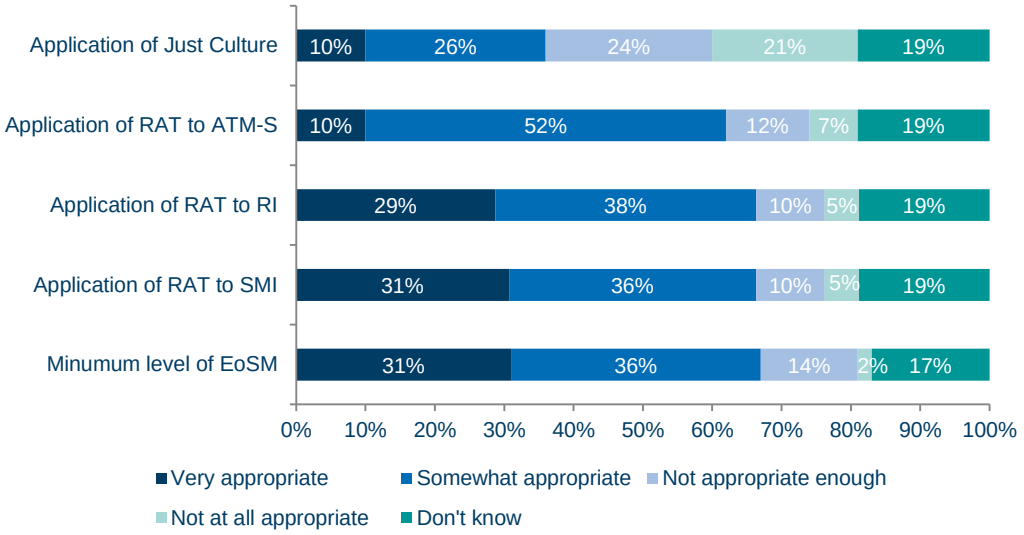
2.3.2 *Safety*

Appropriateness of KPI / target

Respondents were requested to indicate whether the KPIs in the KPA of safety were appropriate to measure improvements in safety performance during RP1 and the first year of RP2. Results show that the majority of respondents were generally of the opinion that the KPIs 'Minimum level of Effectiveness of Safety Management (EoSM)', 'Application of RAT to Separation Minima Infringements (SMI)' and 'Application of RAT to Runway Incursions (RI)' are appropriate to measure safety performance.

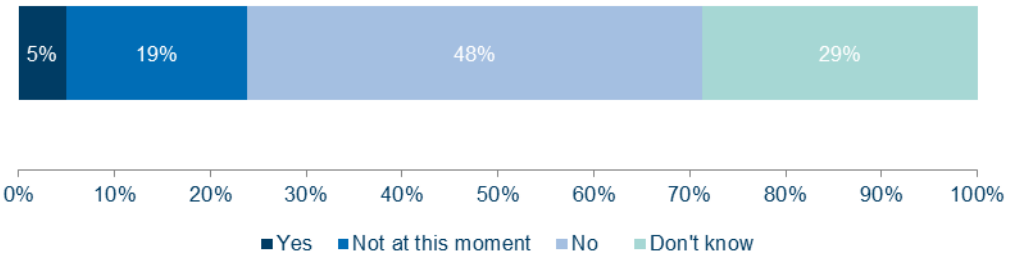
The results of this question are depicted in the figure below. It is recognised that the EoSM questionnaire is difficult to complete and standardise. The application of the RAT for SMI and RI is considered a good approach that reduces the subjectivity and supports the harmonization process. 'Application of RAT to ATM-specific occurrences (ATM-S)' is also seen by the majority of respondents as appropriate, although much more respondents rated it 'somewhat appropriate' than 'very appropriate'. Use of RAT for ATM-specific occurrences is considered to be ambiguous due to a lack of understanding of the definition of occurrences that should be assessed, even though further guidance has been provided. A general concern with the RAT method is that it is has proven to be time and resource consuming. 'Application of Just Culture (JC)' is considered to be the least appropriate indicator for safety. While the application of Just Culture is supported, the Just Culture questionnaire in the context of the performance scheme is not considered appropriate.

Figure 2.7 Appropriateness of KPIs in the KPA of Safety (N=42)



Respondents were requested to indicate whether they are in favour of alternatively setting targets to the number of Separation Minima Infringements, Runway Incursions and ATM-specific occurrences, without a further classification with regard to severity. Only a small percentage of respondents were in favour of this, with two thirds not endorsing this proposal and a third do not know.

Figure 2.8 In favour of alternatively setting targets (Safety) (N=42)

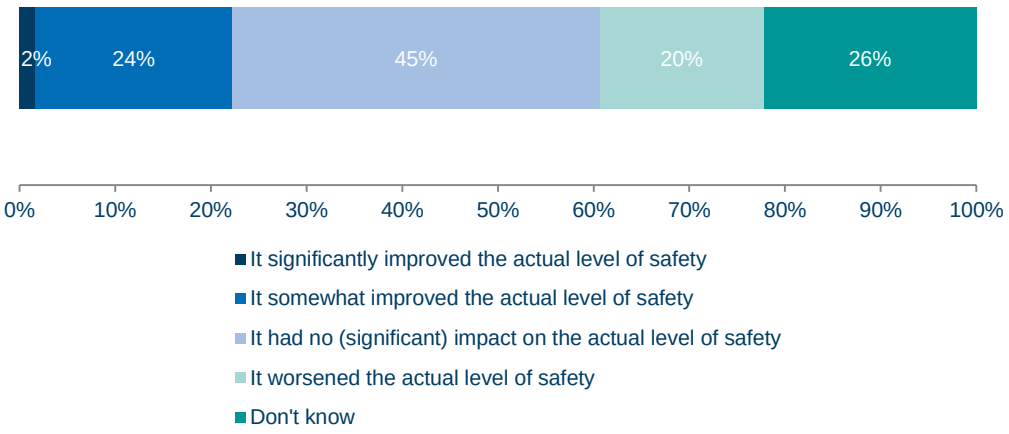


When asked to indicate alternative KPIs or PIs to measure safety performance, several answers were provided. An EASA working group is developing alternative KPIs which should provide a better measure of safety performance. These relate to the severities of SMIs and RIs as a rate. It is strongly felt that targets should not be attached to these measures as the target will inevitably impact the safety culture. However, it was also mentioned that automated recording systems should have been put in place to move away from cultural influences. Some respondents expressed the opinion that the existing safety KPIs should not be abandoned because organisations spent a significant effort on these indicators and that they may have a longer term effect. Therefore it would be better to modify these KPIs rather than abandoning them.

Overall impact and achievement

Figure 2.9 shows the overall distribution of responses concerning the impact of the SES performance scheme on the actual level of safety. The overall impression of impact of the SES Performance Scheme is that the scheme had a marginally positive impact on the actual level of safety. A quarter of respondents believe it significantly or somewhat improved the actual level of safety, while half of respondents think it had no (significant) impact on the actual level of safety. The survey results did not show a significant difference the between the groups of stakeholders in their view on the overall impact of the SES Performance Scheme on safety.

Figure 2.9 Impact of the SES performance scheme on the actual level of safety (N=42)



When asked which factors hindered the improvement of the actual level of safety, several open comments were given. "*Interdependencies with other KPAs*" was most frequently mentioned as a factor that hindered the improvement of the actual level of safety. In the comments provided by the respondents this is often explained from a limited overall investment budget. Indeed "*financial limitations*" is the second most frequently mentioned factor that hindered improvement of the actual level of safety. In this context, it was also mentioned that improving safety should not be included in the Performance Scheme, but rather that the Performance System should only measure the increase or decrease of safety in relation to the other KPAs to ensure that no excessive strain on safety is introduced by the pressure on other KPAs.

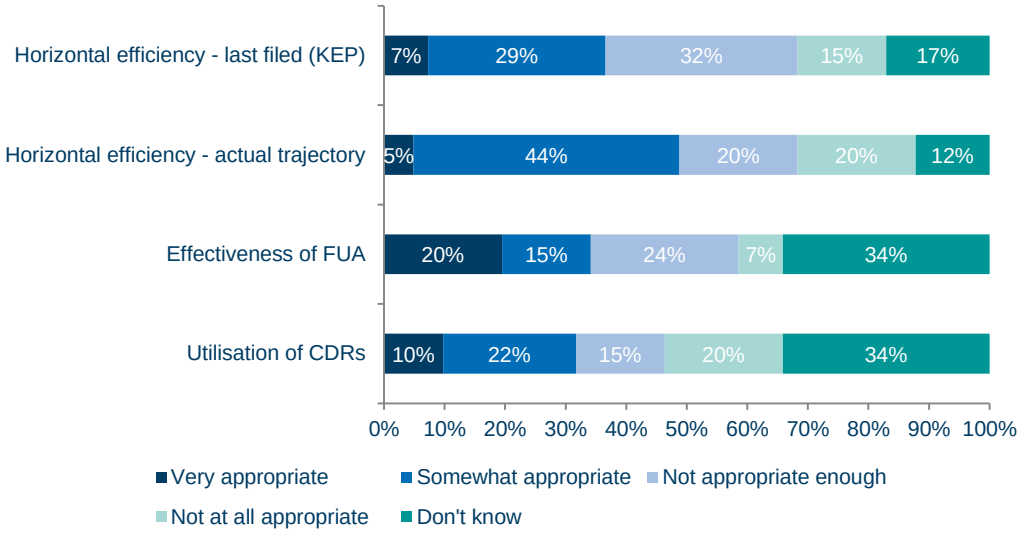
2.3.3 *Environment*

Appropriateness of KPI / target

Respondents were requested to indicate to what extent the four performance indicators in the KPA of environment prove appropriate to improving

environment performance during RP1 and the first year of RP2. Figure 2.10 shows the distribution of the answers.

Figure 2.10 Appropriateness of KPIs and PIs in the KPA of Environment (N=41)



The following observations are made:

- The indicator on the actual trajectory is considered the most appropriate one among the four;
- The appropriateness of the indicators is perceived relatively lowly: less than half of the respondents consider the individual indicators very or somewhat appropriate;
- The main reasons why the indicators are not considered very or somewhat appropriate are:
  - there are several significant factors outside ANSP control such flight planning by airlines, processes operated by military authorities, closure of airspace due to political crises and usage of Free Route Airspace;
  - vertical flight efficiency is not captured;
  - for some airspaces, horizontal flight efficiency is close to optimal.

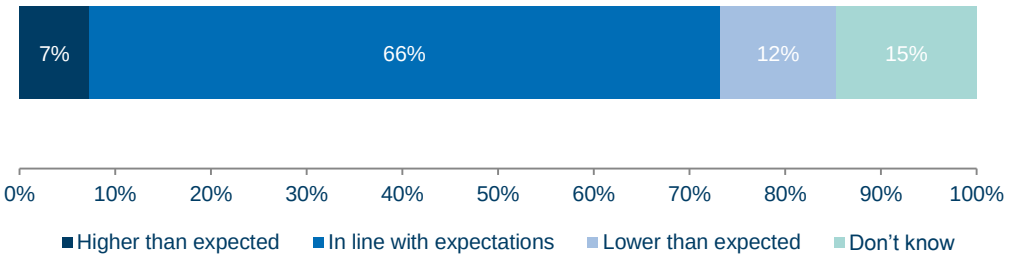
The latter three aspects return in the replies to a question for alternative indicators, which include:

- Focus more specifically on ANS controllable flight efficiency aspects; factor out external influences;
- Include vertical flight efficiency; ascending and descending activities near airports are important for environmental impact;
- Monitor and report the indicators in congested airspaces only.

Overall impact and achievement

Respondents were requested to indicate whether achievements in the KPA of Environment during RP1 and the first year of RP2 were higher or lower than expected. Figure 2.11 shows the distribution of the answers.

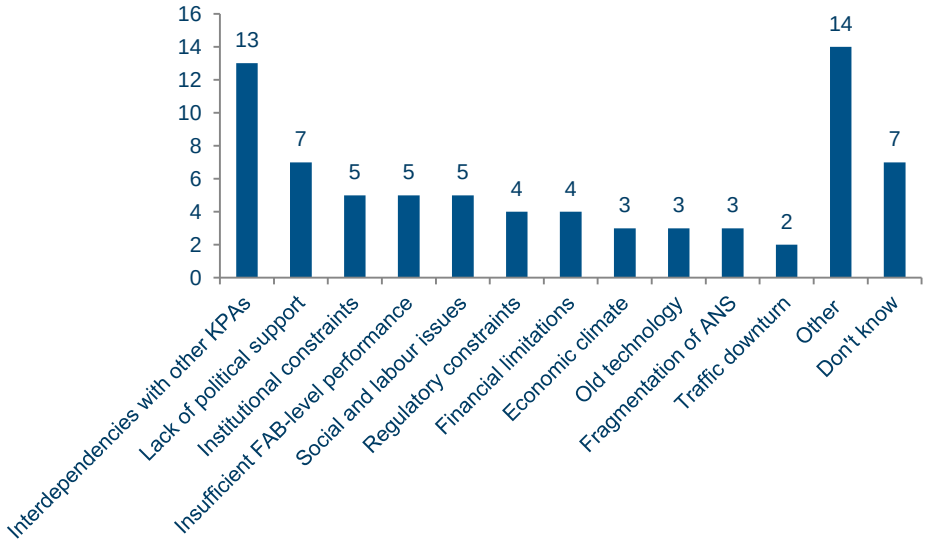
Figure 2.11 Achievements in the KPA of Environment (N=41)



It can be concluded from this distribution, and from the lack of differences between the answers of ANPSs and authorities, that the achievements in this area are in line with the expectations. The airspace users however indicated that the achievements were lower than expected.

The respondents had the possibility to indicate factors that have hindered the achievement in case the achievements were lower than expected. Figure 2.12 shows the number of respondents indicating the various hindering factors. The most frequently cited hindering factors are '*other*' (14 respondents) and '*interdependencies with other KPAs*' (13 respondents).

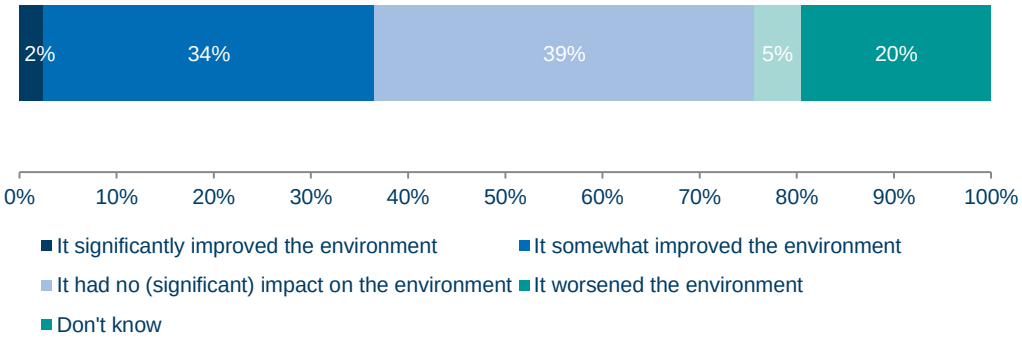
Figure 2.12 Factors hindering environment performance



All of these factors were indicated by least one of the respondents representing the ANSPs and almost all factors were indicated by least one of the respondents representing the NSAs. Airline respondents indicated that lack of political support, insufficient FAB-level performance and fragmentation of ANS are the factors hindering the achievement. In the category other, the most frequent factor cited was the fact that airspace users'planning choices affect the environemnt performance.

Respondents were requested to indicate the impact of the SES Performance Scheme during RP1 on the actual environment. Figure 2.13 shows the distribution of the answers.

Figure 2.13 Impact of the SES Performance Scheme on the environment (N=41)



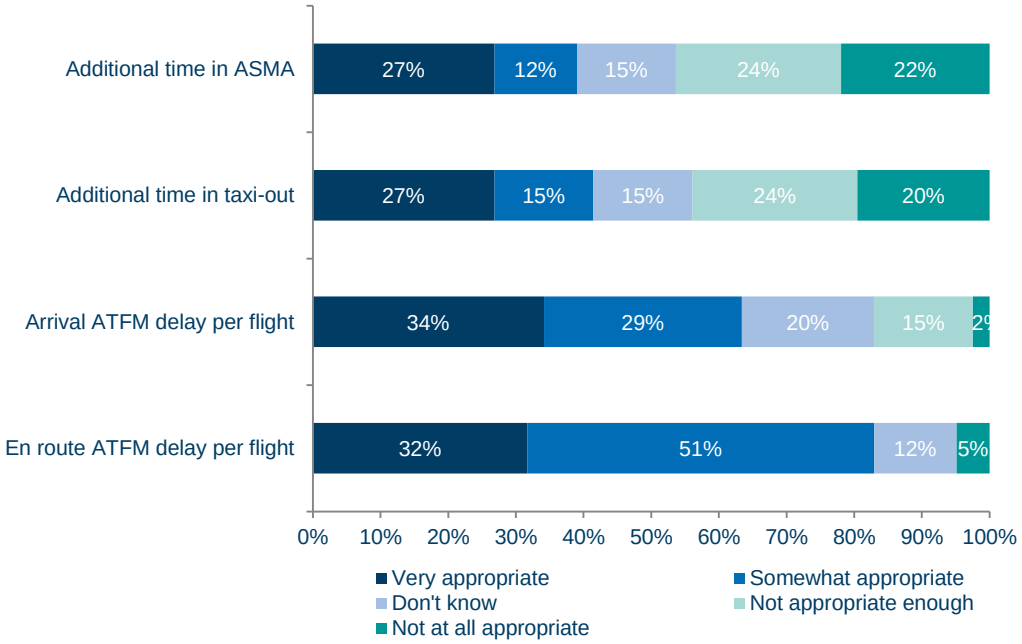
Broadly summarizing these results: one third indicates a positive impact while two thirds indicate no impact, a negative impact or do not know. The authorities are slightly more positive about the impact on the environment than the ANSPs.

2.3.4 *Capacity*

Appropriateness of KPI and targets

Respondents were requested to indicate the appropriateness of the Capacity KPIs . In total 41 respondents answered this question and the following figure shows how the respondents judged the appropriateness for each KPI, from which we take that the en route and arrival ATFM delay per flight are mostly accepted as appropriate, with concerns about ASMA and additional time in taxi-out.

Figure 2.14 Appropriateness of KPI and PIs in the KPA of Capacity (N=41)



For the additional time in taxi-out indictor around one third of ANSPs and NSAs viewed it to be 'not appropriate' or 'not at all appropriate' whereas airspace users viewed it as 'very appropriate'. For the 'additional time in ASMA' there was a similar finding, with airspace users more in favour of the indicator than ANSPs.

En route ATFM delay per flight

The prevalent view is that this KPI is appropriate, with some points on its definition and use. Respondents noted that the indicator is not a direct measure of capacity, but reflects service quality through the balance of capacity to demand; the latter not being in the direct control of ANSPs. The capacity KPIs are "understandable metrics, the source is sound and there are procedures in place to increase the reliability and consistency of the data."

It was, however, observed that en route delays are, in absolute numbers, insignificant compared to total delays experienced by users.

A concern is that not all delay causes are directly controllable by ANSPs, which impacts the application of incentives in RP2. The CRSTMP and post-ops adjustment process were therefore regarded as useful tools to ensure that the share of ANSP-controllable delays is accurate; and should therefore be maintained for RP3.

There was also a view that incentives should be harmonised across States, which we take to mean that the same incentives structure should apply to all ANSPs. It was also noted that the link between capacity targets and the FAB-combined bonus (received after year N+2) is weak.

One ANSP drew attention to the problems of traffic volatility, which "…brings instability into the system and its causes are diverse: Political (war/no-fly zones, financial (change in unit rates, economical (low fuel price allows

airlines to plan longer routes), operational (capacity shortages lead to circumnavigation). This unpredictability severely impacts daily operations in all the 4 KPAs (capacity – plans based on STATFOR figures and shortest routes), safety (mitigation measures potentially not sufficient to reduce complexity), cost-efficiency (higher costs for buffer to cater for unforeseeable traffic shifts), environment (longer routes).” As a consequence, it is proposed that these effects should be taken into account for target setting in RP3, specifically:

- add buffers to performance targets;
- include an airspace user contribution to performance targets;
- define traffic dependent capacity targets.

Further comments were:

- That CODA data is not a viable alternative for the KPI as the contributing data is incomplete (not all airlines report) and of insufficient data quality (flight plans from airlines often vary from ATC received flight plans etc.).
- The role of the Network Manager should not be underestimated, which we read as the Network Manager has an important role in delivering this indicator.
- KPIs should cover also military traffic.

Suggested improvements were:

- The KPI could be expressed differently, such as “% of flights delayed by less than 15 min”.
- The indicator could be enhanced by improvements in delay causes attribution, first by a refined set of causes and second by greater consistency in application by all stakeholders.
- The indicator could distinguish between ‘standard, peak and weekend’ capacity, as it is otherwise an indicator of just substantial service degradation.
- For the longer term (post RP3), because En-route ATFM delay does not measure all ANS related delays, a more suitable indicator probably could be developed with the implementation of business trajectories within SESAR.

Arrival ATFM delay per flight

The support for this indicator was not strong, but the general view was that there is no better alternative to indicate airport arrivals capacity.

The principal concern with the indicator is that it is dependent on downstream factors (weather, demand bunching), making it difficult for the respective ANSP to solve the problems attributed to it via the indicator. Nevertheless, there was support for local target setting, which should properly account for local developments and requirements. The indicator should also be supported by the Network Manager post-ops adjustment process.

A stakeholder from the ANSP category sees this indicator as a good proxy for airport capacity improvements, but is concerned that these require “all the concerned actors to contribute to the achievement of the target”, whereas there is currently “no clear accountability on all other parties involved”. I.e.

"Clarification on all the stakeholders' accountability and responsibility on generating airport delays is needed".

Additional time in taxi-out
This indicator is seen as more relevant to airports than ANSPs, as the taxi-out time is influenced by a variety of factors, with difficulty in identifying the ANS contribution. One ANSP commented that they are uncertain as to how to manage it.

It was generally commented that the indicator is complex, difficult to measure and with some measurement inconsistencies. Respondents therefore thought it not yet sufficiently mature to become a targeted KPI.
Suggested areas for improvement were:

- Not all the airports falling under RP1 criteria had implemented A-CDM so data for the computation of KPIs were not available.
- There is no clear accountability on the other parties involved at the airport.
- The methodology is not clear or transparent, making it difficult to re-compute the values. There were also concerns that the results presented by the PRB are not shared among the stakeholders involved at airport level, i.e. more transparency is required.
- As the indicators are monitored on a monthly basis, the unimpeded time could also be monthly.

Additional time in ASMA
This indicator was also seen as more relevant to airports than ANSPs.

