

4. PERFORMANCE VIEW

4.1	SDM in the SES performance framework	284
4.2	Performance Assessment and CBA Methodology	286
4.3	DP expected contribution to performance	287
4.4	DP Cost Benefit Analysis	292
4.5	Next Steps	303

4. Performance View

The PCP has been adopted by the Commission after positive opinion of the EU Member States and endorsement by the operational stakeholders on the basis of a high level Cost Benefit Analysis (CBA) that demonstrated an overall benefit³⁶. With this CBA as justification, there was the commitment of the EC to facilitate PCP deployment by EU public funding through the Connecting Europe Facility (CEF) financial instrument in the period 2014-2020.

In line with SDM's performance policy laid down at section 2.2 above, the performance view of SDM's Deployment Programme aims at coordinating, synchronizing and monitoring the implementation of the PCP against the boundaries of the high level CBA that has triggered PCP adoption in 2014. "Against the boundaries" means within the expected return on investment according to the performance expectations.

In order to meet this objective, the performance view includes:

- An overview of **SDM's role within the SES performance framework**;
- An overview of the updated "**Performance Assessment and CBA Methodology**" that SDM has applied in support to its performance policy and how it builds on and connect with the methodologies used by other SES and SESAR bodies involved into performance;
- The presentation of the **performance gains expected from the implementation of the Deployment Programme**;
- The presentation of the **Deployment Programme Cost Benefit Analysis (CBA)**.

4.1 SDM in the SES performance framework

The SDM has been established by the European Commission as a SES instrument to ensure timely, synchronised and coordinated implementation of SESAR through a series of Common Projects. **As such, SDM's performance view shall comply with SES overall performance framework, use common indicators and methodologies with other SES bodies dealing with performance and build on their expertise and early results.**

The Single European Sky (SES) initiative aims to achieve "more sustainable and performing aviation" in Europe. The SES High level Goals are political goals set by the European Commission in 2005. The purpose of these High-level Goals is to set the optimal ATM performance levels to be reached in the European Air Traffic Management (ATM) network and to drive efforts to achieve them. The four High-level Goals to be achieved by 2020 and beyond are to:

- Enable a 3-fold increase in ATM capacity, to be deployed where needed, reducing delays both on the ground and in the air;
- Improve safety by a factor of 10;

³⁶ PCP's global cost benefit analysis is available at
http://ec.europa.eu/transport/modes/air/sesar/doc/ec-716-2014_article4c_globalcba.pdf

- Enable a 10 % reduction in the effects flights have on the environment; and
- Provide ATM services at a unit cost, to the airspace users, which is at least 50% less.

In addition to the “high level goals”, and within the SESAR context, the ATM Master Plan 2015 has proposed “Performance ambitions” with a different time line but still contributing to them.

Since implementation as from 1 January 2012 of the performance scheme, the EU has been operating a formal and explicit performance-driven approach, which includes performance indicators – fit for setting binding regulatory targets on specific stakeholders accountable for delivering measurable performance outcomes. Through a succession of Reference Periods (2012-2014, 2015-2019, ...) the performance scheme drives and monitors the final achievement of SES High-level Goals. As explained in the Commission Implementing Decision C(2015) 9057, “a Performance Ambition is considered as an estimation of the contribution of the SESAR project to the Single European Sky (SES) Performance objectives. This estimation shall be confirmed after the validation of the relevant Research, Development and Deployment activities”.

SESAR deployment shall fit within this performance scheme: investments, benefits and performance gains drawn from SESAR deployment shall support the achievement of the specific targets of the active Reference Period. **SDM is cooperating with the Performance Review Body (PRB) to ensure