There were general concerns about the indicator being complex and not sufficiently mature for rollout as a KPI. It was noted that additional ASMA time is influenced by the airport throughput desired by operators. Thus a high-throughput airport may use the additional flight time to preserve overall operational and safety performance. There are also potential trade-offs with emissions.

An ANSP reported finding inconsistencies between their own and the PRU's calculations; with issues around different airports, aircraft type and day of measurements. The complexity issue concerns both the interactions between stakeholders and the distinction of the ANS contribution to observed performance.

Suggestions for improvement were:

- To use the first entry in the 40NM circle as a basis for calculation. For larger airports, an additional indicator based on an 100NM circle may be useful to address more complex traffic patterns.
- It was recommended that in RP3 there should be focus on the reasons for additional time at Airports and in ASMA.

Alternative indicators
A number of proposals for alternative capacity indicators were proposed for the current en-route ATFM delay per flight indicator:

- % of flights delayed by > 15'/20', taking into account peak vs normal operations. It was noted that monitoring of the average delays hides the extremes, which cause most of the airspace user problems.
- Weighted delay performance indicators. The UK has introduced additional metrics to the performance scheme, such as metrics that place greater weight on long delays and operationally critical departures in the morning.
- Consider a gate-to-gate indicator covering all phases of flight.
- Develop capacity indicators that that distinguish between the different phases of flight and the entities responsible for contributing to the achievement of the capacity targets.

Other suggestions

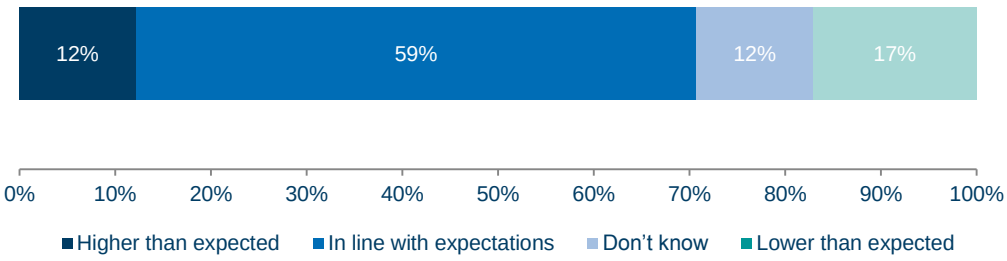
- To address issues with traffic volatility, which is outside of ANSPs' control, traffic dependent capacity targets should be defined for en route and terminal operations.
- Include other actors such as airspace users and airports in the performance scheme.
- Develop military KPIs.
- KPIs and PIs should focus more specifically on the contribution of ANSPs.
- The ASMA KPA is closely linked to the Environment KPA, whereas new KPIs should contribute to widen the perspective captured.

It was further stressed that the transition of the PIs towards KPIs should be careful, in order to assure the consistency of targets and metrics. For example, "slot adherence already has a regulatory 80% target, and the metrics regarding ATC pre-departure delay are not sufficiently mature".

Overall impact and achievements

The majority of the same respondents judged that the achievements in the capacity KPA during RP1 and the first year of RP2 were either in line or greater than expectation, although airspace users judged that the achievements were lower than expectation:

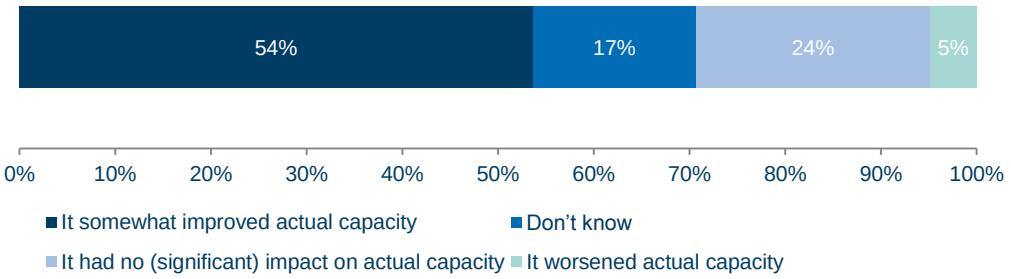
Figure 2.15 Achievements in the KPA of Capacity



Respondents were also asked to indicate the impact of the SES Performance scheme during RP1 on the actual level of capacity. Answers distribution of 41 respondents are presented in the figure below. The majority of respondents indicates that the schemes somewhat improved actual capacity.

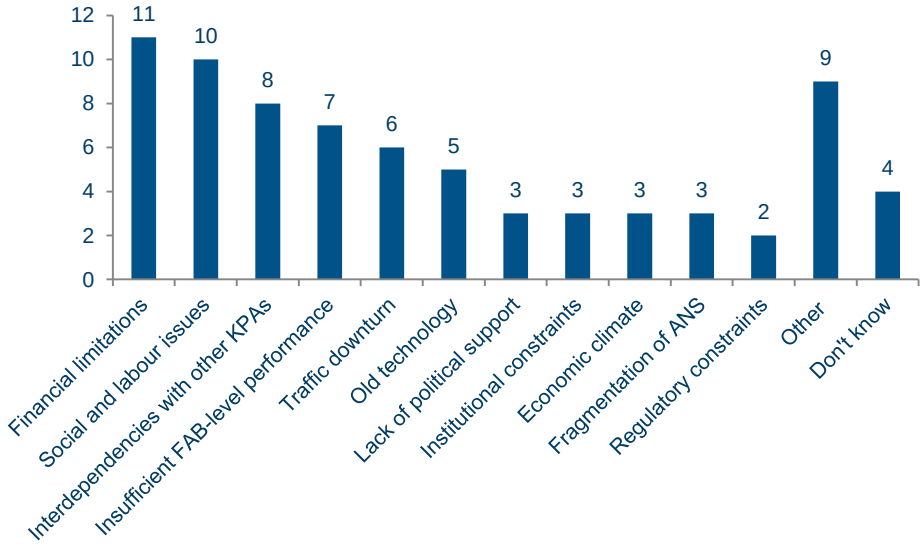
No respondent indicated that the scheme significantly improved the actual level of capacity. Surprisingly, airspace users tended to believe that there was some improvement in the capacity whereas many ANSPs responded that there was no impact in actual capacity.

Figure 2.16 Impact of the SES performance and charging scheme on actual capacity performance



Respondents were asked to indicate what factors have hindered the achievement of the objectives in their Member State or by the entity they represent. The survey offered 11 factors (plus 'other' and 'do not know'), which could be marked as hindering the achievement of the objectives. Of the respondents, the NSAs and ANSPs broadly identified all of the factors as hindering achievements, although ANSPs did not chose 'Fragmentation of ANS'. By comparison, airspace users chose a narrower range of factors: 'Lack of political support', 'Insufficient FAB-level performance" and "Fragmentation of ANS'. The Network manager respondents identified 'Financial limitations' and 'Insufficient FAB-level performance'. The following figure presents the overall list of hindering factors, in order of relative importance. Comments accompanying these responses are shown below.

Figure 2.17 Factors hindering achievement of objectives in the KPA of Capacity



Financial limitations

- The Cost-Efficiency KPA put pressure on staffing and in turn on capacity.
- Due to oscillations in traffic levels and shifts in traffic patterns on a short time interval basis it is challenging to provide optimal capacity levels having in mind efforts to be cost effective in line with expectations.

Social and labour issues

- In France, performance would have been better for 2012-14 without ATCO strike impact. Also social negotiations were under way in 2015, which generated some strikes.

Other

- Effort on SESAR projects did not deliver the expected results: Productivity did not increase tremendously.
- Uneven traffic growth in different places in Europe was also a factor to exceed capacity in specific places, including due to travel diverting from areas affected by security issues, political instability or airspace or route closure.
- The targets have to exclude calculation of delays out of the control of MS/NSA/ANSP (strikes, military events, crisis areas/volcanoes, conflicts etc.)

Interdependencies with other KPAs

- Economic choices by users regarding flown routes costs (fuel costs and charges levels) have had an impact on traffic shifts impacting capacity in specific areas.
- Capacity: in RP1 DK/SE FAB met the FAB capacity target. For Sweden there were some problems when the NSA tried to devolve the target to ACC level. However, it's hard to increase capacity further in our airspace – that would only increase costs
- Interdependencies with the other KPAs (especially cost efficiency in a period of economic constraints) have affected the overall capacity at European level. This has been a general feature where financial limitations have affected staffing levels.
- There is an interdependency between the capacity target and the cost-effectiveness target

Insufficient FAB-level performance

- ANSPs continued to put the maximum effort in offering their best capacity which has not been supported by an adequate level of performance within FABs.

Traffic downturn

- In spite of traffic growth and systems upgrades, performance was not as high as expected because of traffic volatility, with traffic growth non-homogeneous in time: traffic peaks have seen big increase and some flows have shifted. Nevertheless, the actual ATFM delay through Europe was lower than expected in 2012 and 2013 and would have been better in 2014 without ATCO strikes in 2015. I.e. the outcome should be considered as exceptional as some ANSPs had to provision delays for the introduction of new ATM systems and account for traffic flow changes

due to unit rate evolutions following the implementation of a new performance plan.

- Although overall Capacity performance in RP1 was more or less in line with expectations, a number of ANSPs experienced constraints that prevented Capacity performance from being enhanced further. Crisis areas and airspace closures during RP1 affected the overall level of capacity (ie. Libya in the case of Italy).
- There was an under-investment in capacity in RP1 that has an impact on users that has not been appropriately evaluated and no mitigation is planned for RP2.

Old technology

- Year 2015 should at this stage be considered as exceptional as some ANSP had to face provisional high level of delays due to the training and implementation of new ATM system and take into account traffic flow changes due to the unit rates evolutions which occurred at the beginning of RP2 with the implementation of a new performance plan.
- Implementation of new ATM systems to modernize ATC and enhance capacity also led to temporary under-capacity due to training and implementation phases.
- The operational benefit of new systems enabling SESAR deployment and adequate human resources foreseen during RP2 and for RP3 should enable to maintain the very good RP1 capacity achievements and accommodate the traffic growth.
- For capacity and flight efficiency there is a permanent work done with the NM through LSSIP, ERNIP and CEF in order to adjust and enhance capacity planning by ANSP. Further progress will materialize mainly with the introduction of new ATFCM tools and concepts, with the implementation of new ATM system and SESAR implementation, and also with new working arrangements with ATCO enabling new rostering rules compliant with the evolving distribution of traffic

Lack of political support

- Cost-effectiveness targets for RP2 have been watered down without paying due attention to the investments (and risks of duplication) and without assessing the impact on capacity.

Institutional constraints

- Civil-military coordination could be improved for better FUA
- FUA needs to be addressed at State level.

Economic climate

- The economic climate in the entire EU has been volatile during the past 5 years, which has been taken into consideration while developing the Performance Plan for the second reference period.
- The lack of maturity within the 9 FABs, which led to a lower performance evolution overall.
- Social issues such as industrial actions led to a relative lower than expected performance.

Regulatory constraints

- The Cost-Efficiency KPA put pressure on staffing and in return on capacity.

2.3.5 *Cost efficiency*

The Performance Regulation laid out the following KPIs and PI's in the KPA of Cost-efficiency during RP1 and the first year of RP2:

- Union-wide determined unit costs (DUC) for en route ANS
- Union-wide determined unit costs (DUC) for terminal ANS (TANS)
- Costs of EUROCONTROL compared to evolution of the KPI on en route ANS

Appropriateness of KPI / targets

Respondents to the survey were requested to indicate whether the KPIs and PI's in the KPA of cost efficiency were appropriate to measure and target improvements in cost efficiency performance during RP1 and the first year of RP2. Figure 2.18 shows the distribution of views concerning the appropriateness of the 3 KPIs and PIs for the KPA cost efficiency. Figure 2.19 further breaks down this information according to respondents' stakeholder group. Note that Figure 2.19 does not display data on airspace users, as only one respondent answered this question, who indicated '*Not at all appropriate*' for each of the indicators.

Overall, taking into account only those respondents who answered the question (excluding '*don't know*' answers), 83% of respondents view a DUC for en route ANS at least somewhat favourably (i.e. '*very appropriate*' or '*somewhat appropriate*') as an appropriate indicator and target to measure cost efficiency performance. Categorising respondents according to stakeholder group, the distribution remains relatively even, accounting for 16 ANSPs and 14 NSAs. By contrast, just under 60% (14 of 34 respondents) view TANS as an appropriate indicator to measure improvements in cost efficiency, and 50% for Eurocontrol costs. In all cases, the respondent representative of airspace users indicates that KPIs and PI's are "*not at all appropriate*".

Figure 2.18 Appropriateness of KPIs and PIs in the KPA of Cost Efficiency (N=39)

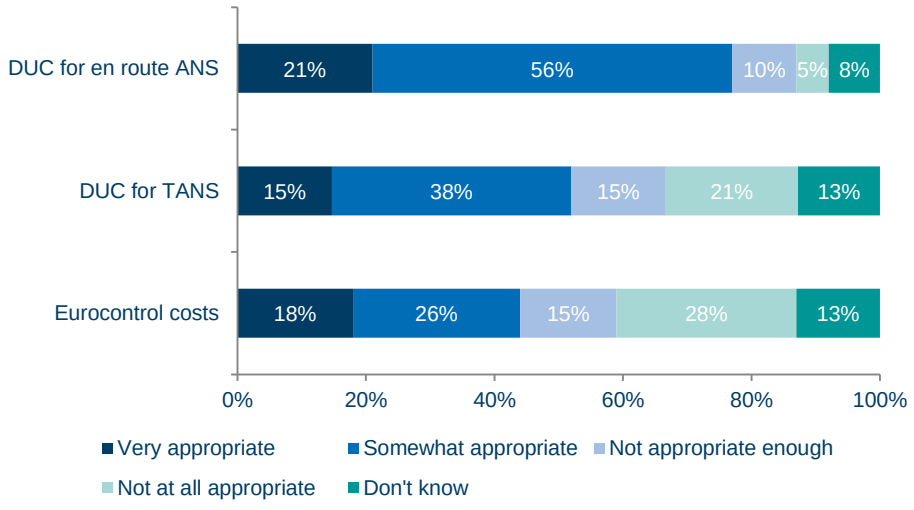
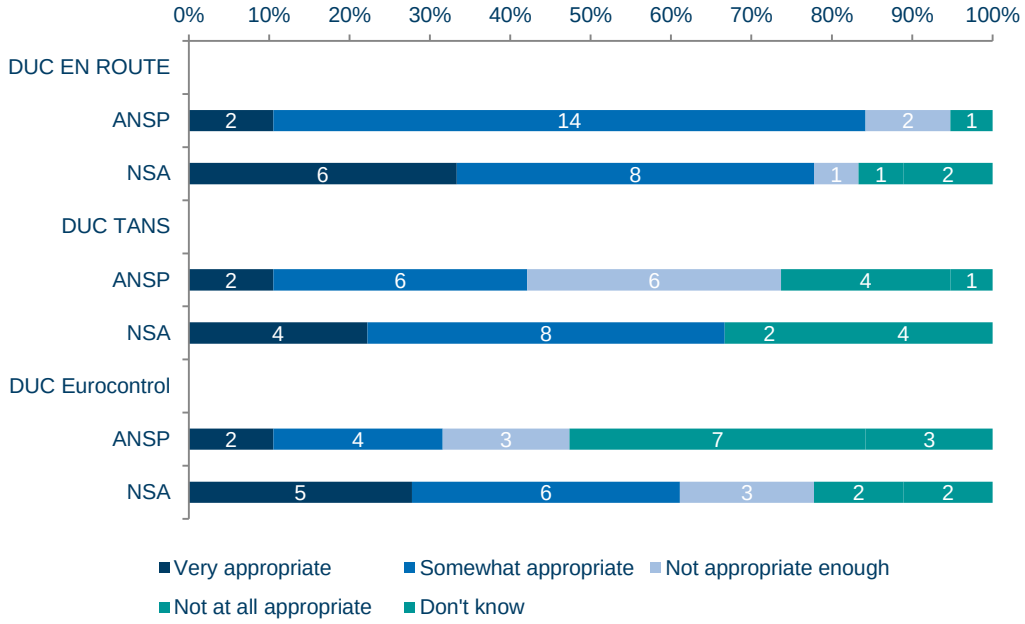


Figure 2.19 Appropriateness of KPIs and PIs in the KPA of Cost Efficiency, per stakeholder group (N=38)



DUC for en route ANS

Support for this indicator is highest among the respondents, though there is a general view that the KPI DUC for en route ANS could be more focused on the cost elements over which ANSPs have direct control.

The main concern with the indicator is that, in the present conditions, the focus is on controlling cost (i.e. focused on inputs) rather than on improving the performance of ANSPs. At the same time, the current approach does not sufficiently focus on the elements over which ANSPs have direct control (i.e. controllable costs), thereby increasing the risk associated with undermining the cost reduction incentive. This issue has been raised by all stakeholder groups.

A second concern, which is raised by both ANSPs and airspace users, is that the DUC for en route ANS is not actually a target, but rather constitutes a ratio that entities – and ultimately the Member States – estimate on the basis of their annual cost base estimate for the whole reference period, divided by the forecasted number of service units during the same period. Unrealistic (inflated) economic or traffic assumptions included in NPPs artificially enhance the actual cost-efficiency performance during the period and fail to capture the true costs for users. From the airspace user perspective, the targets are not binding, as there is no penalty attached to the non-delivery of the performance targets (despite the fact that additional incentives on capacity have been created).

A stakeholder from the NSA category further asserts that many of the current side effects of the Regulation, i.e. large carry-overs for some ANSPs, discrepancy between actual cost efficiency performance and the "true cost for users", unrealistic initial economic or traffic assumptions, which artificially inflate the cost efficiency performance during the assessment – could be overcome with greater flexibility. In particular, flexibility is needed to revise

the performance plans in case of large deviations of the actual traffic from the initial forecast, making initial economic assumptions invalid (e.g. interest rates), or exempted costs reach unexpected levels. This could be done through a revision of alert mechanisms with thresholds for such deviations.

DUC for TANS

For TANS, respondents generally agree that setting a Union-wide target on this PI would not be appropriate given the discrepancy of operational and technical set-ups among the different charging zones. The main concern with the indicator is that DUC for TANS must be tailored to the local level conditions and/or specific airports because the cost basis is different from country to country, and one-size targets do not fit all airports, their needs and requirements. Targets should be set nationally.

EUROCONTROL costs

The support for this indicator is lowest of the three KPIs and PIs analysed. The main issue raised is that Eurocontrol absolute costs have an impact on the unit rate, though DUC takes into consideration traffic evolution. The DUC should not be combined with an absolute cost, and therefore Eurocontrol osts should not be considered when assessing the cost efficiency performance of the State. These costs are considered uncontrolled by the EC, however.

Suggested areas for improvement:

- Eurocontrol costs target should be set based on the absolute cost level for the Part 1 cost elements of the Agency and on the DUC level for the Part 9 cost elements for NM activity, which is related to traffic development)
- Eurocontrol costs target should be set based on the absolute cost level rather than unit costs per flight, as most Eurocontrol costs do not vary with traffic volume.

Alternative indicators

Proposals for alternative cost efficiency performance indicators fall into three main themes:

KPIs and targets that are better aligned to controllable costs, applying different approaches to different cost components. Concretely, respondents propose to treat capital expenditures (costs and depreciation), costs of equity and costs exempt from cost sharing in a different way – for example by excluding them from determined costs and making them be subject to full cost recovery – in order to focus ANSPs on enhancing the efficiency of controllable costs. This proposal is supported by 7 respondents to the survey. It is also mentioned that indicators should attempt to capture the flexibility needed to respond to events and developments, for example allowing for re-profiling of capital expenditures and to prioritise different aspects in response to customer requirements.

Potential use of total economic value, incorporating the quantifiable impacts of the other KPAs (not only delays within Capacity, but also fuel consumption savings and CO2 emission benefits for Environment) is seen as the most adequate indicator to measure cost-efficiency performance by three respondents. However, it is recognised that such an approach will require a mature tool to account for all relevant factors and correlate costs and benefits. An immediate alternative for the actual en-route and terminal ANS KPIs is suggested in the application of different approaches for different cost categories (see above).

Finally, it is suggested that the actual unit rate level and trend be used in order to monitor the true cost for users. Currently, due to the traffic and cost risk sharing mechanisms and related carry-overs, substantial differences emerge between Unit rate and Unit cost trends.

Other suggestions and comments were:

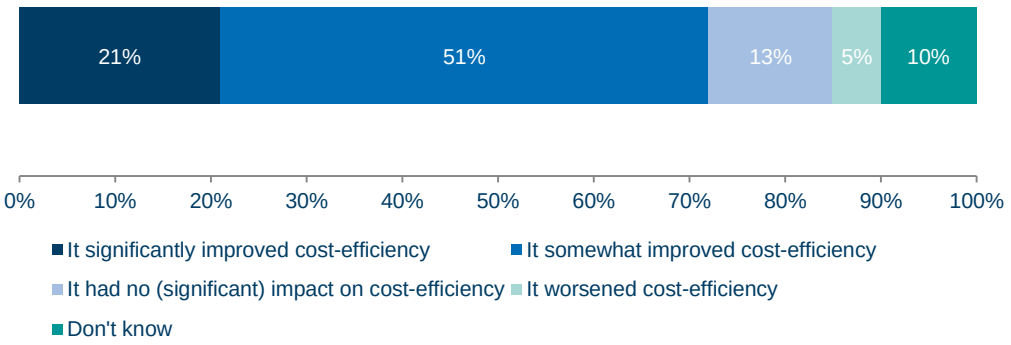
- The efficiency of the performance scheme should be assessed on two levels: (1) The long-term effects on unit costs and unit rates, assessed against the 2002-2011 period or even before; (2) The medium-term effects on unit costs and unit rates. The latter can be assessed as positive, since the actual unit rates are determined on the basis of external factors (traffic, inflation, uncontrollable costs from period N-1), hence avoiding large deviations for airlines and helping ANSP to anticipate how to react to those external variations.
- All cost items should be under the control of the service provider. To this end, a new KPI should be defined with a 'normalised cost base', i.e. including SAR costs even if the State do not recover it from route charges.
- The specificity of local conditions (State-level /organisation-level) needs to be (better) taken into consideration in the target-setting process, including the already achieved effects, therefore, targets must be differentiated between the states.
- The main target should be expenses reduction of the final part of the civil aviation value chain - the passengers, not on profit margins of the airspace users.
- Incentivise the development and use of technology, including through partnerships, by setting price-targets combined with sufficient freedom for the ANSP to deliver on performance improvements.

Overall impact and achievements

Union-wide targets for the cost efficiency KPA in RP1 foresaw a reduction of the average DUC for en route ANS from € 59,97 in 2011 to € 53,92 in 2014 and to € 56,64 in 2015 (the first year of RP2), expressed in real terms per service unit, € 2009.

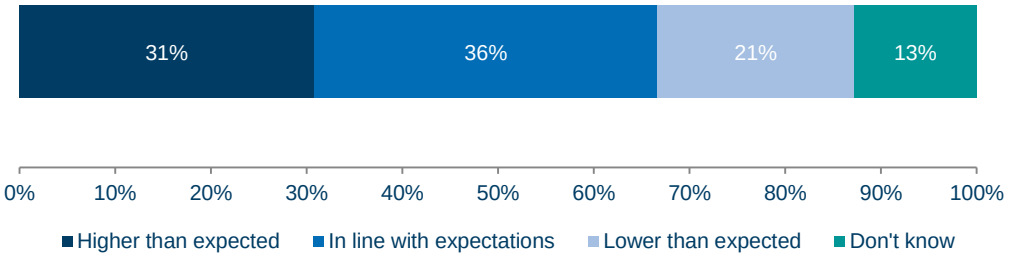
Respondents were requested to provide their assessment on the overall impact of the Performance and Charging schemes during RP1 and the first year of RP2 on actual cost efficiency performance (Figure 2.20). Approximately 72% of respondents indicate that the performance and charging scheme had an overall positive impact (somewhat improve or significantly improved cost efficiency). Of those respondents (who indicate an overall positive view), 71% are representatives of ANSPs.

Figure 2.20 Impact of the SES performance and charging scheme on cost-efficiency (N=39)



When asked whether achievements in cost efficiency were higher or lower than expected (Figure 2.21), 31% of respondents indicate that achievements have exceeded expectations, while a further 36% indicate that achievements have been in line with expectations. When taking into account respondents' background, ANSPs account for more than 80% of those who indicate that achievements in the KPA of cost efficiency exceeded expectations. On the other hand, ANSPs account for less than two-fifths (3 out of 8 respondents) who indicate achievements below expectations.

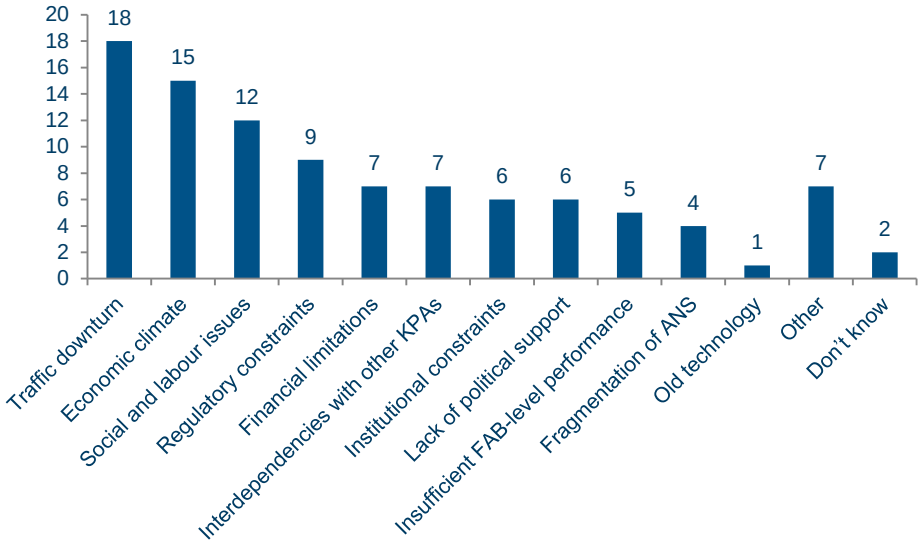
Figure 2.21 Achievements in the KPA of cost efficiency



Factors hindering achievement of SES-related objectives

Respondents were requested to indicate the most important factors hindering achievement of SES-related objectives by their Member State or organisation. Figure 2.22 shows the number of respondents indicating the various hindering factors. The most frequently cited hindering factors are '*traffic downturn*' (18 respondents), '*economic climate*' (15 respondents) and '*social and labour issues*' (12 respondents). Comments accompanying these responses are summarised below.

Figure 2.22 Factors hindering cost efficiency performance (N=39)



The European economic crisis and resulting drop in traffic are the most frequently cited factors said to constrain improved cost efficiency performance. The main impact stems from the traffic downturn as this is a factor beyond the direct control of the providers. However, given the link between macroeconomic indicators and the level of traffic demand, the negative economic climate in recent years has resulted in significantly lower traffic levels than forecast in the National Performance Plans (NPPs). This in turn impacted the cost/traffic ratios of ANSPs, which in many cases led to lower than expected income for ANSPs, as costs could not be immediately reduced to the same degree and level.

Notwithstanding the economic crisis and subsequent traffic downturn, several respondents point to the overall satisfactory level of performance achieved by ANSPs despite the major drop in traffic compared to the levels forecast in the NPPs. This is explained by the fact that many ANSPs responded in turn by adopting extensive cost containment strategies. ANSPs in many States reduced cost bases below determined costs forecasted in NPPs. One ANSP notes that strong performance achieved in this way should be viewed with scepticism: "as it has been done in part by postponing investments, so those costs will reappear in the coming years, hampering additional costs reduction and in the meantime, the operational benefit of those investments have not materialised. In [this Member State], some salary adjustments shifted for unexpected "technical reasons". Regarding RP2, the lack of revenues due to the RP1 traffic downturn, leading to major RP1 investments postponement to RP2, made it impossible for those States to reduce their costs in the period."

In some cases, additional measures aimed at cost-savings and productivity gains require significant changes in ATCO rostering and managements (i.e. decrease in wages/salaries). Such measures are linked to local social dialogue cycles, which are not in line with the Performance Scheme calendar. Moreover, changes need several years to see an impact (low personnel turnover due to longer careers).

For example, in RP1, one ANSP "managed to satisfy the customer requirement of closing the ATCO shortage and at the same time to reduce its cost base more than it had planned. Due to the sharp decrease in traffic development, [the ANSP], however, was not able to meet the DUC target."

To a lesser extent, the regulatory burden is argued to be so high that it consumes any gains made in cost-efficiency. Under the 'other' category, interest rates were cited as a factor that is not fully under the control of ANSPs (inflation).

Taking into account the different categories of stakeholders, respondents saw the hindering factors differently: whereas ANSPs and NSAs saw almost all factors as relevant in one way or another, for airspace users the most important factors seem to be lack of political support, insufficient FAB performance and fragmentation of ANS.

NSA oversight capabilities

NSA stakeholders were requested to indicate whether they have sufficient oversight capabilities to fully monitor and enforce the implementation of cost-efficiency planning requirements. Overall, the respondents offer a moderately positive view, with nearly all respondents (13 of 15) who represent an NSA indicating that their oversight capabilities are at least partially sufficient. Just 2 of the 15 NSA respondents indicate that oversight capabilities are '*not at all*' sufficient.

When asked to elaborate, one respondent notes that the amount of time and workload dedicated to ensuring oversight of cost efficiency performance comes at the expense of resources for the same purpose across other KPAs. Another respondent takes issue with the potential conflict of interest, asserting that it is impossible for an NSA to independently assess cost figures and planning requirements presented by ANSPs.

The other issue that is mentioned by 3 respondents is the absence of a common set of guidelines or criteria upon which the NSA evaluation is to be based. Specific comments to this issue were:

- Performance Plans are not required to include a set of clear actions that would be necessary in order to reach a certain level of cost efficiency;
- There are no shared criteria to assess the reliability of an ANSPs' business plan;
- There are no guidelines regarding investment or for situations not covered by the Regulation, e.g. low inflation rates.

Charges to airspace users

Airspace users were asked whether the Performance Scheme had the effect of increasing or reducing the charges to airspace users. It was indicated that the Performance Scheme increased the charges to airspace users and argued they have paid € 1 billion more than foreseen in the Performance Plans despite the fact that the traffic was 5% below forecasts during RP1.

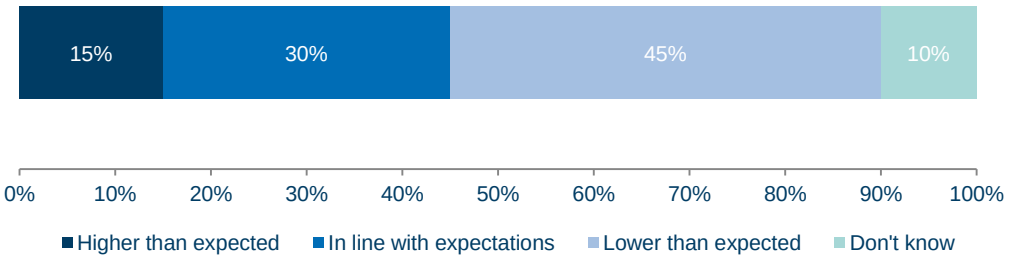
As contributing factors for this increase, it was argued that the adjustment mechanisms foreseen under the Regulations (traffic risk, cost-sharing and

exempted costs) allowed ANSPs to effectively raise the costs charged to airspace users, compared to the Determined Unit Rate in the National Performance Plans. Moreover, it was argued that traffic was purposely overestimated.

2.3.6 *Investments and incentives*

Capital expenditures (CAPEX)
ANSPs were asked whether their capital expenditures were higher or lower than expected. Of 20 total responses, 3 (15%) indicated it was higher than expected, 6 (30%) stated it was in line with expectations, and the largest number, with 9 responses (45%), indicated it was lower than expected. The distribution in percentages is given in the figure below.

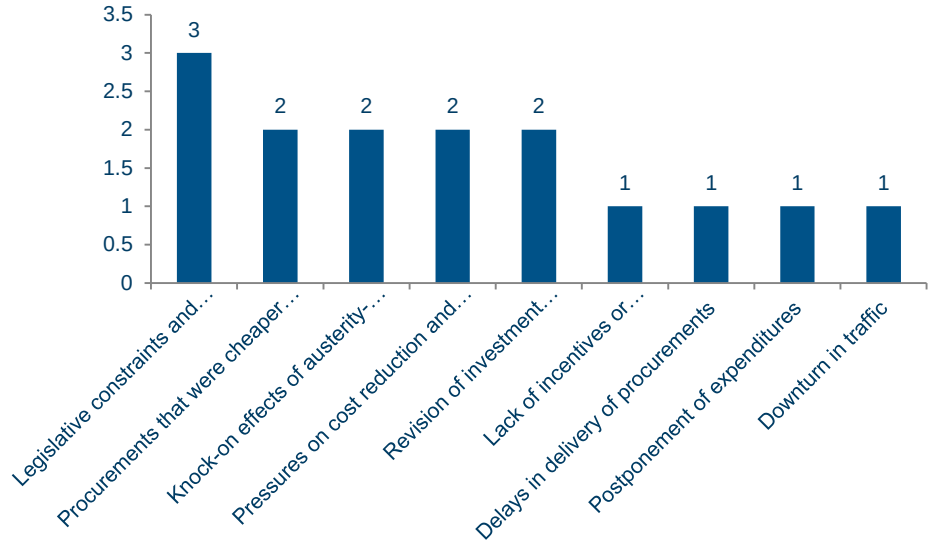
Figure 2.23 Actual versus expected Capital Expenditures (N = 20)



Various explanations were for were expenditures being lower than expected, reflecting the country-specific contexts ANSPs are operating in. These related to:

- Legislative constraints and related delays in procurement processes;
- Procurements that were cheaper than expected;
- Knock-on effects of austerity-measures in a country;
- Pressures on cost reduction and cash flow constraints;
- Revision of investment requirements between planning and execution stage;
- Lack of incentives or disincentives to fulfil the investment plan;
- Delays in delivery of procurements;
- Postponement of expenditures;
- Downturn in traffic.

Figure 2.24 Why capital expenditures were lower than expected (N = 15)

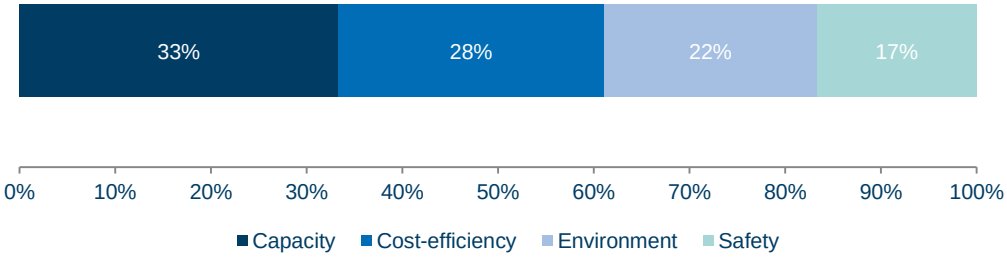


Most significant investment implemented and impact on KPAs

Eleven ANSP-respondents indicated to which KPA their most significant investment(s) contributed to achieving SES performance goals. Ranked according to frequency of mentioning, investments were aimed at improving:

1. Capacity
2. Cost-efficiency
3. Environment
4. Safety

Figure 2.25 Contribution of significant investments per KPA (N = 18)

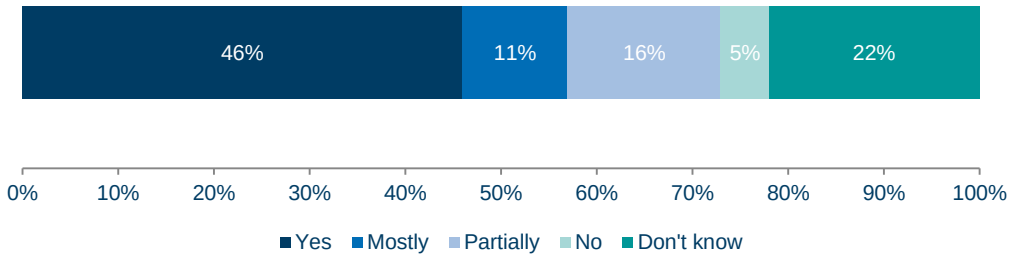


Unspent capital expenditures in RP2

NSAs and ANSPs were asked about the way unspent capital expenditures during RP1 were dealt with during RP2. Out of 37 respondents, 17 (45%) indicated it was dealt with appropriately and 4 (11%) indicated 'mostly appropriate'. As shown in Figure 2.26 below, this slim majority of 21 respondents is opposed by 6 (16%) respondents stating it was only partially appropriate and 2 (5%) stating it was not appropriate at all.

Respondents were split about equally between ANSPs and NSAs. NSAs were more negative in their judgement than the ANSPs with both 'no's' and 4 out of 6 'partially' responses coming from NSAs.

Figure 2.26 Have unspent capital expenditures been appropriately dealt with in RP2? (N = 37)



Some substantive suggestions for how unspent CAPEX could have been better dealt with have been given (only) by NSA-respondents:

- There should be clear guidance on handling of unspent CAPEX, with incentives (penalties) to ensure investments cannot be postponed and cancelled without consequences *(mentioned 2 times);*
- Capital expenditures are defined at high level in performance plans, not at project level. A lower level of oversight is needed to effectively monitor unspent capital expenditures;
- Introduction of a specific KPI for the preparation and implementation of the investment plan. A methodology should be developed that takes into account depreciation of capital is included in the cost basis, not the capital expenditures itself.
- Through the unlinking of capital expenditures and cost-efficiency: investment plans should be evaluated separately from the cost regulation.

One of the responses pointed towards a possible solution on the horizon:

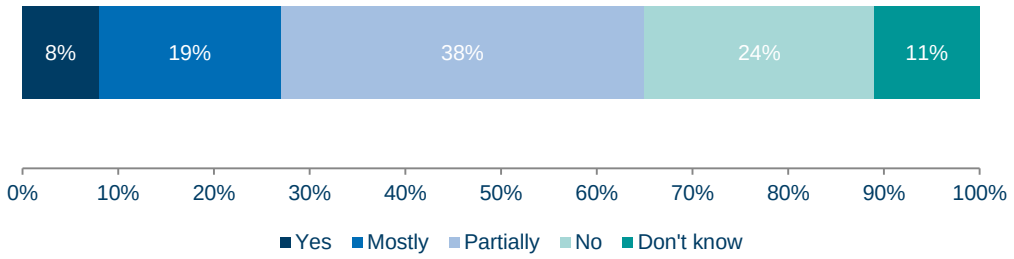
- A Single Sky Committee Working Group on Economic Affairs is currently drafting guidelines for the handling of unspent expenditures. As soon as these are validated at SSC level, they will be available to ANSPs and NSAs.

Target setting and long-term investments

NSAs and ANSPs were also asked whether the target setting process addresses long-term investments sufficiently. To this, 9 respondents (24%) indicated it did not, whereas 3 respondents (8%) said it did. Seven respondents (19%) indicated it was mostly sufficient, with double that number (14 or 38%) indicating it was only partially sufficient.

Leaving out the 'don't know' category, almost 70 per cent of respondents (69.7%) thinks the current target setting process is not sufficient to address the long-term investments.

Figure 2.27 Does the current target setting process address long-term investments sufficiently? (N = 37)



Substantively, there are no differences in view between ANSPs and NSAs, with 5 NSA- and 5 ANSP-respondents indicating it was either fully or mostly sufficiently dealt with and 11 ANSPs and 11 NSA-respondents indicating it was only partially or not at all sufficiently addressed. Slight differences in nuance are indicated in the table below.

Table 2.1 Views on target setting and long-term investments, per stakeholder category

	Yes	Mostly	Partially	No	Don't know
NSA	1	4	7	4	2
ANSP	2	3	6	5	2

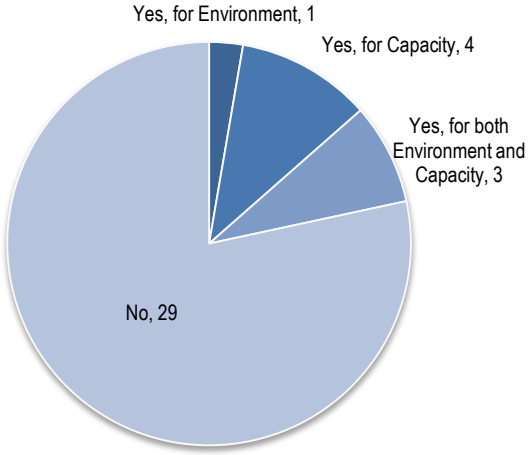
Utilisation of additional incentive mechanisms

Under the Performance and Charging Regulations, a regulatory framework was set up allowing the usage of optional incentives and penalties, to ensure that the performance targets would be met. This was set out as follows:

- **KPA Safety**: Financial incentives are prohibited.
- **KPA Environment**: Incentive is optional, however the nature of incentive may be financial or otherwise (such as corrective action plans with deadlines and associated measures).
- **KPA Capacity**: A financial incentive is mandatory, and may be complemented with incentives of another nature (such as corrective action plans with deadlines).
- **KPA Cost-efficiency**: Financial incentives are built into the "determined costs" principle and the traffic and costs risk-sharing mechanisms of the charging Regulation.

NSAs and ANSPs were asked to indicate whether the additional incentive mechanisms had been used in their Member State. As shown in the figure below, 1 respondent indicated their Member State had introduced this only for Environment, 4 for Capacity and 3 for both Environment and Capacity. A large majority of 29 respondents (78.4%) indicated that their Member State had opted not to make use of the additional incentives.

Figure 2.28 States indicating use of incentive mechanisms (N=37)



As indicated in Table 2.2 below, there are some differences in responses from the NSA and ANSP groups. These are most likely the effect of the different national compositions of these groups. (Note that one response seems not to have been properly processed in the survey.)

Table 2.2 Application of additional incentive mechanisms, per stakeholder category

	Environment	Capacity	Both	None
NSA	1	1	2	14
ANSP	0	3	1	14

Effect of additional incentive mechanisms on performance

The one **NSA respondent** indicated that "additional Performance Indicators (PIs) have been introduced to better understand the evolution of KPIs in the right direction. They are only monitoring KPIs." In this sense, there was no impact of an additional incentive mechanism.

Two **ANSP respondents** elaborated on the main effect of the additional incentive schemes on their performance, both stating the effect was beneficial. One elaborated that the incentive schemes serve as a focus for management, and the management teams are incentivised to achieve the targets to ensure alignment. This respondent's Member State has set more performance targets than average (e.g. four categories of capacity targets) which it believes to be both appropriately balanced and challenging to achieve, for example the bonus for environment has not been earned and performance in this area may actually lead to a penalty as the targets become more challenging over time.

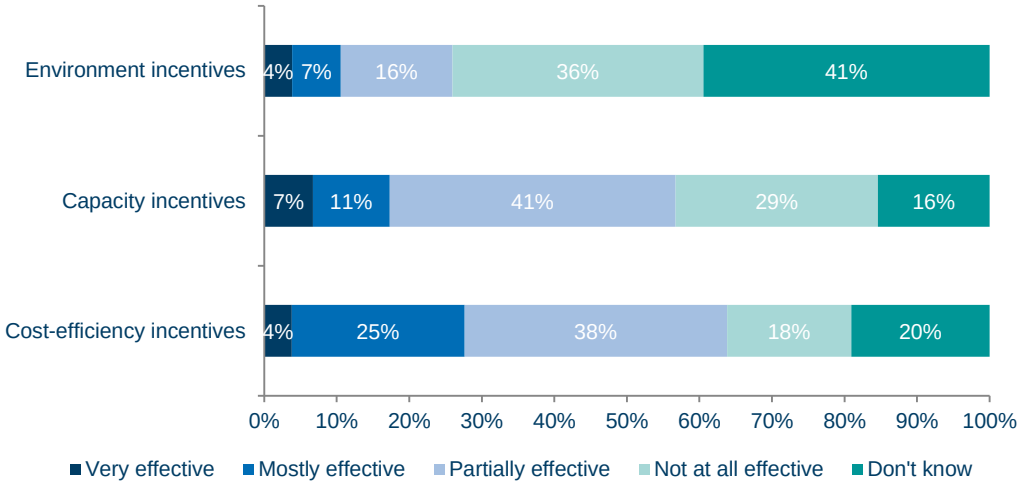
An issue that was raised by this respondent is the seeming inconsistent application of the Performance and Charging Regulation requirements for financial incentives: whereas the Regulation states the total incentive available for both KPAs is 1 per cent of turnover, the Commission has indicated that the incentive available is 1 per cent of turnover for the Environment and 1 per cent for the Capacity KPA.

Effectiveness of incentive mechanisms as an instrument to incentivise performance

All stakeholder groups were asked whether the incentive mechanisms in the KPAs of Cost-efficiency, Capacity and Environment were an effective instrument for incentivising performance.

As shown in Figure 2.29 below, the 58 respondents as a whole rated the Cost-efficiency incentives as most effective in incentivising performance in comparison to the other KPAs, with 2 respondents saying it was Very effective, 14 respondents stating it was Mostly effective and 21 stating it was Partially effective, and 10 respondents stating it was Not at all effective. After Cost-efficiency, Capacity was rated as the most effective and Environment as the least effective.

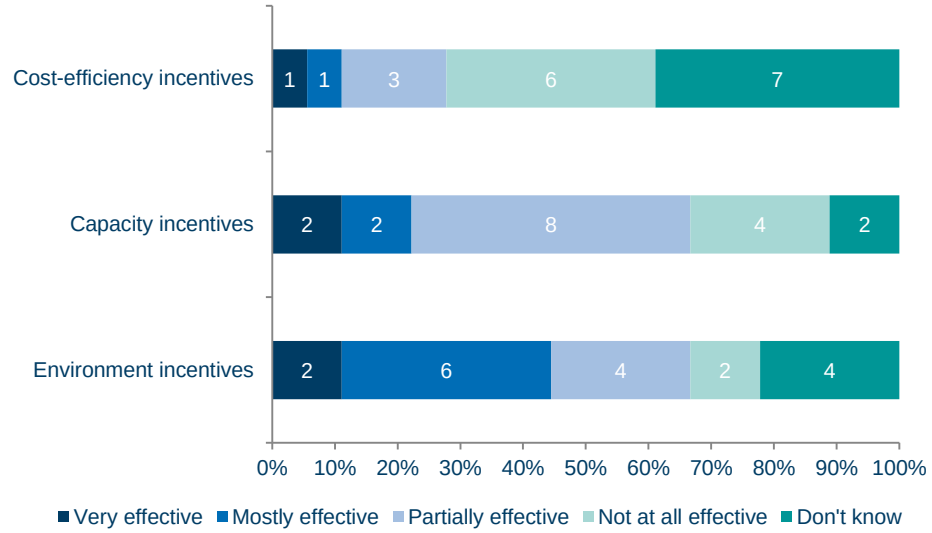
Figure 2.29 KPA incentives' effectiveness in incentivising performance (N = 58)



This, however, masks some distributional differences across stakeholder groups.

As shown in Figure 2.30 below, based on 18 respondents, **NSAs** had the most positive view on the Environment incentives, with 8 respondents (44%) indicating it was either very or mostly effective and a further 4 (22%) indicating it was partly effective. In order of declining perceived effectiveness, Environment was followed by the Capacity incentives and the Cost-efficiency incentives.

Figure 2.30 KPA incentives' effectiveness in incentivising performance, NSA views



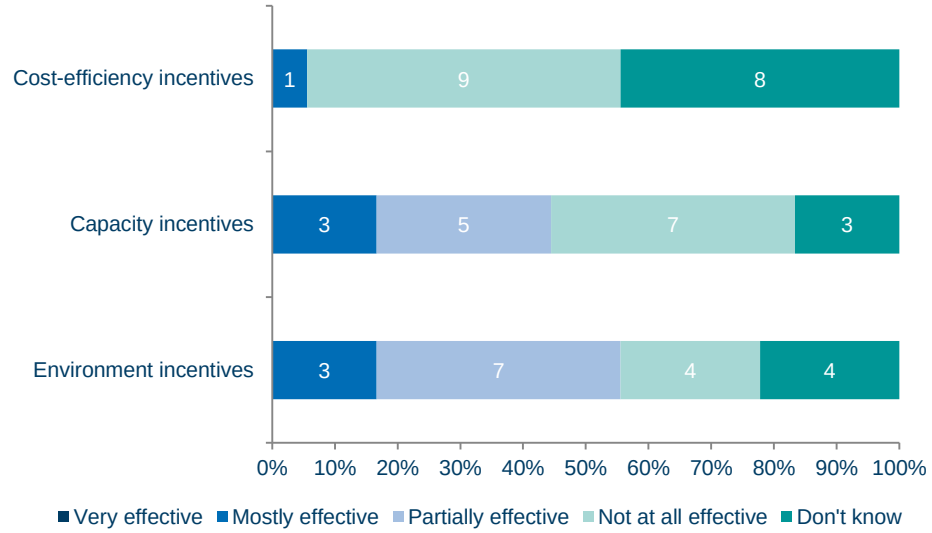
In terms of Cost-efficiency, one respondent noted that the risk sharing mechanism is clearly covered in the performance and charging regulation. Another noted however that 'traffic and cost risks should be re-evaluated'. Finally, one respondent highlighted that the cost-efficiency incentive is "only linked to the traffic forecast and not on the total costs. ANSPs do not fix the traffic."

With regard to Capacity, one respondent explained simply that it was effective because it meant 'additional money'. However, another respondent noted that it had a troubling side effect on safety, as "safety decrease[d] in order to keep the capacity at the highest level".

Two respondents elaborated on the Environment incentives' effectiveness, arguing that these are either 'not effective at all' because they are in the hands of Airlines, or that they were 'not set', again highlighting that Airlines are the major contributor, not ANSPs.

As shown in Figure 2.31 below, also based on 18 respondents, **ANSPs** tended to have a less positive view on the effectiveness of the incentives overall, with a larger portion indicating the incentives were not at all appropriate across categories, compared to the NSA-respondents. Most favourably viewed are the Environment incentives, for which 3 respondents (17%) indicated it was mostly effective and 7 (39%) indicated it was partly effective. In order of declining perceived effectiveness, Environment was followed by the Capacity incentives and the Cost-efficiency incentives in last place, which 9 respondents (50%) indicated is not effective at all.

Figure 2.31 KPA incentives' effectiveness in incentivising performance, ANSP views



One ANSP respondent elaborated that the Cost-efficiency incentives had some effect on cost-efficiency and that the move away from a full cost recovery system contributed to an increase in ANSPs' focus on performance management. Another noted that its financial incentives are not based on the EU-level KPI but were set on a national level, and that this flexibility is important to ensure the schemes take into account local customer requirements. This respondent further elaborated that ANSPs have only limited control on the overall outcomes and other stakeholders' actions to a greater or lesser extent also impact these. His conclusion was that improvements can be made in the definition of the KPIs to address this, especially for Cost-efficiency and Environment.

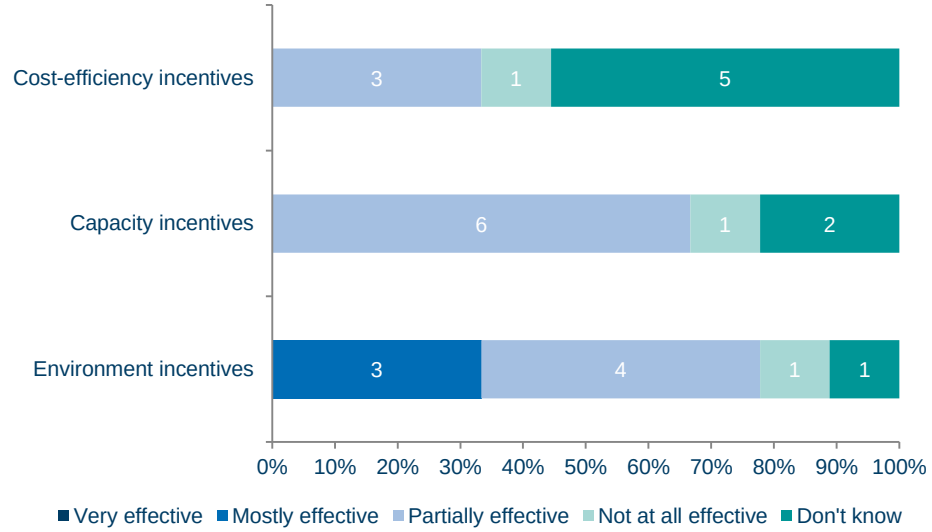
Two ANSP respondents noted that it is in general too early to say whether the Capacity incentives were effective, as their application was limited in RP1. One of them further stated that the application of financial incentives is "in principle appropriate based on the established target KPI", whereas the other noted that they experience the main pressure from Airspace Users on capacity needs. A third respondent mentioned that in his FAB, financial incentives were mandatory and incorporated, but that their "effectiveness is very dependent on the incentive formula".

Four ANSP respondents elaborated on the Environment incentives. One mentioned that "the established target KPIs do not constitute a sound basis for financial incentives due to the numerous shortcomings of those KPIs" which were elaborated under the Environment KPA analysis above – amongst others, the absence of vertical flight efficiency and absent ability to take into account unforeseeable events. Another mentioned that there is increasing pressure from the population and local politicians to introduce noise abatement measures, which risks getting more influence than the Horizontal Flight Efficiency. One respondent indicated that its FAB did not introduce financial incentives, and that good performance at national level had been driven by the free route concept which has been in force since 2009.

One respondent from the Functional Airspace Blocks (FABs) group on the ANSP side indicated that in his view, both Cost-efficiency and Capacity incentives were only partially effective, with no opinion on the Environment incentives.

As shown in Figure 2.32 below, based on 9 respondents, **Ministries** also did not rate the effectiveness of the incentives highly. The Environment incentives are most favourably viewed, with 3 respondents (33%) indicating it was mostly effective, 4 (44%) it was partially effective and 1 (11%) indicating it was not at all effective. In order of declining perceived effectiveness, the Capacity and Cost-efficiency incentives were rated less effective.

Figure 2.32 KPA incentives' effectiveness in incentivising performance, Ministry views



Elaborating on the Cost-efficiency incentives, one respondent from a Ministry stated that at least the majority of states and ANSPs have taken the incentive seriously. Another respondent indicated that Airspace Users are mostly focusing on reducing costs.

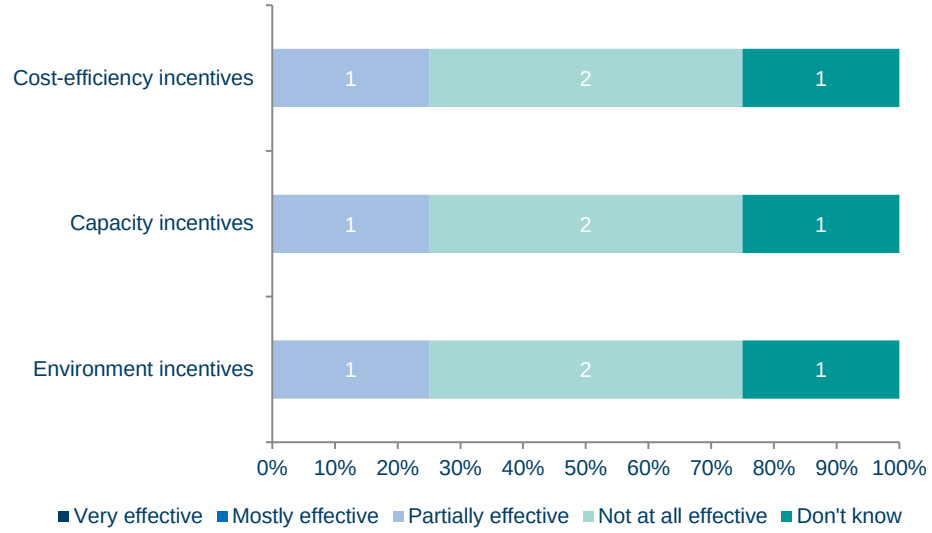
For Capacity, one of the respondents noted that the same areas continue to suffer from a lack of capacity. Another argued that capacity is based on incorrect demand, because Airspace Users are not flying according to their last filed flight plan – pointing towards a shortcoming of the system.

For Environment, one of the two respondents indicated that in some areas there is no big difference between existing direct flight paths and free route airspace. The other respondent noted that if the focus of the airspace users on reducing costs also helps the environment this is 'nice', implying that any improvements made here are side-effects.

Airspace users indicated that they saw the incentive mechanisms as not at all effective across the Cost-efficiency, Capacity and Environment KPAs.

The views of 4 respondents from **Trade union and staff organisations** are summarised in Figure 2.33 below. Across the KPAs, the effectiveness of the incentives is rated poorly with only partial or no effectiveness at all discerned.

Figure 2.33 KPA incentives' effectiveness in incentivising performance, Trade Union and Staff Organisations views



One respondent noted that, in relation to all the KPAs, the incentives are only a minor element of the scheme and are probably the lowest priority for an ANSP, outweighed by external influences and the significant pressure on cost. This respondent added that incentives are not always the best motivator and should be used with extreme caution in a safety-critical industry.

One respondent indicated that for the Environment incentives, Airspace Users are not included in this mechanism and they often plan longer routes.

For Cost-efficiency, a respondent stated that the financial pressure is too high, meaning necessary investments are not done and recruitment is too low and that this will "create huge problems in the future".

For Capacity, one respondent argued that the mechanism is too stringent and counterproductive, and that better solutions would have been found without this mechanism.

One respondent from an **Academic institution** indicated he viewed the incentive schemes for all KPAs as partially effective. For capacity, this was due to the incentives being more demand related. For the Environment KPA, the incentive was dubbed more of a 'by product'.

2.3.7 *PRB*

Duties and responsibilities of the Performance Review Body

The survey asked respondents about Performance Review Body duties and responsibilities through the following question:

> "Article 3(3) of the Performance Regulation sets out the duties and responsibilities of the Performance Review Body (PRB) to assist the European Commission in the implementation of the performance scheme as shown in the following table. *Do you believe that the PRB carried out these tasks effectively*?"

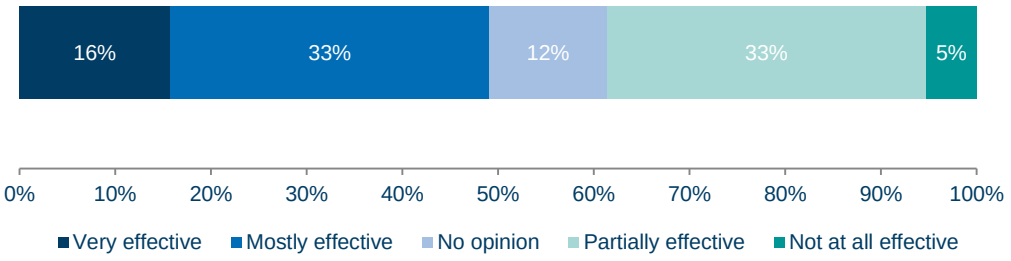
The above question was asked against 11 specific roles and responsibilities of the PRB, for which there were 57 respondents. The findings are described in the following subsections, for which we note that there are 3 areas which were judged in the majority to be only partially or not effective:

- Consistency of assessment of adopted performance plans.
- EU target setting.
- Definition of appropriate KPIs.

Collection, examination, validation and dissemination of performance-related data

The overall responses are reported in the figure below. Of these respondents, ANSPs, NSAs and Ministries responded that the PRB carried out this specific role very effectively or mostly effectively. NSAs tended to be more positive than ANSPs. However, airspace users responded 'not at all effective' and trades unions / professional staff associations responded 'partially effective'.

Figure 2.34 Effectiveness of PRB performance data handling (N = 57)



It is noted from an ANSP stakeholder that the PRB has made a significant effort to carry out the assigned tasks with valuable lessons learnt. In respect of RP3 regulatory framework, the respondents proposed that the following issues should be addressed for RP3:

- Lack of recognition of bottom-up considerations in the development of EU-level target proposals Lack of recognition of local requirements and circumstances in performance plan assessments.
- Interdependencies between KPAs/KPIs did not get appropriately addressed.
- Definitions of KPIs (see corresponding comments in the chapters on KPAs).
- Delays in meeting deadlines (e.g. assessment of performance plans).
- Monitoring templates should keep focused on their scope and not be used to gather additional information not directly related with the metrics to be measured as referred in the regulations.
- New requirements appear after approval of the regulations and plans, while data gathering processes are not clear and sometimes lead to inconsistencies.

Other respondents commented:

- The PRB is lacking independence and expertise. During RP1, the concept of "True Costs" (see above) has not been used to evaluate the real cost-effectiveness of the ATM service provision. The trade-offs between the

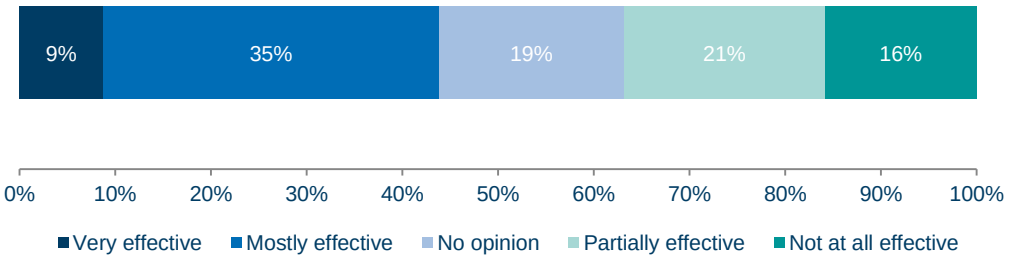
targets (capacity and cost-effectiveness) have never been taken into account. No serious analysis of the investment plans has ever been performed. No reconciliation between the investments approved in the National Performance Plans and the amounts charged to airspace users (through depreciation and cost of capital) has ever been realized.

- The PRU is professional, but there is an institutional conflict.
- Military data has not been properly taken into account.
- There is no ANSP or NSA control or view of the PRB's data processing and reporting, so some oversight should be introduced, such as EASA oversight on the data quality.
- A stronger use of the existing EUROCOTNROL support mechanism (SID) would reduce burden of regulated entities.
- We noticed a lot of errors in safety data.
- New requirements appear after approval of the regulations and plans, while data gathering processes are not clear and sometimes lead to inconsistencies.

Definition or adaptation of KPAs, in line with those outlined in the air traffic management (ATM) Master Plan and related KPIs

The overall responses are reported in the figure below. Nearly half of ANSPs, NSAs and Ministries believe that the PRB carried out this role 'very effectively' or 'mostly effectively'. Airspace users responded that it was 'not at all effective'. Trades unions / professional staff associations responded 'partially effective'. The distribution of the responses is presented in the figure below, with 'effective' to 'not effective' running from left to right:

Figure 2.35 Effectiveness of PRB definition or adaptation of KPAs (N= 57)

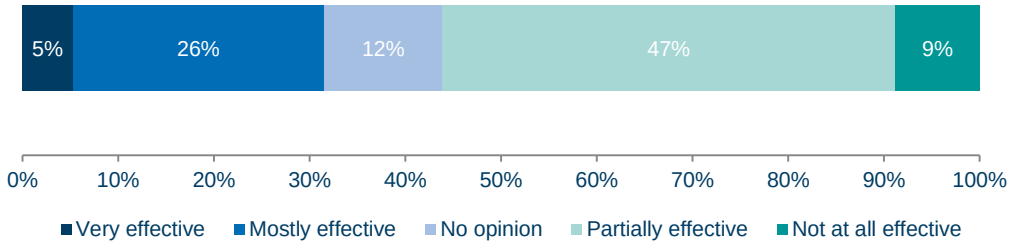


It was commented that KPAs and KPIs for RP1 had mostly been defined before the PRB was nominated; only safety KPIs were still being defined, but this was mostly an EASA activity. For RP2 the influence of the PRB would have been clearer, but RP1 indicators were largely an evolution of existing RP1 indicators.

Definition of appropriate KPIs covering the performance of the network functions and of ANS for all key performance areas

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.36 Effectiveness of PRB definition of appropriate KPIs (N = 57)



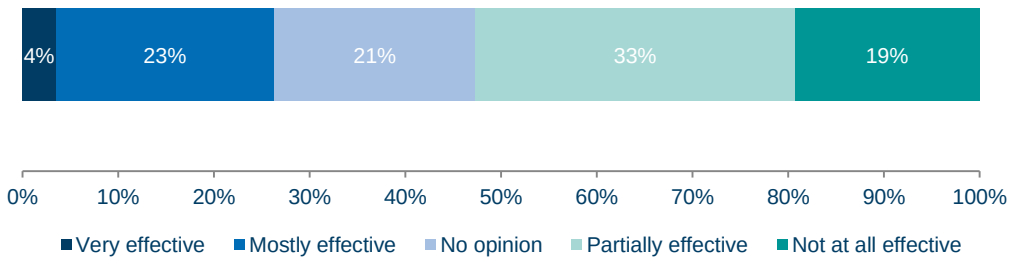
Comments accompanying these responses were:

- The most recent KPIs for the Environment and Capacity KPAs were not so relevant.
- No target should be set before a KPI is perfectly understood, validated and robust.
- The latest interactions with EASA and PRB on the evolutions of KPI do not reflect a willingness to work with the industry and develop KPI and targets that would inform on the positive evolutions of safety in this industry. Additionally, as the investments in safety are not accounted for, it is not possible to value improved safety in the services provided to airspace users.
- KPAs and KPIs for RP1 had mostly been defined before the PRB was nominated. Only safety KPIs were still being defined, but this was mostly an EASA activity. For RP2 the influence of the PRB would have been clearer, but RP1 indicators were largely an evolution of existing RP1 indicators.
- Better definitions in all KPAs needed

The setting and revising of Union-wide performance targets and alert threshold(s) for activating the alert mechanisms

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.37 Effectiveness of PRB setting and revising of Union-wide performance targets and alert thresholds (N = 57)



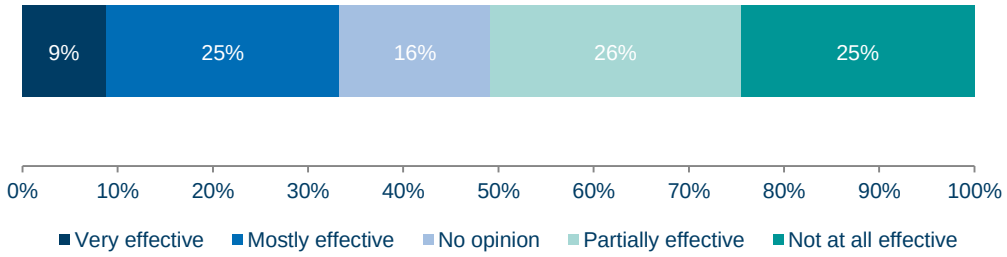
Comments accompanying these responses were:

- Some more efforts could have been put, as asked by several stakeholders during RP2 consultation, on interdependency studies between KPAs and related targets.
- KPIs and associated targets should be considered to their full extent, i.e. considering that ANSPs do not necessarily have all means to achieve targets if other stakeholders' actions are not taken as well on board (e.g. airlines not optimising the use of capacity / available routes, etc.)
- Transparency could have been better.
- The establishment of EU-wide targets and National/FAB targets are technically bound. Though not specified in that way in the regulation, in fact National/FAB targets are automatically set when EU-wide targets are adopted. Nevertheless, current scheme separates both processes too much (in structure and time) to be mutually consistent.
- Lack of recognition of bottom-up considerations in the development of EU-level target proposals

Consistency assessment of adopted performance plans and of the alert threshold(s)

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive. Airspace users and some trades unions / professional staff associations responded 'not at all effective'.

Figure 2.38 Effectiveness of PRB consistency assessment of adopted performance plans (N = 57)



Comments accompanying these responses were:

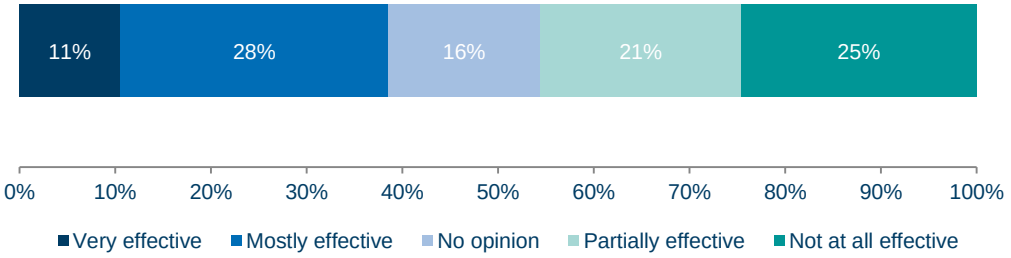
- PRB is trying to be as unbiased as possible but miss sometimes the local difficulties such as complexity of some airspace.
- The assessment of KPI is limited by construct of the KPI and lacks a detailed and interconnected perspective. In addition, more consideration should be given to bottom-up local analysis and proposition by States and ANSP. Any reference values defined at NM level under a top-down process according to a specific methodology should be considered only as indicative and / or informative and not as a legal or enforced breakdown of the targets. Other methodologies and local bottom-up values should also be considered.
- A statement on the assessment of local achievements, contributing to a target set at EU level should be adopted, taking into account the local context, past and actual levels of performance, which may vary considerably within States/FABs.

- Any support, template or prefilled data should be available prior the drafting period and not subject to changes during the drafting of performance plans.
- The PRB has made a significant effort to carry out the assigned tasks, but the process of assessing the consistency of performance plans and their contribution to EU-wide targets needs to be more effective.
- performance targets has not been adequate. In both RP1 and RP2 we consider that insufficient consideration was given to local requirements and circumstances.
- The regulation should be changed so that the establishment of EU-wide targets and the drafting of Performance Plans are processes running in parallel. Both processes feed one another engaging top-down and bottom-up. The time imbalance between EU-wide target setting and Performance Plans adoption would be reduced to the minimum, and moved closer to the start of RP3.

Assessment of the revised performance targets and corrective measures implemented by Member States

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive. Airspace users and some trades unions / professional staff associations responded 'not at all effective'.

Figure 2.39 Effectiveness of PRB Assessment of the revised performance targets and corrective measures implemented by Member States (N = 57)



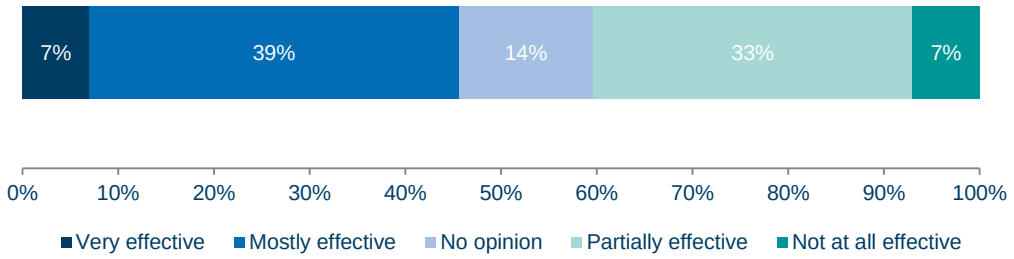
Comments accompanying these responses were:

- Only the Commission is assessing in that case.
- This is a political process.

Monitoring, benchmarking and review of the performance of ANS, including investment and CAPEX at local and Union levels; and of the performance of the network functions

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.40 Effectiveness of PRB Monitoring, benchmarking and review of ANS performance (N = 57)



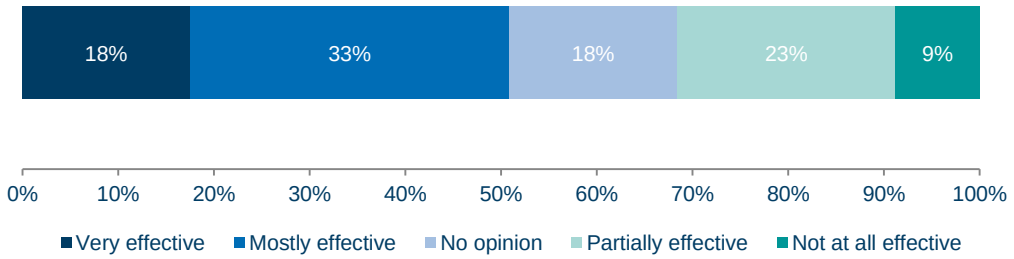
Comments accompanying these responses were:

- The approach is too generic and high level. NSAs know their ANSPs and their difficulties better.
- Regarding safety, the PRB does not take into account the variability in the reporting mechanisms for lagging indicators of safety KPI. Therefore, the published figures are obviously biased and differences are not explained, which may lead to inadequate representation of ANSP safety levels.
- Monitoring is not sufficient to incentivize investment.
- There was no real monitoring of capex.
- Monitoring templates should keep focused on their scope and not be used to gather additional information not directly related with the metrics to be measured as referred in the regulations.

Monitoring of the overall performance of the European ATM network, including annual reports to the Single Sky Committee

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.41 Effectiveness of PRB monitoring of the overall performance of European ATM network (N = 57)

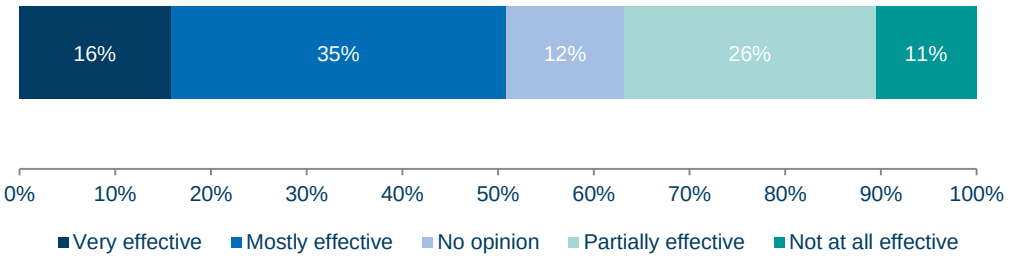


It was also commented that there is an inconsistent approach to Military involvement in RP1 and RP2.

Assessment of the achievement of the performance targets at the end of each RP

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.42 Effectiveness of PRB Assessment of the achievement of the performance targets at the end of each RP (N = 57)

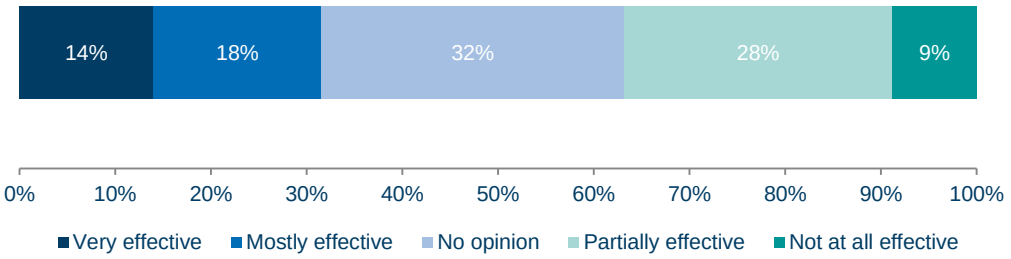


It was also commented that: the PRB is trying to be as unbiased as possible but sometimes misses the local difficulties such as complexity of some airspace.

Assessment of the performance plan of the Network Manager

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.43 Effectiveness of PRB Assessment of the performance plan of the Network Manager (N = 57)

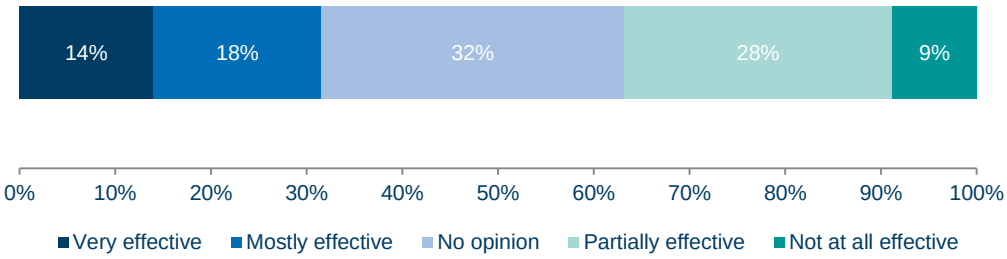


No comments were received accompanying these responses.

Maintenance and support in coordinating the stakeholder consultation calendar

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.44 Effectiveness of PRB Maintenance and support in coordinating the stakeholder consultation calendar (N = 57)



It was also commented that: European (PRB) coordination of consultation process set for RP2 has been helpful and should be maintained for RP3.

Recommendations to increase the effectiveness of the PRB in carrying out its tasks

A second question on this topic was whether respondents had any recommendations to increase the effectiveness of the PRB. These recommendations have been grouped as follows:

Stakeholder interaction

- Better and more effective consultation methods for the affected stakeholders.
- Active involvement with the Military and revision of the KPIs
- A better working relation with Eurocontrol and other actors involved in the performance scheme, including more constructive dialogue avoiding personal clashes.
- PRB should work more closely with the industry to develop appropriate KPI while retaining trends information for some KPI (e.g. Maturity of SMS).
- Close cooperation with the ANSPs.
- Closer cooperation with Eurocontrol and EASA.
- The PRB members could be closer to the stakeholders, including the military (and e.g. visit stakeholders on a regular basis to get a view of and feel for practical experiences, achievements and the main hurdles faced).

Working methods and tools

- More focused workshops early in the process of e.g. any new material developed by PRB (e.g. new indicators, target development, etc.).
- The PRB should also consider increasing visibility of its work programme (tasks, priorities, timescales and who is accountable for individual items) and decision-making processes employed to the work it plans to do.
- Timelines for setting performance KPIs and PIs need to be set out clearly in advance, and allow for sufficient stakeholder consultation and for NSAs to determine their domestic timelines for performance plan preparation. One evident problem is, that by 2016 no final performance plans are signed for some member States. This is a problem concerning the effectiveness of the system. More stringent time lines for RP3.
- Appropriate flexibility at local level to address local requirements.

- Stability of the website and access to the data repositories is paramount. The data made available through Eurocontrol and PRB, and the dashboards are very important repositories for building up performance plans.
- More guidance material is needed (cost of capital, use of EU funds...).

Clarity and transparency

- Regarding the safety KPA: reporting mechanisms should be clarified to create level playing field greater clarity in definition of terms; and it is not clear whether PRB has adequate expertise in safety management to evaluate and propose improvements on a realistic basis.
- Need for more transparency on the outsourced studies, as well as better/earlier consultation of all involved stakeholders on them and more clarity on the final conclusions of PRB.
- The assessment criteria/mechanisms should be more transparent and specific; the current level of detail is not satisfactory (Annex IV of Regulation (EU) 390/2013 is too ambiguous).

Technical development

- New proposals, changes, etc. require sufficient maturity, with feasibility analysis and impact assessments.

Target setting and monitoring

- In the recommendation of targets to the Commission, the PRB has failed to tackle the issue of interdependencies, and is too focused on cost. This is undoubtedly as a result from airspace user lobbying, which the PRB seems to take greater cognisance of than other stakeholders.
- Stability of the scheme within the reference period EU-Target setting to be based on a balance between top down and bottom up analysis - reference values defined at NM level under a top-down process should only be considered as indicative/informative.
- Assessment of local achievements contributing to a target set at EU level should take into account local context, past and actual levels of performance.
- When defining the EU wide targets, Member States, NSAs and ANSPs should know what local targets will be expected so that there is a clear traceability between EU wide targets and local targets.
- There is a problem with non-IFPS traffic on the EU boundaries which has never taken seriously into account during setting and assessment of local capacity targets in the EU boundary countries.
- The target should be high-level and simple, and there should be a minimum amount of exemptions.
- Any template or prefilled data should be available prior to the drafting period of the PP and should not be subject to changes during the drafting of performance plans.

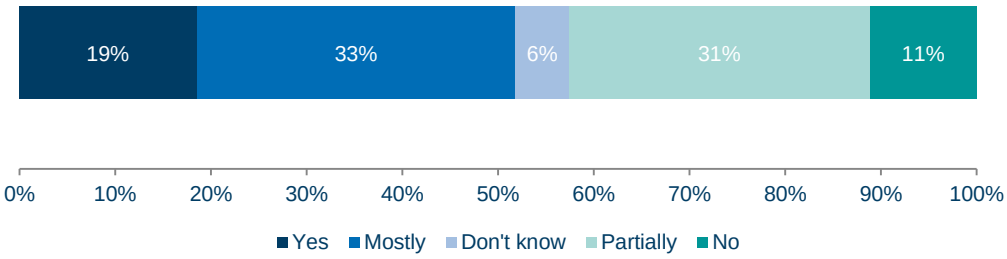
Regulatory aspects

- Reduction of additional (unnecessary) regulatory burden.

Do you consider that the PRB carried out its tasks in an independent manner?

The overall responses are reported in the figure below. As in previous answers ANSPS and NSAs were generally positive, with airspace users responding 'not at all effective', and trades unions / professional staff associations responded 'partially effective'.

Figure 2.45 Independent discharge of tasks by PRB (N = 57)



Whilst most respondents thought that the PRB conducted itself independently, there were many conflicting comments about the independence and governance arrangements of the PRB, with different opinions of what actions should be taken: separate the PRB from Eurocontrol (and the Network Manager) versus 'ensure independence from the European Commission'.

The concern with the Commission stems from perceived political influence in target setting: "PRB has to be an independent entity and not a vehicle for the Commission and consequently the proposals and findings from PRB should be evidence-based proposals not political". Furthermore, "the PRB should be an advisor of the EU with no direct link to any stakeholder". The concern with Eurocontrol is that the financial and political interests of ANSPs and Member States are the same and are therefore reflected in the Eurocontrol framework.

There were some concerns about the power of the airline lobby, with a belief that the PRB was biased towards the airlines. Also referenced were problems with insufficient transparency and stakeholder consultation and the need to follow an evidence-based approach. Other points were:

- There was an argument that role of the NSA should be reinforced over that of the PRB as "the national authorities are in contact with ANSPs and they have a better understanding of this industry".
- Greater clarity on the relationships between Eurocontrol, EASA and European Commission is needed.
- It was commented that the Eurocontrol governance link should be removed but that with the Network Manager (EC governance) reinforced.
- The industry (ANSPs, airports, airlines) should provide the necessary technical advice to the PRB.

An ANSP stakeholder has described the independence issues as both acting impartiality and with freedom from interference. Their view is that the PRB and the technical support work executed by the Performance Review Unit (PRU) under the Performance Review Commission (PRC) has acted in an impartial manner. However, they believe that the PRB has been subject to interference from external parties. For this reason it argues that the PRB should be able to select, manage and fund technical support work without interference from Eurocontrol management.

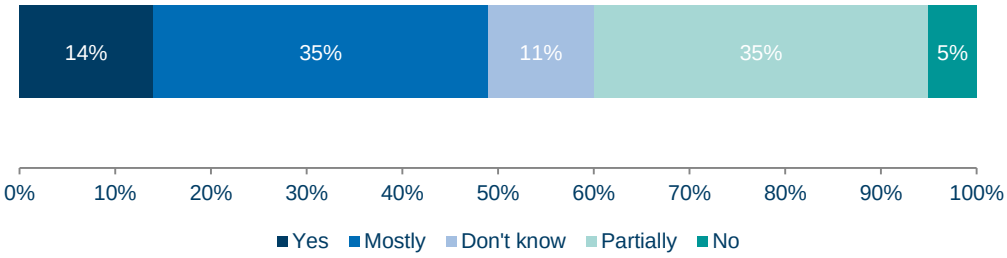
It was also commented that full independence of PRB is not possible and therefore not something that should be considered as an issue or a goal. Instead of trying to reach independence, work of PRB should be supervised and an appeal mechanism should be established.

2.3.8 *Horizontal issues*

Availability of resources

The questionnaire asked whether respondents had sufficient availability and sufficiency of resources (e.g. number of staff, qualification of staff) to implement the performance scheme, with just under half of responses believing there is. NSA respondents were less confident that they had had sufficient resources, which is reflected in the detailed comments.

Figure 2.46 Sufficiency of resources to implement the performance scheme (N=37)



For NSAs, more training initiatives are a prerogative as it is difficult for existing staff to develop the required new responsibilities. It was commented that this means that only 1-2 people in each NSA are responsible with managing the entire performance scheme, and the pressure of this may cause individuals to leave. This is exacerbated by recruiting problems occur related to the lack of flexibility and the absence of effective tools to keep talented and expert resources within the organisation. An additional concern is the workload and expenses required in conducting the activity. One commented that in some NSAs the senior management have not approached the responsibilities well and have therefore not provided additional resources.

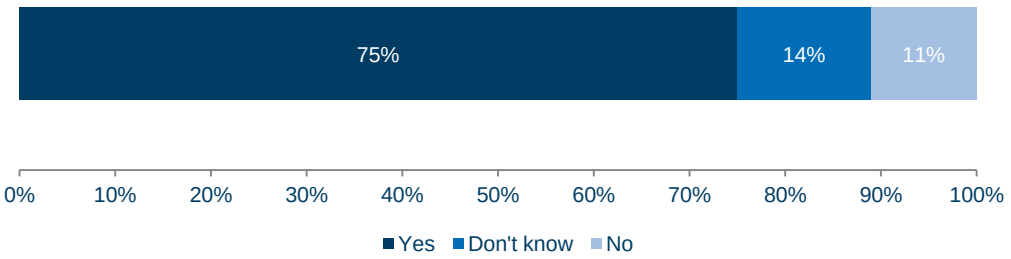
ANSPs cite an increasing workload in order to implement the performance scheme, with both NSAs and small ANSPs short of resources to even understand complicated regulations. Smaller organisations do also not have the manpower available to cope with the short peaks of work that are created by the scheme. ANSPs identified no main resource issues themselves but concerns about the shortage of staff in some NSAs, which they felt had little capability to manage the requirements of the performance scheme. A consequential effect is that NSAs may to rely on ANSPs, making it difficult to maintain an independent viewpoint. However, the ANSPs' concern arises from concerns of the ability of the NSAs to fully understand and communicate the local specific constraints to which ANSPs are subject. With highly capable NSAs, ANSPs are also better able to find a balancing opinion with the PRB. In the comments it was proposed to organise a common aid available to all NSAs. With the increasing role of FABs, this could be supported at FAB level.

A further comment was that the scheme has led to an increase in bureaucracy which in the context of already significant cost pressures makes smooth operation challenging.

Awareness of cooperative initiatives

Respondents were asked about their awareness of (and/or participation in) cooperative initiatives and actions at the national / FAB / EU level to support the implementation of the performance scheme (e.g. pooling expertise on performance aspects at FAB level, NSA working groups, etc.). As illustrated below, the responses were predominantly positive:

Figure 2.47 Awareness of cooperative initiatives and actions to support implementation of the performance scheme (N=36)



Respondents volunteered actions to different degrees as the following list. Several ANSPs cited their FAB cooperation actions but did not list them individually:

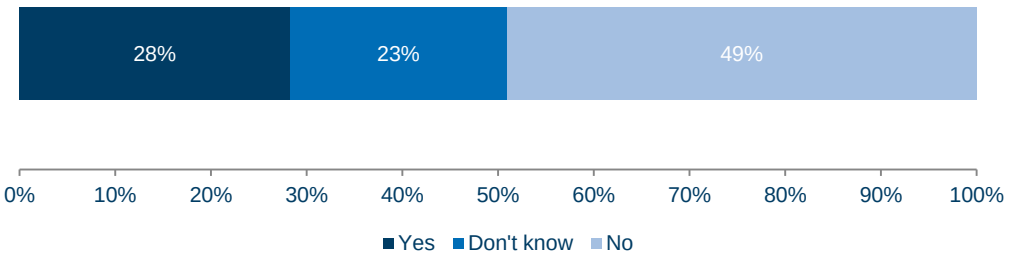
- NSA coordination platform, and particularly the WG on Performance and FABs.
- Economics matters such as the SSC Economics working groups.
- FABEC Financial and Performance Committee.
- FABCE Aviation services, established in order to allow for common procurement and better Project Management.
- EASA audits.
- NEFAB Free Route Airspace (together with Danish/Swedish ANSP).
- Borealis Free Route Airspace / 9-State NSA Group.
- Single Sky Committee Group on economic aspects.
- Eurocontrol CER study group.
- NEFAB Interim Deployment Program (NEFAB ATS-services).
- Coordinated NEFAB ANSP participation in SESAR Deployment Manager's Stakeholder.
- Consultation platform for Deployment Programme implementation.
- NEFAB ANSPs in NORACON consortium for SESAR Phase 1.
- NEFAB business plan including e.g SMS harmonisation.
- Coordinated efforts within FABEC in all areas of the performance scheme.
- iTEC (Interoperability Through European Collaboration - joint collaboration of European air navigation service providers to deliver a new flight data processing system to support the future ATM services)
- UK-IRL FAB Network Management

- FAB level cooperation when it comes to the roles and responsibilities of the NSAs. In this regard, building a FAB Performance Plan is a difficult task. Assistance and guidance material would be welcomed and developed on this, as well as to establish similar FAB level monitoring schemes both to: • Report performance once the year has ended (prior to 1 June). • To monitor performance during the year and analyse whether targets will be met by the end of the year.

Any other positive (unintended) effects

Respondents were questioned about their views as to whether there were any other unintended but positive effects of the performance and charging schemes:

Figure 2.48 Awareness of other positive (unintended) effects (N=53)



Respondents mentioned various other positive effects:

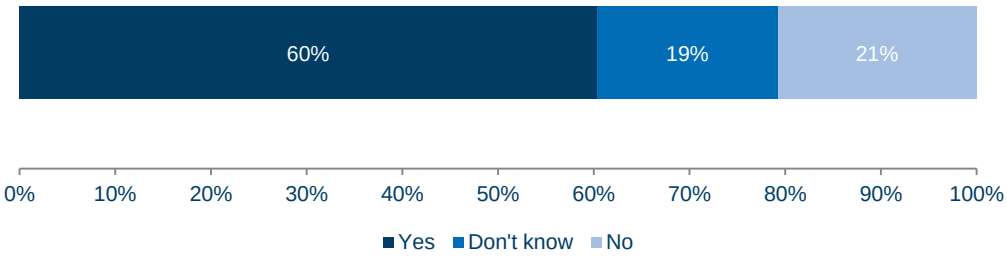
- Better oversight on economic aspects of ANSP (incl. investments).
- FAB pools of experts.
- Exchange of information with other stakeholders (EASA, Eurocontrol, etc.)
- Increased level of intra and inter FABs cooperation, sharing of best practices.
- Increased awareness of performance and affectivity.
- Heightened awareness of the need to preserve national interests in the provisional of ATS services.
- Transparency improves when the data are finally made available. However the timing at which the approved National Performance Plans and Monitoring Plans are being made available raises concerns.
- The schemes have led to an improvement of general awareness of performance management, as well as the interdependencies between performance areas (although this does not necessarily mean these interdependencies are well understood; an in-depth study did not deliver concrete results and only showed that a quantification of the interdependencies is almost impossible).
- At national level, there is a clear commitment to the SES initiative not only in the technical programmes but also in the targets.
- Increasing focus within the concerned organizations on "performance culture".
- EU performance schemes influencing the discussion on performance taking place in other regions and at a global level (eg. ICAO, ICAO-EUR).

- Due to synergies in the ANS cost basis, the terminal costs seem to have experienced a similar reduction to en-route costs, which was subject to performance regulation in RP1. The schemes had also the merit of putting service providers and airspace users talking together more frequently and jointly assess what went right or wrong – even though the perspectives are often different - and how the system can evolve to be more acceptable to the different stakeholders.
- From a staff point of view there appears to be no positive impact from the SES performance scheme. Cost pressure has resulted in fewer staff, working increased traffic, with curtailed spending on investment. This appears to be in service of airline profitability and the tiny percentage that ticket prices may end up being reduced by (and that is far from certain) does nothing to offset the greater delays that the traveling public will suffer. The performance scheme seems to be less about providing value for the traveling public and more about increasing profitability for the airspace user.

Any other negative (unintended) effects

Similarly to the previous question, respondents were asked about their views as to whether there were any other unintended negative effects of the performance and charging schemes:

Figure 2.49 Awareness of other negative (unintended) effects (N=53)



The associated comments to this question are as follows:

- There is no doubt, that the schemes play to certain extend a role in 'industrial unrest' we are observing in some ANSPs.
- The correlation between capacity and costs have not been addressed properly, especially with regard to the long term effects. The focus has been on short term cost reductions and not to provide the EU with a system that can handle significant growth in traffic.
- Putting increased financial pressure on the ANSP may lead at a certain point to shortages in safety.
- Lack of consideration of the regulations for local context and too rigid assessment of local targets by the Commission led to endless validation process of the performance plans for a number of States. Putting performance plans in place is really time consuming, it should be wise to ease that process.
- The relationships between the KPAs which are not fully understood have resulted in many untended consequences. The pressure on cost reduction has resulted in ANSPs being unable to provide capacity

increases which in turn has harmed delay performance. The differing route charges in member states also results in airlines flying cost effective rather than environmentally beneficial routes which again affects both capacity and environmental KPAs. There is no incentive for harmonisation of routes and free route airspace when this results in significant shifts of income from one Member State to another.

- The inflation forecast used in the performance plans sometimes differs from reality. Since the inflation adjustment has a significant impact on the ANSPs, the opportunity to choose a specific inflation forecast source, proven to be more accurate for a given country, should be allowed. Backed with appropriate factual evidence, of course.
- EC has very limited influence on the 'most expensive' ANSPs / countries.
- Weak incentives are likely to be counter to achieving a high quality of service and investment.
- Military ops are regarded as a restriction and not part of the system providing the overall safety.
- Excessive amount of reporting drives the focus from the core activities.
- Reduction of benefits for ATC employees.
- Non uniform assessment of the Plans causes changes in the behaviour of ANSP's and airspace users (e.g. traffic shifts) due to different DUC trends.
- Increased focus on short term thinking, e.g. focus on cost reductions in line with lower traffic levels, with limited consideration for longer term effects and what to do when traffic levels recover. Investments will be necessary for various reasons (traffic increases, achievement of operational targets, end of life cycle, ATM Master plan implementation) but will inevitably result in cost increases and deteriorate the already achieved cost efficiency improvement. As yet it is not clear how this dilemma will be dealt with in the performance framework.
- Once the Performance Plans of several Member States have been approved (may be with over-performance), other Member States can argue that their contribution should be less demanding as the other Member States have "very good" targets.

Air fares have not decreased despite gains in savings, extended routes. The final effect has to be seen for increased mobility for EU passengers and cargo shippers.

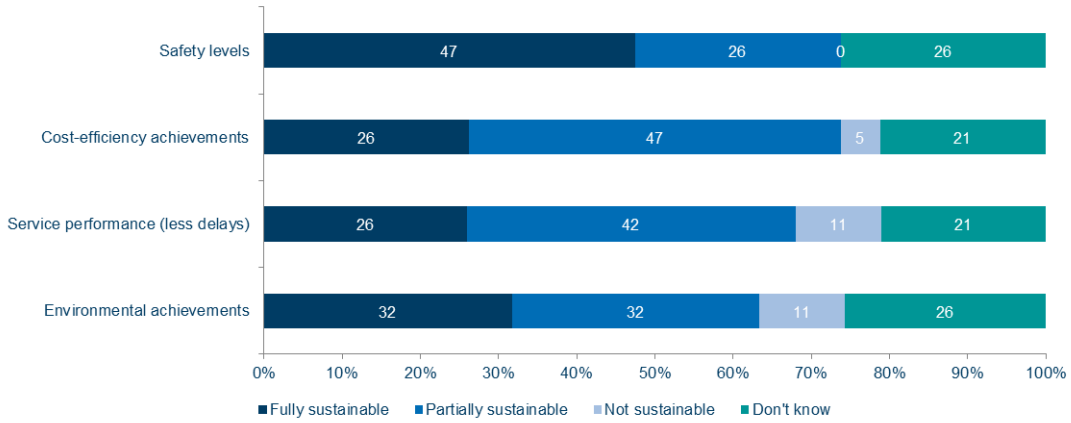
2.4 *Sustainability*

One of the objectives of the SES Performance Scheme in the Performance Regulation (390/2013) are to "contribute to the sustainable development of the air transport system by improving overall efficiency of the ANS across the KPAs of safety, environment, capacity and cost-efficiency, in consistency with those identified in the Performance Framework of the ATM Master Plan, all having regard to the overriding safety objectives." Achievements should therefore be sustainable:

- In the short-term (i.e. in the subsequent reference period)
- In the long-term (i.e. over several reference periods)

Respondents were asked if the achievements supported by the charging and performance schemes during RP1 were sustainable in the next reference period (i.e. RP2). The respondents were asked to answer this question for the four Key Performance Areas separately. The results are presented in Figure 2.50 below.

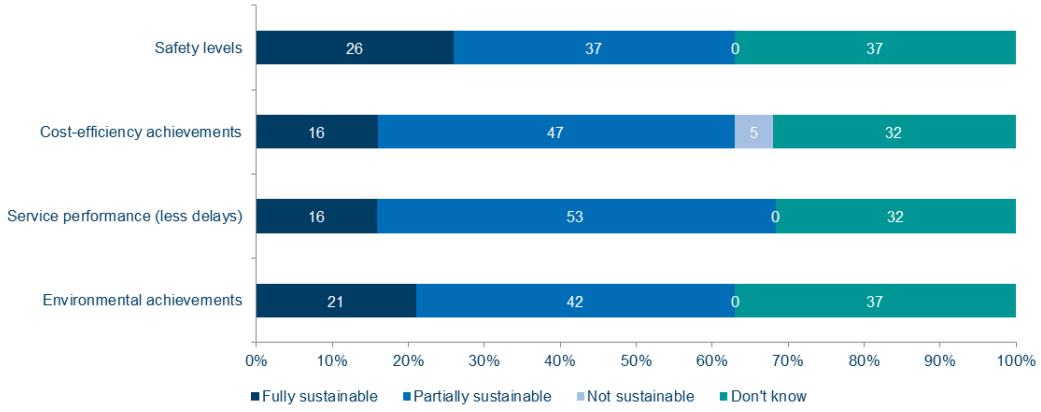
Figure 2.50 Sustainability of the achievements in the short-term (from RP1 to RP2) (N=19)



For safety and cost-efficiency, around 73% believe that the achievements are partly or fully sustainable. For service performance (delays) and environmental achievements this is slightly lower (around 66%). The main reasons given were (the external events affecting) the traffic levels (volatility and divergence from forecasts) and interdependencies, particularly between capacity and cost efficiency. Some of the service performance (less delay) was achieved due to the lower traffic levels.

Respondents were asked if the achievements supported by the charging and performance schemes during RP1 were sustainable in the long run (over several reference periods). The results are presented in Figure 2.51 below.

Figure 2.51 Sustainability of the achievements in the long-term (over several Reference Periods) (N=19)



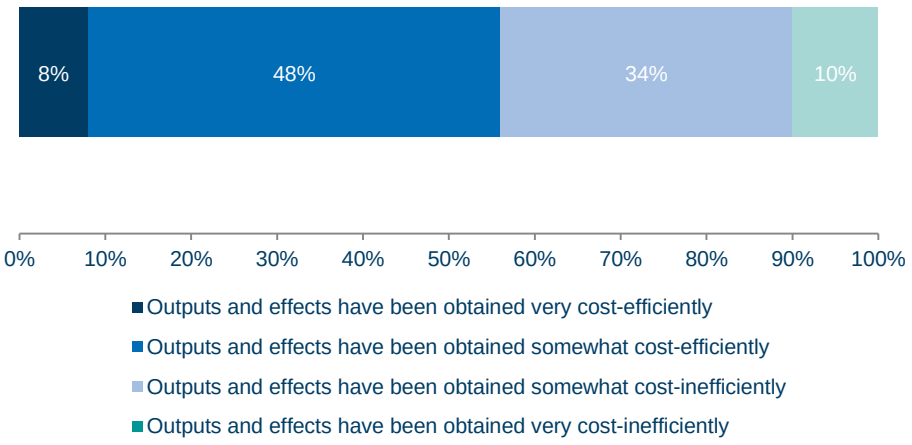
About 63% answer this question with "fully sustainable" or "partially sustainable". There is hardly any difference between the Key Performance Areas. It is argued by respondents that "new targets must be set" in which the Commission "should not overdo it for the States". The main challenge identified is the "improved predictability of the traffic levels" and "pressures from enduring interdependencies, e.g. cost, capacity and environment". One respondent states that there is a limit to the progress you can expect and that there are strong interdependencies between the KPIs.

2.5 *Efficiency*

Respondents offer a moderately positive assessment of the overall efficiency of the performance and charging scheme, as shown in Figure 2.52, with over half of respondents (56%) indicating that outputs and effects of the system (i.e. achievement of the objectives) have been obtained at a reasonable cost (i.e. '*outputs and effects have been obtained very cost-efficiently*' or '*outputs and effects have been obtained somewhat cost-efficiently*'). Just 10% of respondents view the scheme to be very cost-inefficient. This view was expressed by 2 NSAs, 1 representative of airspace users and 1 representative from academia.

Overall, in terms of the balance of views for different stakeholder categories, NSAs are more positive than ANSPs, accounting for 68% and 25% of all positive responses, respectively. By contrast, ANSPs account for just under half of respondents (45%) who view the system to be either very or somewhat cost-inefficient, compared to 27% for NSAs. Airspace users surveyed also view the system to be very cost-inefficient.

Figure 2.52 Cost efficiency of the system (N=50)



Within the category of respondents indicating that outputs and effects have been obtained '*somewhat cost efficiently'*, there is a general agreement that the scheme has delivered benefits to European ATM in broad terms, which are deemed to sufficiently outweigh the additional burdens stemming from reporting and monitoring requirements. One respondent points to the particular challenge to achieve the required balance between investment in support of improving operational performance on the one hand, and the need for improved cost efficiency on the other. Notwithstanding this challenge, in light of the circumstances that characterised RP1 (i.e. the volatility of traffic volumes and, in some cases, the impact of conflict zones on major traffic flows), the outputs and effects are seen as having been achieved at a reasonable cost.

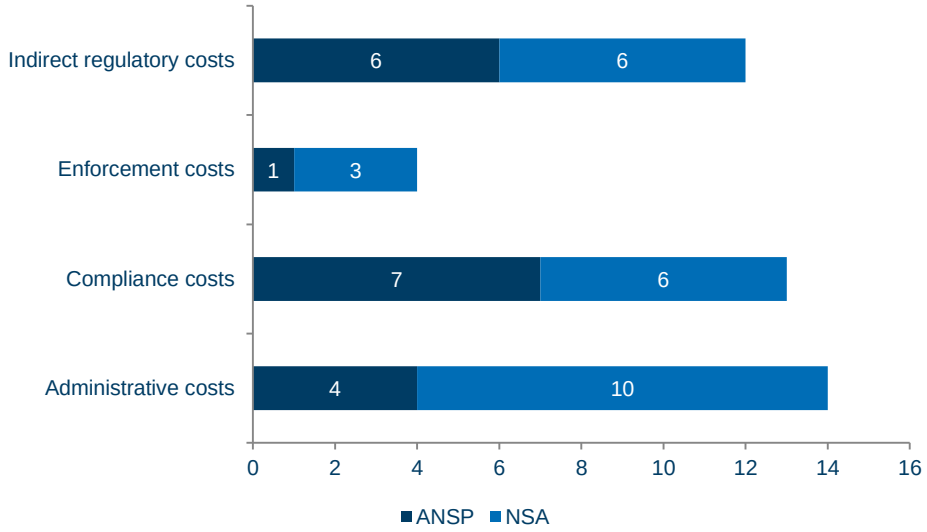
Among those who do not agree that outputs and effects of the scheme have been obtained at a reasonable cost (i.e. '*Outputs and effects have been obtained somewhat cost-inefficiently'* or '*Outputs and effects have been obtained very cost-inefficiently*'), the majority point to the overall increase in the workload for both ANSPs and NSAs to implement the scheme, most notably in the context of reporting requirements, which take both time and resources. One ANSP specifically refers to an increase in the amount of time spent "justifying happenings or evaluating change proposals", for example "the cumbersome process of eligibility assessment for costs exempt from cost sharing in RP1."

Main costs
Airspace users indicated that "Supervision costs" included in the unit rates paid by the airspace users represent more than € 75 million in 2017. Eurocontrol costs (including the Network Manager and the PRU and the support to regulation) represent an additional total cost to airspace users of above € 500 million per year. The Commission contribution is also evaluated in € million."

The majority of respondents were unable or unwilling to provide an estimation of the costs incurred to implement the scheme. Of the 3 ANSPs that did respond to the question, the average amount of administrative costs and compliance costs incurred per organisation is estimated at 1,1 FTE and 1,75 FTE, respectively. On the NSA side, according to one respondent, between 2 and 3 FTE are employed for the purposes of implementing and ensuring compliance with the SES Performance and Charging Regulation. The amount of resources varies, however, depending on the stage of the performance scheme. For instance, 3 FTE resources during the drafting of the Performance Plan, and 2 FTE during the implementation phase.

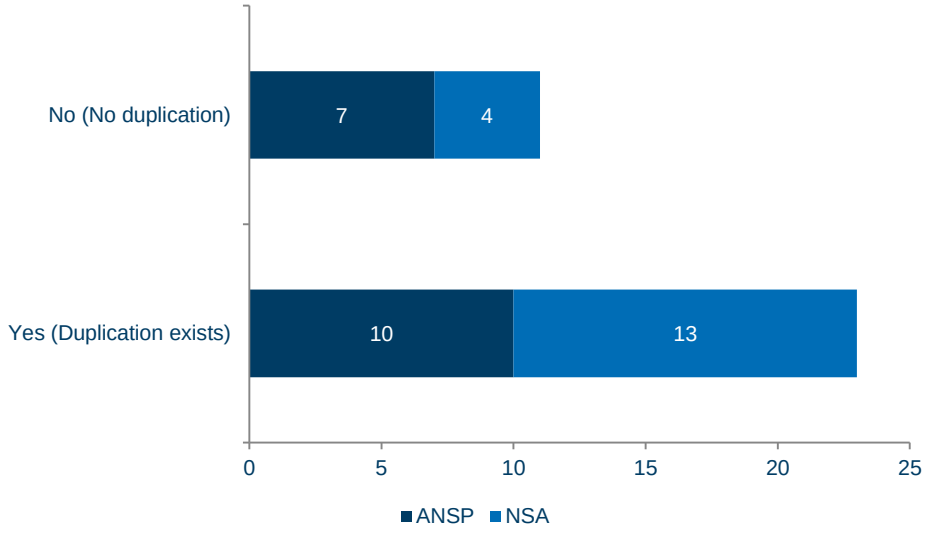
When asked to elaborate which area has the greatest scope for potential cost reductions, the most frequently cited cost category is '*administrative costs'*, in particular related to the reporting obligations – e.g. streamlining reporting obligations between mechanisms to avoid duplication - with NSAs accounting for the majority of these responses. ANSPs are mainly split between '*compliance costs'* and '*indirect regulatory costs'*. The distribution of response is shown in Figure 2.53 below.

Figure 2.53 Scope for cost reduction



Related to the above question, respondents were asked to reflect whether the introduction of the performance and charging schemes has led to the duplication of any reporting efforts. Overall, 23 respondents confirm duplication in reporting requirements, while 11 do not indicate having experienced any duplication. The distribution of responses between NSAs and ANSPs is shown in Figure 2.54.

Figure 2.54 Views on duplication



Three main forms of duplication are identified:

- Duplication between mechanisms: For example, safety is reported through EASA channels, Eurocontrol channels and through the performance scheme monitoring. Investments are reported through the performance scheme and through LSSIP and SDM (SESAR) reporting channels. Costs are reported through the performance scheme and through the Eurocontrol channel for the En Route Charges Enlarged Committee.

- Duplication between levels: For example, between the Performance Scheme and national monitoring and reporting requirements.
- Duplication with respect to data requirements: Respondents note that there are different data requirements for different types of reports, e.g. Performance Review, ACE Report, Safety reporting and the PRB's Annual Monitoring Report.

On the other hand, one NSA points to the substantial effort being made at the National and FAB level to channel and streamline different reporting requirements and data requests in order to reduce duplication as well as to ensure greater consistency. This respondent does not see the Performance and Charging schemes as solely responsible for the extensive reporting requests.

Cost savings / benefits achieved

Figure 2.55 shows the number of respondents indicating having achieved various cost savings / benefits across different aspects of the performance scheme, and Figure 2.56 further breaks down the distribution according to stakeholder group. The most frequently cited cost saving / benefit category is '*reduced cost based of ANSPs'* (11 respondents), followed by '*time savings'* as a result of better ANS service and fewer delays' (8 respondents) and '*cost savings related to reduced delays*' (7 respondents). At the same time, the second largest category selected of all options is 'None' (9 respondents), i.e. no benefits materialised. Comments accompanying these responses are summarised below.

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Figure 2.55 Cost savings / benefits (total, per benefit category)

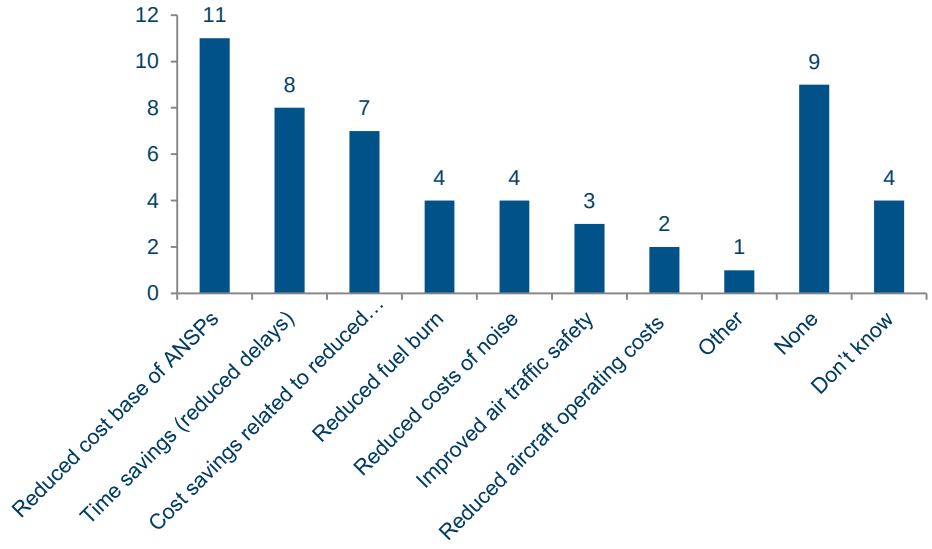
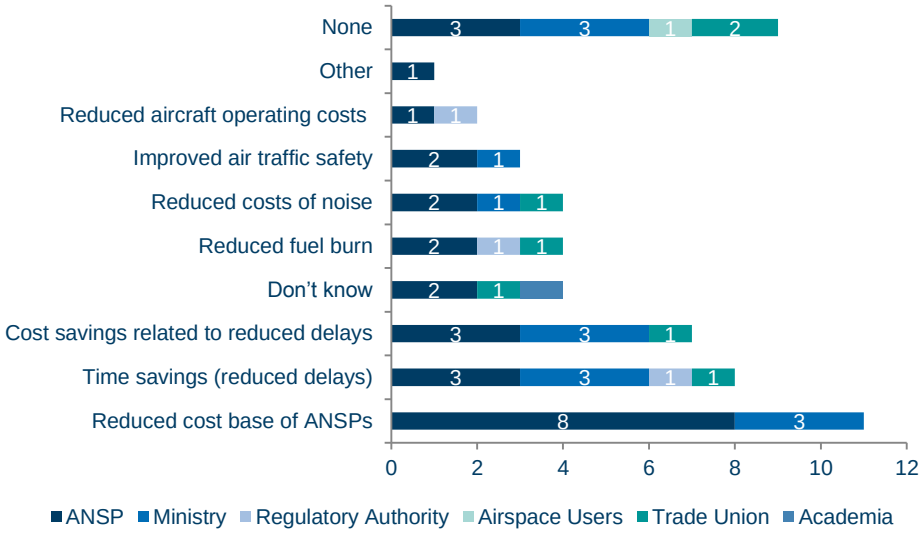


Figure 2.56 Cost savings / benefits (per stakeholder group)



According to at least 2 ANSP respondents indicating '*reduced cost base of ANSPs*' as a cost saving / benefit, the cost savings of the ANSP would most likely have been achieved even in the absence of the SES regulations. One of the respondents points to an on-going cooperative dialogue with airspace users to support the expectation, while another refers to customer requests and the national regulator.

Respondents indicating that no benefits have been achieved as a result of the SES Performance and Charging scheme include ANSPs, Ministry, Trade Union / Profession Staff Unions and Airspace User representatives. One Ministry representative asserts that any cost savings achieved would not be due to the SES schemes, but rather the result of the choices made by airspace users, whereas the airspace user refers to the fact that the "True Costs" to airspace users do match the targets and actual performance. A professional union representative states that no measurable benefits to employees have materialised from the scheme.

EU-added value

When asked to reflect on whether the achievements (cost savings / benefits identified in Figure 2.56) could have been achieved in the absence of the SES charging and performance regulation, including the binding EU-wide target setting for Member States / FABs, only 4 respondents (of 36 who answered the question) do not believe the achievements could have been obtained in the absence of the scheme. According to one, European ATM would have performed worse under full cost recovery, while another points to the increased effectiveness resulting through partnerships and expanding developments of ATM systems and deployment.

A much larger number of respondents (17 respondents) hold a less positive view on the EU-added value of the scheme, for similar reasons as listed in the previous paragraph.

Further comments were :

- Savings and efficiency gains could be produced via bilateral agreements between adjacent ATS providers;
- Cost savings in the ANSP cost based would have been achieved regardless of SES, due to an on-going, cooperative dialogue with airspace users;
- Performance improving measures would have, and will be selected on the basis of customer requests and consultation;
- Optimisation of capacity and environment are part of ANSPs' strategies;
- National legal and regulatory frameworks would have dictated mechanisms selected in the absence of SES.

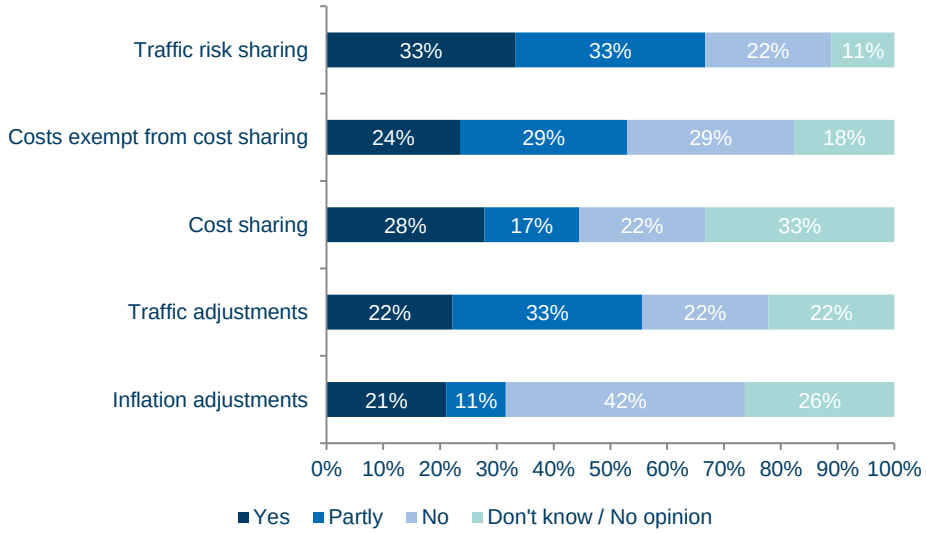
The remaining respondents (4) indicated '*Don't know*'.

Equity of the schemes

The charging Regulation, allows for a number of adjustments, for example, for inflation, carry-over of legacy costs, traffic risk sharing, bonuses and penalties from incentive schemes and other revenues. Respondents were requested to indicate whether, based on their experience, carry-overs have been distributed equitably (i.e. distribution between ATSPs/ ANSPs and airlines/users, and geographic distribution) across the system. Figure 2.57 displays the respondents' view on the equity of the scheme for each of the adjustment categories.

Overall, the '*traffic risk sharing*' mechanism is considered to be the most equitable of the adjustments mechanisms, with 66% of respondents indicating the mechanism to be at least partly equitable, and '*inflation adjustments*' are considered least equitable. It is not possible to make an assessment across stakeholder groups, however, as only ANSPs answered this question.

Figure 2.57 Equity of schemes - Carry-overs (N=19)



Comments accompanying these responses are summarised below.

Traffic risk sharing

- Deviations are fully assumed by service providers if not exceeding 2%, above which risk is shared, being evenly assumed when the deviation is 7%; when deviations exceed 10%, the part that exceeds this percentage is fully supported by users, similarly to traffic adjustments, if the alert mechanism is not activated.
- The risk for ANSPs could be increased within the dead-band of the 10%.

Costs exempt from cost sharing

- One ANSP asserts that MET costs could very well be costs 'subject to risk sharing'.
- Another ANSP reaffirmed the challenges associated with assessing and determining the eligibility of these costs for RP1, stating that different positions led to disputes throughout the process. It is expected that the process will be much smoother for RP2, given the amount of informatino required for RP2 PP and for annual monitoring reports.
- Exemptions should be kept to a minimum

Cost sharing

- There is no cost sharing as this risk is borne 100% by the ANSP
- Cost sharing provides most promising grounds for cost effectiveness, however it should be kept within shorter reference periods of no longer than 3 years

Traffic adjustments

- Traffic adjustments only apply to national authorities and Eurocontrol costs, and are fully reflected on users.
- The traffic forecast was not adjusted during RP1, despite it being obvious that the traffic forecast prior to RP1 would not materialise.

Inflation adjusments

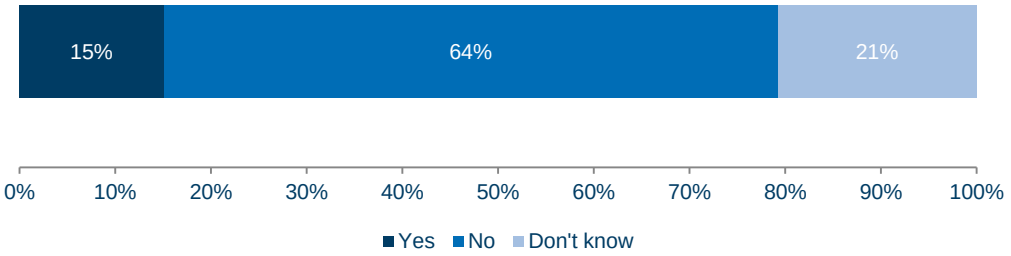
- The inflation forecast (based on IMF estimates for all EU Member States) has led to significant differences paid by / returned to users. To reduce the instability of this factor, inflation forecasts should be the responsibility of the Member State.
- The inflation adjustment is applied to all costs, including those which are not inflation driven (e.g. capital expenditure).
- The inflation adjustments are not linked to the actual evolution in costs, which leads to high risk scenarios given that inflation is much lower than forecast combined with the case that the actual cost are not decreasing with the same amount. Instead the inflation could be linked to certain indexes linked to the actual costs in the ANSP's cost base.
- The risk is at 100% with the ANSP, although it is being planned with nominal values

2.6 *Coherence*

Respondents were requested to indicate whether the interdependencies between the four key performance areas have been sufficiently acknowledged

and addressed in the context of implementing the schemes. Figure 2.58 shows the distribution of the answers.

Figure 2.58 Sufficiency of approach to address interdependencies between the 4 KPAs (N=53)



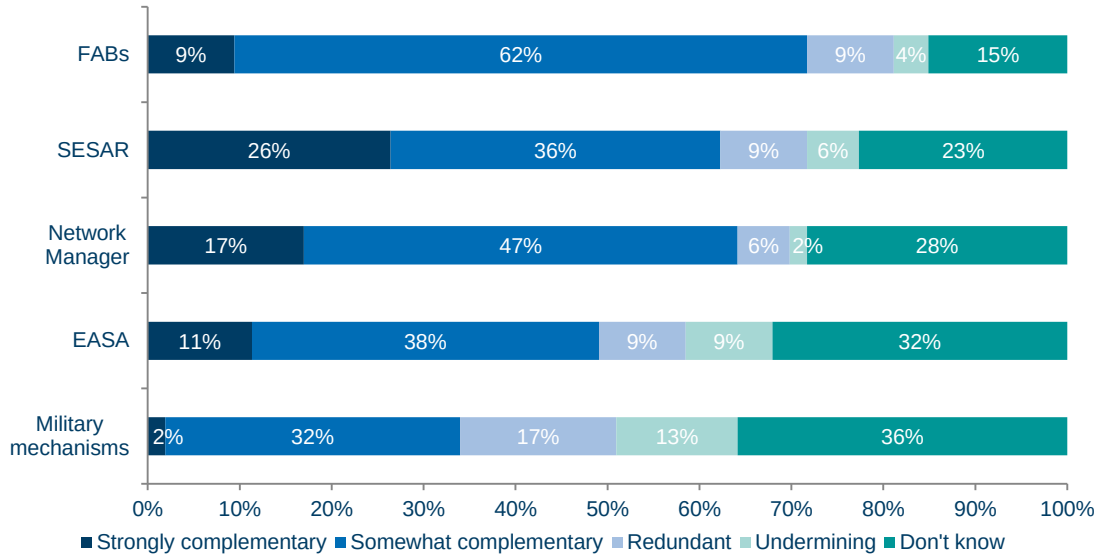
ANSPs are less positive on coherence than other parties; only 6% of the respondents representing an ANSP indicated an affirmative answer (against 15% overall, and e.g. 25% of the respondents representing an NSA).

In the subsequent questions on how the interdependencies have been exploited to maximise the benefits and how the coherence could be improved, the following issues were mentioned, among other things:

- The interdependencies between the performances areas are not well known and should be researched. Some respondents consider this an urgent matter. Some respondents consider the dependencies very complex. Some respondents refer to earlier studies on how to address these interdependencies, considered as failed. A better understanding of the interdependencies would lead to sharper definitions and more balanced target-setting and incentive schemes.
- The priorities of the KPAs might be set in a more balanced way.
- The top-down (Europe -> States -> ANSPs) leads to a one-size-fits-all approach that does not correspond correctly to the local circumstances;
- The main dependency is that a better performance in safety, environment and capacity typically requires investments while cost effectiveness is typically improved by cutting investments.
- Another dependency often referred to is that if an ANSP cuts unit costs, the horizontal flight efficiency is decreased as some airlines might choose to fly detours in order to avoid ANSP cost (especially now that fuel is rather cheap).

Apart from the coherence within the schemes, it was asked whether the SES schemes are coherent with other EC initiatives. The first question on this reads: *"The Commission Implementing Regulations (EU) 390/2013 and (EU) No 391/2013 lay out the provisions of the SES performance and charging schemes, respectively. In your experience, are the requirements of the schemes, including the achievement of performance targets, complementary and not duplicating and/or undermining other SES initiatives with similar objectives?"* Figure 2.59 shows the distribution of responses.

Figure 2.59 Coherence of the SES performance scheme with other SES initiatives (N=53)



When asked to elaborate on overlaps, trade-offs or inconsistencies, several issues are mentioned. The issue that is most mentioned is the relation between the KPA safety and EASA actions. Several positive remarks were made about the consistency of the SES schemes and the SESAR initiative, with some critical remarks concerning the costs of SESAR in the light of the cost efficiency on the short term. Although the repsondents were not so positive about the consistency with the military, only the following three comments were provided in response to the open question:

- Military position is that they are outside of the scope of the EU regulation.
- The military requirements could in some way hinder the cost efficiency program; there needs to be more effective use of the released airspace.
- If a state has an integrated system for civil and military, the possibilities for cross border services are limited. Establishing a separate system for military would cost more than the potential savings from giving up the national ANSP.

Several respondents see room for improvement:

- there is redundancy in the data provided by ANSPs and NSAs to EASA and Eurocontrol; this causes a considerable administrative workload on ANSPs and NSAs;
- there are inconsistencies in the principles of the Risk Assessment Tool (RAT) and the Occurrence Reporting Rule;
- the EASA regulations and the performance schemes are not coordinated.

Some respondents have critical remarks about the FABs in this repsect: FABs do not contribute much in term of performance improvements, their institution costs a lot of money, they constitute another layer in the steering of operational improvements and they bring uncertainty on the role of NSAs.

The remarks on SESAR are limited and in general positive, i.e., confirming complementarity with the SES schemes. Some respondents make the side remarks that SESAR deployment process will have a negative effect on cost efficiency on the short term.

3 Key findings of the interview programme

3.1 *Introduction*

The consortium has reached out to various stakeholders to conduct in-depth interviews in which the SES Performance and Charging schemes could be further discussed.

3.2 *Member States*

Relevance and EU added value

The majority of the interviewees consider the SES performance and charging schemes as an important step forwards. Although for airspace users it might seem that the schemes are not delivering quickly enough and they do not yet see the level of benefit they want to see, the SES performance and charging schemes is providing benefits. The interviewees mentioned:

- The ANSPs and NSAs are now engaged and co-operating. ANSPs and NSAs are now more aware of their responsibility and accountability. ANSPs became more aware that the capacity and costs need to improve.
- Costs and also capacity are improving
- Information is provided in a more uniform and transparent way.

On the other hand, there are some weak points, especially in implementation, where there is believed to be room for improvement. The interviewees mention:

- Lack of flexibility to address local circumstances.
- Dependency between the KPIs.
- External influence: drop in traffic levels, inflation, pension costs.
- The regulations were perceived as a heavy administrative reporting burden. ICT issues and double reporting did not help the situation.
- Lack of effectiveness of the supervisory power of the NSAs in the performance schemes. ANSPs sometimes proposed Performance Plans lacking in rigour that were not sufficiently challenged by NSAs.

Between the interviewees there is some difference in opinion about the relevance of the different KPIs and targets. Although the interviewees agree that a large benefit was obtained for the Cost-efficiency KPA, some interviewees mention that for environment and capacity (ATFM delay), the challenges are not en route. Additionally, some believe that Safety is not well accounted for. Another interviewee believes that safety should not be covered in the scheme but as a standard that everybody has to meet.

Generally, it was felt that RP1 was seen as a transition or test phase and RP2 was used for further improvement. Hence RP 1 should be evaluated as such with the main test in RP3, where the lessons learned can be implemented. There is seen to be a lot of pressure on RP3 for which all should play their role properly to make it a success. Whilst interviewees agree that some benefits could have been achieved in another way, they accept that the SES

performance and charging schemes (and the underlying regulation) were the right way to implement this in the EU.

Planning and procedures

For RP1 the interviewees felt that the process was unnecessarily compressed towards the end and that to improve this there should be a shared objective for a given RP. The scheme was considered an administrative burden. The template of the performance plan was not found to be clear nor in a suitable format (excel spreadsheet). It was also commented that the criteria that the PRB used to assess the plan were not known when the performance plans were written; i.e. knowing these criteria will help in developing a plan more efficiently.

Complaints from RP1 were not believed to have been sufficiently considered in the preparation of RP2. One of the complaints is that the targets are too ambitious and are not negotiable by the Member States. There is a need for more involvement from Member States and ANSPs. EASA and the PRB are very powerful. According to some NSAs, input from Member States is not sufficiently taken into account. Local situations might also be better taken into account.

For RP3 planning there should be on overall shared objective before the period starts, so that there is sufficient time to establish performance plans. The process should be kept simple, otherwise stakeholders might lose commitment. The administrative burden should be reduced, e.g. by reducing the number of indicators.

Objectives and goals

General

There is thought to be a trade-off between cost efficiency (which requires cost reductions to meet the target) and the other areas (which require investments to meet the targets). Some NSAs are of the opinion that the targets for cost efficiency are too ambitious and have a negative effect on the ability to meet targets in other KPAs.

Safety

It was commented that safety performance indicators were included as a counterbalance against effects resulting from targets on the other KPAs, but that the current safety indicators do not provide a complete picture. There are a few leading indicators but no lagging indicators. Nevertheless, the leading indicators show that improvements have been made by the Member States and the ANSPs.

The current safety regulations (outside the performance scheme) are considered sufficient to ensure safety. Regulation 376/2014 on occurrence reporting also allows for monitoring of safety outside the performance scheme.

Environment
There were two main concerns expressed about the current indicators:

- Horizontal flight efficiency is only partially within the managerial control of the ANPSs. I.e. it is the airline that decides about the route planning and it is very often an external power that leads an airspace closure. There is no information available on the causes of changing values. A cause could be the route optimisation triggered by the SES scheme, it might be changed by the fluctuations in traffic and it might be changed by both; this is simply not known. It might however be complex to factor out the external influences.
- Vertical flight efficiency is not in the scheme. It is however understood that, among potential other difficulties, there is this complication that the vertical flight efficiency is especially relevant in the terminal areas, where a new element might spoil the balance in the discussion about throughput, noise and flight efficiency, in changing circumstances.

Capacity
The value of the ATFM delay indicators are not considered to be completely within the managerial control of the ANPSs. In Germany for example, there is more delay at the weekend, when military airspaces can be used for civil traffic. The military-civil co-operation to optimise the route network during working days is effective, but it cannot be more effective than the situation during the week-end. Hence, the underlying factors resulting in the actual delay as measured are still not understood.

One representative commented that ANSPs will continue to keep delay under control, whether there is a performance scheme or not.

Cost efficiency
It was felt that the SES performance and charging schemes caused the ANSPs to become more aware of the costs and as a consequence this led to a decrease in costs. Most interviewees consider the KPA Cost efficiency the most 'successful' KPA. Some interviewees warn for the fact that there are a lot of uncontrollable costs in the system, including inflation correction and pension costs that fall outside the scope of the regulated determined costs (as part of the adjustments, these items would be charged fully to users without a target reduction being applied). Additionally, the difference between the forecast and actual traffic levels could lead to significant changes in the costs. Although this is to some extent recognized by the adjustment mechanisms, there is thought to be insufficient flexibility within the potential adjustments in case of large discrepancies.

Investments and incentives
The interviewees view that the SES performance and charging schemes led mainly to a reduction in costs. According to two interviewees, this is mainly because ANSPs are more aware of the costs and are reducing unnecessary spending. Some interviewees mention that often solid business cases are missing to determine the costs and benefits of investments in order to prioritize investments in technology.

All the interviewees commented that their States have implemented the required incentive mechanisms. There is not much experience with the application of these mechanisms since it was not often necessary to impose penalties. There is a difference in opinion among the interviewees as to whether the bonuses/penalties are sufficiently high. One interviewee argues that the bonuses/penalties are not large enough to motivate increased performance while another argues that it is not the amount that counts but ANSPs would want to avoid any potential bad publicity, e.g. if a newspaper reports that they have received a penalty. An interviewee mentions that the current system is not always fair because an ANSP is not always causing the delay, but they are accountable for it. Additionally, in some States the ATFM delay is close to zero. Meeting the targets in that State is much easier than meeting the targets in a State with heavier traffic which is more prone to delay. Some interviewees argue that the effectiveness and fairness of the incentives can be improved by providing additional guidelines and tools about how to make calculations in terms of revenues, bonuses and penalties.

PRB

All interviewees generally agree that the PRB is working as expected. It is well structured and has sufficiently skilled staff. There has been some discussion about the lack of independence of the PRB and the PRU which could potentially lead to conflict of interest, but in the current practice the interviewees believe that the PRB is doing its job.

Horizontal issues

Two interviewees mentioned the idea, already under debate, that when it comes to meeting demands of the airspace users –this includes cost efficiency, delay and flight efficiency–, they should be able to directly negotiate those with the ANSPs. In the current schemes and regulations, the ANPSs deal with the authorities and that makes that the authorities, so to speak, in between those who offer and those who consume the services. If the service providers and the consumers come to agreements, supply and demand would better match. Such a different approach would not include the performance area of safety or environment; where the role of the authorities in these areas should remain more active.

One interviewee missed a total system / chain approach. All relevant stakeholders should be involved, including passengers, with the Commission in the lead. It was thought that large improvements can be made if this is achieved.

Some interviewees perceived the FABs, as a layer in the working of the schemes between States and Europe, as negative.

Two interviewees expressed the thought that the SES schemes are designed to solve problems in the congested core of Europe and are not very effective in the periphery. This implies for example for a State that considers horizontal flight efficiency a non-issue and for a State for which the unit costs are significantly lower than in a neighbouring country, while the target is set in relative terms (i.e., a further fractional reduction).

Efficiency

When it comes to the efficiency of the schemes themselves, there is one strong opinion held by the interviewees representing the authorities. The opinion is that the administrative burden for the national authorities unnecessarily high.

The interviewees provided different reasons for the administrative burden being high: changing formats, tight deadlines, unclear deadlines, many details (in particular: in the controllability of ANSP cost), missing data, limited resources and inconsistent data (e.g., coming from the ANSP and coming from the Network Manager).

When discussing whether the burden is unnecessarily high, all interviewees referred to 'double reporting', e.g. to the Eurocontrol CRCO and for the SES scheme[11]. This does not only cost effort but also commitment. The interviewees almost all agree that the efficiency of the schemes can be improved by avoiding duplicated data streams. In the past, it was Eurocontrol that collected the data and that was rather efficient. In the current situation, other parties such as the PRB collect data as well, with some overlap. The reporting and monitoring should be better streamlined over the organisations. It might be better if Eurocontrol could act on behalf of the European Commission, instead of beside it.

Some interviewees also doubted the efficiency of reporting of some items such as:

- the filling in of the safety metric, as they are subjective anyway
- the horizontal flight efficiency in a particular Member State, as it very close to optimal; and
- the details in the ANSPs costs, as it does not seem very relevant, given the uncertain assumptions.

Some expressed the opinion that the SES performance schemes are relatively cost efficient, compared to the cost efficiency of FABs or of the SESAR programme.

Coherence

When it comes to the coherence of the schemes themselves, the issue of the interdependencies between the indicators are often mentioned. I.e. that there is conflict in insisting on cost efficiency on one hand and on pressing towards on investments for performance improvements on the other hand (see also preceding comments under objectives and goals).

Some interviewees expressed that these interdependencies do not constitute problems yet, but might in the future when targets become tighter, and the ANSPs may be suffocated. Some interviewees remarked that the interdependencies are complex and should be researched first before they can be addressed, despite failures in the past.

[11] On this specific point, from the study team meetings with the CRCO and PRU there seemed to be a single shared process, so it may be that this is a perception; e.g. arising from different points of contact in Eurocontrol rather than duplication.

Apart from this issue of the interdependencies between the indicators, the schemes are considered quite coherent: the processes (monitoring, reporting, setting targets, creating incentives etc.) consistently work towards the same high level goals.

When it comes to the coherence of the schemes in relation to other EU initiatives, most interviewees are quite positive. Some however express the opinion that EASA should supervise all safety related matters, without overlap or complementarity with the performance scheme. One expressed that local initiatives like Borealis are probably more effective because the partners are directly involved.

3.3 *ANSPs*

Relevance and EU added value

On the whole ANSPs thought that the performance scheme has had a positive impact at EU level, primarily through cost efficiency. This is offset by views that the scheme has introduced an administrative burden to ANSPs so that the net value of the scheme is still to be demonstrated. An example positive impact cited is that the scheme should encourage investment by States that have performance issues due to under-investment..

Some ANSPs felt that the reductions during the recession would have occurred anyway due to customer pressure, and evidenced this by their response in previous downturns such as 2001. UK NATS believes that the Performance Scheme has had a relatively minor impact on its pre-existing national performance regulation. This is particularly the case in target setting where, for example, the UK NSA has set more stringent targets for cost efficiency and environment for RP2 than the EU-wide targets.

A particular effect at the EU level is that the scheme has led to greater transparency, through openly published indicators, particularly in safety; although the quality of reported safety data could be improved.

NSAs were seen as a weak link in implementing the scheme, with their lack of capability causing difficulties for ANSPs. For example, NSAs committing ANSPs/FABs to performance plans that have operational weaknesses and do not reflect customer requirements. Customer consultation in the performance planning process was seen as a critical factor in achieving the right balance between cost and performance over the long term. Those ANSPs who had good consultation mechanisms highly valued the input of stakeholders whereas those that did not were frustrated by the lack of insight into their business planning. Hence a criterion for good performance planning is seen as whether the NSA and ANSP have consulted on the detailed plans with airspace users.

It was felt that the impact on capacity and environment has been less obvious than on cost efficiency. The impact on safety is even more difficult to pronounce, although there was a general view that it has improved since 2012, but it is not possible to say whether this is due to the performance

scheme; as the KPIs are leading indicators which are loosely coupled to safety outputs. Within the safety management framework there are identifiable improvements, such as better structuring of evidence in safety cases, but there is also little harmonisation of safety management.

A concern was raised that the scheme may have lost some clarity in its objectives, which were originally capacity but now appear to be primarily cost focused. This is further exemplified by the low evidence base used in target setting, at EU, regional and national level and little recognition of trade-offs between different KPAs such as capacity and cost efficiency

There were some comments directed at the Network Manager in the context of the performance scheme. The Network Manager was seen as having a reasonable degree of independence in its role of providing data to the scheme. It was also commented that the contribution of NM costs as a 'determined cost' was not logical, as determined costs should only be relevant to costs that vary with units, which does not apply to the NM or EUROCONTROL as a whole. Hence the comparison should be with the absolute costs.

The value of the performance scheme

In discussion of whether the same performance levels could be achieved without the scheme, it was viewed that this could have been, where driven by customer pressure. This customer pressure is felt in day to day operations where, by virtue of strong customer engagement, ANSPs are able to respond to customer concerns and improve services. A concern of ANSPs is that it is difficult to translate the local customer requirements to the EU level. Local customer engagement informs on local needs and constraints that will differ across the EU. Those ANSPs that maintain a high level of interaction with customers are subject to their scrutiny on services and investment plans/performance. By including a high degree of customer consultation with performance and investment planning it was felt that ANSPs should adequately capture and meet customer expectations.

Integration of performance scheme into business planning and management

ANSPs have varying maturity in business planning, and it is believed that this is generally improving. By example, UK NATS has a comprehensive business planning process linked to the performance scheme and aiming to meet the targets. The plan is set over the Regulatory Period with annual reviews. NATS consults with customers twice a year, about the progress in delivering the investment plan along with any adjustments that may be needed; from the prevailing economic circumstances or general environment which may influence investment priorities. This approach retains flexibility to respond to customer needs and/or changing circumstances.

Actions taken to meet targets

The actions taken by ANSPs towards meeting the targets are generally long term and set at the beginning of the performance scheme. Sustained improvements in performance are often the result of long term investments in major infrastructure programmes, the introduction of new technology (new

CNS, ADS, NATS' iFACTS etc.), consolidation of centres, improved traffic flow management, airspace design. There have also been incremental improvements in all aspects of performance, as well as a general bearing down on costs. NATS also cited that since its privatisation, it has made real term reductions of 40% in operating costs excluding pension costs, as well as improving performance in capacity, safety and environment.

There is also the view that the ANSPs are becoming more performance aware, which is helping to identify new opportunities to improve performance. Often major programmes lead to stepped improvements in performance, initially following the changed operations and then subsequently as staff finesse working methods.

Status/capability of NSAs/DGCA

As alluded to earlier, ANSPs generally view the NSAs as under-funded and lacking in capability. To improve the situation additional resources and capacity building are foreseen, with examples such as EASA's network of analysts. However, there was no desire to centralise regulation at the EU level, which would lose any local understanding. It was commented that EASA need to be working more in the field with NSAs than from its offices. Whilst not strictly within its remit, Eurocontrol has been observed to have a positive impact on NSAs through its hands-on support.

The most productive relationships between NSAs and ANSPs were viewed as when the NSA is appropriately resourced and engaged with its ANSP on all aspects of performance planning, monitoring, trouble shooting and, in particular, the NSA is involved in user consultation over these aspects. Engagement with the ANSP does not mean dependence on it, although this can arise where the NSA is under-resourced. It was also noted that even for well-resourced NSAs, some of the requirements of the Performance Scheme are demanding, such as the need to validate safety occurrence reports when there may be many thousands each year. (It was commented that occurrence reporting the trends may be more important than the absolute numbers as countries of similar size produce different numbers of occurrence reports with no obvious cause other than the level of reporting).

Planning and procedures

ANSPs have had little impact on the target setting at national or EU level and this has been a concern in the sense that the target setting may not reflect local needs, which are driven by customer requirements. The view is that NSAs have generally been following a top down apportionment of the EU targets, whereas a bottom-up assessment will better reflect local or regional needs. A FAB example of this was where the NSAs were guided by Network Manager capacity estimates in RP1, which did not reflect planned capacity, but later accepted that merits of a bottom-up approach in RP2. There is also some frustration from FAB ANSPs that their EU level proposals are not taken on board by the EC.

Customer consultation is seen as a critical component to ensure that the performance targets and plans are effective, although this adds to the time involved. An example of a consultative approach is that of the UK:

- For RP2, NATS initially consults with customers with the CAA in attendance. The customer preferences captured from these consultations led to one revised plan from two initial plans being developed, one providing more resilience and the other less cost. This plan was further revised by the CAA to reflect its overall assessment in target setting. Issues that concerned users included whether the current low level of delays justified further spend on capacity, as there may be diminishing returns. NATS commented that fuel savings continue to be important to their customers, which has led to a £180M target to be saved through airspace development, procedures design and other techniques.

A further concern is that there have been few attempts to get to grips with and understand the crucial trade-offs between key performance areas. It was noted that the EC launched a study but this was theoretical rather than practical and a further study proposed by the PRB has not been funded. It was further noted that a top-down study is not the way to properly understand the trade-offs as local influences are not evident top-down.

Key lessons for RP3

- RP3 performance framework should be long lasting. The best outcome would be a framework that receives positive reaction from customers, ANSPs and member states.
- RP1 and RP2 would have benefited from a framework of guidance for NSAs, including, e.g. the importance of consultation with customers.
- The 5-year duration of RP2 is a benefit for longer term business planning.
- The PRB should adopt more of a working-group style of working in order to tackle highly technical elements (e.g. cost of capital, pensions, etc.).
- Regard should also be given to the passenger interest, though must not compromise the integrity of the KPIs by including elements ANSPs cannot control, e.g. Arrival delay etc.
- It is imperative to avoid a 'one size fits all' approach. E.g. some States where capacity is not an issue at all.
- Although it is accepted that PIs are introduced with the intention of becoming KPIs in future RPs, this should not be automatic. PIs should be subject to proper review of the consequences of setting targets on them. For example, auto-reporting of safety occurrences has numerous practical problems. E.g. the data may be challenging to accurately interpret and require significant investment in equipment, such as for auto-reporting of runway incursions.
- Target setting should be informed by pre-consultation with customers, e.g. what KPAs would they prioritise?
- Performance indicators should attempt to capture the flexibility needed in operations. For example, users may prioritise different things at different times – fuel vs schedule for instance.
- A wider scope of PIs than current would be good. How should indicators interact with wider airport operations - do they help or hinder?
- More transparency in how PIs are measured would enable ANSPs to measure indicators directly themselves, e.g. KEA.

Objectives and goals

General

There is a concern that ANSP performance is being compared on different basis. For example, there are different types of entity (corporatised, privatised, public institutions etc.), which creates different problems. The key example cited was financing pension schemes during periods of low interest rates. This causes problems as the schemes have to be financed in some countries but are 'pay-as-you-go' in others. Comparing the performance of these different entities is therefore not appropriate as it distorts the comparison. It was recommended that this and other factors should be investigated further.

The ANSPs commented that there are trade-offs between KPAs to some extent and that these need further study. Key trade-offs are between capacity and cost effectiveness, as 'capacity costs money'. Some interdependencies are also seen between environment and capacity, where traffic management may use longer routings and which may be evident on a wide scale in respect of geopolitical causes. ANSPs' insight is that the issue of interdependency should be dealt with at the local and national level; and that it cannot be addressed at the EU level.

Safety was seen as being the priority from which other KPIs shall not be compromised through trade-offs. One question was whether safety should have a target set at all, particularly given that targets are known to encourage the wrong behaviour, i.e. under-reporting. This does not preclude measuring safety, wherein the trends may be more informative than the absolute measurements. It was recommended that wider consultation with NSAs, customers and the EC should be carried out on safety indicators with consideration given to a different approach for safety. Some difficulties with safety indicators were:

- knowing whether the right investment has been made, as the outcome may not be evident for years;
- it being difficult to know what level of investment leads to what safety improvement – i.e. the problem of loosely coupled system of systems where interactions may be diffuse.

Safety

There are mixed views on safety indicators, which on the one hand are viewed as not measuring safety performance, whilst on the other they have been acknowledged as playing an indirect role in increasing safety. The main concerns are:

- The safety KPIs are system/process indicators and there is no means to directly link, e.g. Effectiveness of Safety Management with actual safety.
- For the safety KPA, there has been a large cost incurred in preparing for RP2 and ANSPs are concerned that the indicators will be dropped for RP3. ANSPs argue that this misses the point around safety indicators, which have an impact over the long term and is wasteful of the work to date. For example, the effectiveness of safety management indicator is a capability maturity model type indicator and takes time to embed in

organisations. Similarly, application of the RAT has a longer term impact, potentially showing worse performance initially as States harmonize through RAT reporting.
- The Just Culture indicator has widely acknowledged shortcomings, with some of the KPI-determining questions being contrary to Just Culture.

It was also recommended by one ANSP that the costs of dedicated safety projects, such as new safety nets arising from SESAR, should be excluded from the determined cost base so as to remove any notion of interdependency between safety and costs.

Environment
A concern with the environment KPA is that there is not a clear rationale in allocating the environmental targets. It was also noted by the study team that ANSPs have a wider perspective on environmental performance indicators than the scheme and their efforts in this respect may be important but not recognised by the Performance Scheme.

Capacity
A question raised was whether the Performance Scheme could be used to help lower the level of industrial action, which has a huge cost on the industry.

Investments and incentives
ANSPs do not see the incentives as a strongly motivating force when compared to the direct effect of customer needs, although accept that the cost efficiency KPI has a strong motivation. It was commented that "with the incentives it does not materially help the organisation to have 0.5-1M some years later". An example given was where capacity may not meet airline needs, which would lead to an immediate reaction from airlines and executive level discussions between ANSP and airline. This example reflects on another concern that customer issues may be acute at the local level but not visible at the national or regional level. E.g. an unanticipated controller shortage may cause a restriction at a specific airport and this may be quickly acted on to solve the airport's capacity constraint. It was noted that ANSPs work to avoid this type of problem in the first place, e.g. through staff planning.

UK NATS commented that the UK scheme is appropriately balanced, with the incentives challenging to achieve. Performance scheme targets are also flowed down to the business and management teams to ensure alignment with the scheme.

Other points were:
- The regulations have needed clarifying on whether the incentive available is 1% for each KPA (capacity and environment) or jointly.
- NSAs should have greater local freedom to determine the incentives, e.g. in alignment with local customer needs.
- Incentives should be developed around delivering the requirements of users and NSA through consultation.
- Incentives should be voluntary for capacity and environment subject to the consultation mechanism adopted.

- Traffic risk sharing is not the right level for an incentive as it is not controllable.

PRB

ANSPs identified some key characteristics that the PRB should:

- Be independent
- Have strong governance
- Possess the right technical capability through the right types and number of experts
- Follow an evidence-based approach
- Adopts a high standard of consultation.

As referred to earlier, target setting in RP1/2 has been seen as a bit crude, with too many like-for-like comparisons when there are in fact fundamental differences; such as how pension costs fall on ANSPs (comparing schemes that have to be fully funded in UK and Germany against 'pay-as-you-go' schemes in some other Member States). It was recommended that the PRB needs to give further consideration to how more authentic like for like comparisons can be made in order to inform target setting.

The PRB has done a decent job of challenging the Network Manager on how it contributes to performance, but this has not been followed through in creating meaningful metrics for its contribution.

The Network Manager is seen as having a reasonable degree of independence in its role of providing data to the performance scheme. NB, the contribution of NM costs as a 'determined cost' should only be relevant to costs that vary with units, which does not apply to the NM or EUROCONTROL as a whole. Hence the comparison should be with the absolute costs.

Efficiency

ANSPs have found that the scheme has clearly added to their workload but are not wholly convinced that this is justified by the improvements in performance arising from the scheme.

Coherence

Concerns around coherence of the performance scheme were:

- There is a need to better align the requirements of the performance scheme and SESAR which has its own performance indicators. The SESAR indicators are appropriate for R&D but should not necessarily be absorbed into the performance scheme KPIs.
- There are a lot of policies being developed that do not all sit in a single comprehensive SES framework. This creates confusion around the different policy threads: harmonisation from EASA, industrial policy from SESAR, performance framework and with the SES policy thread limited to the ANS domain. Clarification on the direction of these activities is needed.
- In the safety area, the European Risk classification scheme for aviation occurrence reporting is not compatible with the RAT, and ANSPs would not wish to see it mandated in preference to the RAT.
- SESAR is addressing gate to gate performance, which is not yet the case for the performance scheme.

- Implementing Rules cause a concern as they are prescriptive on technical solutions. Datalink has generated a lot of cost but no benefit, because the regulation was made before there was a mature solution. The import is that the investment could have been spent on other innovation.
- There needs to be more flexibility for ANSPs to change investment priorities in response to traffic and customer needs, keeping NPV neutral for customers.

3.4 *Airspace users*

So far, three interviews have been conducted with Airspace Users, two associations and one airline, with one more planned.

Overall assessment
According to one of the interviewees, the scheme as a whole is relevant and an economic regulation is the appropriate tool to address the monopoly position of the ANSPs. However, the current parameters of the economic Regulation are not enough to reach the high target set at the political level: a reduction of the costs of Air Navigation Services by 50 per cent.

Although the association had been in touch with the Commission during the process of the target setting, the outcomes did not reflect the stance of airspace users. A problem is that Member States have a vested interest in their ANSPs and are definitely 'on their side' instead of that of the airlines.

The current structure has incentives foreseen by law but no uniform system to assess these incentives, as each country is allowed to keep its own system. It results in a cumbersome and inefficient system that is not transparent for the airspace users. It also leads to gaps in the network that will never be fulfilled, as there are no penalties for this.

Suitability of the KPAs and KPIs in their current form
As it stands, for the Capacity KPA the average delay for flights is viewed as an essential and suitable metric to measure flight efficiency.

For the Environment KPA, horizontal flight efficiency is seen as a good proxy. It is thought to be better if vertical flight efficiency is included, but believed to be impossible to measure correctly at this time. The problem is that the KPI target is measured at network level but actions need to be taken at national level, which makes it very difficult to achieve. This creates an ownership problem where the actors that take the decisions to influence this (ANSPs) are not responsible for the outcomes. This is probably because the assumption was that the FAB Regulation would be fully in place, but it is not. Targets should be at both national and network level.

For the Cost-efficiency KPA, the determined unit cost is deemed not to be effective at all. There are two main issues:

1. The KPI should have measured the true costs paid by airspace users, which includes all the adjustments allowed under the scheme and the Terminal ANS costs;
2. The definition of 'true costs' should include the exchange rate fluctuations, as at the moment the airspace users unjustly fully bear the exchange rate risks.

Deficiencies of the system

A related issue concerns investments. During RP1, the investment plans have not been implemented by the ANSPs as they were approved and sent to the airspace users. There is a gap of more than € 800,000,000[12] between approved and implemented investments. These costs have been charged to the airspace users. As there is no mechanism to automatically return these paid costs to airspace users when investments are not implemented, ANSPs are in effect given a free loan.

One of the interviewees noted that for RP1, traffic forecasts were purposefully overstated. The investment forecasts were based on these traffic forecasts. Because traffic was less than foreseen, some investments were not implemented and airspace users paid for capacity increases that did not materialise. This was done by ANSPs to make windfall profits. An example given was in Italy, where the war in Libya led to a massive downgrade of traffic forecasts without lowering capacity investment costs.

Also brought up was the lack of a mechanism to hold ANSPs accountable for delays following strikes. Airspace users now fully pay this cost.

Overall, there is no coherence or balance between the KPIs of Environment, Capacity and Cost-efficiency. A challenging Environment or Capacity target would require strong investments, which pushes down Cost-efficiency.

Role of the PRB

In the view of the interviewees, the current functioning of the PRB is rated as 'a disaster'. Airspace users interviewed indicated that they can't trust this organisation in its current form, and it is suspected the PRB is not allowed to implement what they think is necessary. They should have done an analysis of cost-efficiency based on the true costs for users and a further analysis on investments.

The underlying problem perceived is that the PRB relies on Eurocontrol resources and information to fulfil its mission. However, Eurocontrol is owned and managed by Member States (which have a vested interest in their ANSPs) and this leads to a conflict of interest.

The PRB should be fully independent for the process of target setting and should have access to all relevant information, so that they can organise this to be insightful to the stakeholders involved.

[12] In nominal terms, or €700,000,000 in EUR_{2009} terms.

Final issues
One thing to note is that all the administrative costs of the system are, in the end, paid by the airspace users. The Eurocontrol costs are currently € 500,000,000 and growing yearly; the other State costs such as that for the NSAs are € 80,000,000 and also growing yearly.

3.5 *Staff representative bodies*

The overall view, shared by all three staff organisation, of the SES Performance and Charging schemes and especially the target-setting is that it is a political process, in which airlines have too much influence due to their strong lobbying efforts. The views of the ANSP industry are not taken into account enough. The whole decision making process is considered inefficient. They argue this has created a system that reflects a 'paper reality' and is not geared towards improving actual performance. This results in binding targets which are too prescriptive, hindering flexibility and freedom of choice of the ANSPs to respond to situations based on their expert opinion.

Furthermore, they declare the system is too rigid, as targets are set for multiple years and it is not possible to change these in the meantime. One example is that it is, in their words, almost impossible to get a revision to the traffic forecast accepted: this is too difficult and takes too long. One of the consequences of this rigidity is that States resort to 'gaming' to meet their targets.

One of the fundamental problems is that Air Traffic Management is treated as if it were an airline industry, while it actually is an infrastructure.

Suitability of the KPAs and KPIs in their current form
The interviewees indicated that the Safety KPA has not been a driver of performance, although it is good there is now a standardised approach and that there are currently no targets set. Statistically speaking it is impossible to measure due to the many non-events and too few actual events.

The current form of the Environment KPA is viewed as not suited, because it does not include vertical flight efficiency and because there are no real sanctions for airlines that do not take the most efficient route (see trade-offs below).

For the Capacity KPA, an important point is that the increases in traffic are not distributed equally over the week, with some weekend days seeing traffic increases of 20 per cent. These are impossible to cope with without increasing delay. The Capacity KPI does not adequately reflect the complexity of the traffic nor what has been done up to this point to meet the challenges posed by the different nature of traffic.

The targets under the Cost-efficiency KPA are considered unrealistic and leading to unwelcome trade-offs between the short and long term and have negative effects on the other KPAs (see below). The respondents were united in their conviction of the current structure as being 'unbalanced' and skewed

towards cost reduction. A better way to cover Cost-efficiency would take into account more performance areas, such as the 11 that the International Civil Aviation Organization (ICAO) has published[13]. An alternative way to reduce the costs would be to focus on improvements in technology, as there is still much variation throughout Europe and much can be gained from upgrading and streamlining systems.

Trade-offs between short and long-term and between KPAs

The considered predominance of the current Cost-efficiency indicator is thought to lead to a favouring of the short-term over longer term needs, operating through two channels: Firstly, the focus on cost reductions to meet the cost-efficiency targets has meant the level of investments has gone down in the face of declining traffic and the lesser income that goes with it, which will hurt in the longer term as traffic goes up again. Secondly, it has accelerated the low level of recruitment of new ATCOs, which started with the economic crisis in 2008 but accelerated with the Performance Regulation. One staff organisation saw this happening throughout Europe, from Poland to the Netherlands to Belgium. This is a significant point, because preparing an ATCO to be fully able to work is a long process that can take up to 4-5 years. The same work needs to be done with fewer ATCOs and traffic is growing, adding to the workload. Although this results in a cost-reduction in the short term, the system will be faced with problems in the longer term as there will be a shortage of ATCOs and more staff 'burn-outs' will occur.

The above also points to a trade-off between Cost-efficiency and Safety, because as ATCOs have to work more hours[14] and become more fatigued, they are not as alert as they should be, increasing the risks of incidents.

It was further commented that the predominance of the Cost-efficiency KPA also led to unwelcome trade-offs with the other KPAs, and that: to decrease costs, airspace users do not plan their flights according to the route that gives them the most efficient path from A to B, but plan for the cheapest route – which sometimes means utilising a neighbouring airspace that is cheaper. The longer flights almost by definition mean that the targets under the Environment KPA are missed, as these are geared towards the (horizontally) most efficient flight trajectory.

This further results in a mismatch in terms of capacity, because predictions in the National Performance Plans (NPP) are based on the most efficient routes and ANSP investments are based on these performance plans. An example of such a trajectory is from North to South Italy, where a direct flight is dropped in favour of a detour over the cheaper Croatian airspace. Here, the Croatian ANSP, making its investment decisions based on the NPP, will not have invested enough in face of the increased traffic,[15] resulting in longer delays and missing of the Capacity targets.

[13] See ICAO Doc. 9883, Manual on Global Performance of the Air Navigation System.

[14] It was mentioned that in some cases, they need to work 18 out of 21 days.

[15] And conversely, the Italian ANSP will have invested too much in relation to the decreased traffic.

Role of the PRB

Interviewees indicated the PRB should be independent and that it is influenced too much by the airline industry. Another interviewee argued it did well as a body and the best it could in the current (incoherent) landscape.

Final issues

One interviewee had an interesting suggestion for the financing of the system. The toll currently levied on airspace users leads to pressures from these airspace users on cost reduction. Another way to recover the costs for ANSP provision that might be better is to institute an EU 'passenger contribution' under which all citizens would pay, for example, €2 for the utility of flying. This would introduce a different dynamic by taking it out of the cost base of the airlines.

3.6 *Other*

3.6.1 *Airport*

We have contacted various airports to schedule an interview, but have not had a satisfactory response so far.

3.6.2 *Manufacturing industry*

The manufacturing industry preferred to maintain a neutral stance in responding to the consultation but did volunteer the following comments:

- A concern that there may be a tendency for ANSPs to reduce investment to achieve objectives and targets, whereas the EC expects an increase in investment to achieve better performances in various domains.

A concern that SESAR will not be deployed as quickly as possible because of the shorter term objectives of the performance scheme.

P.O. Box 4175
3006 AD Rotterdam
The Netherlands

Watermanweg 44
3067 GG Rotterdam
The Netherlands

T +31 (0)10 453 88 00
F +31 (0)10 453 07 68
E netherlands@ecorys.com

W www.ecorys.nl

Sound analysis, inspiring ideas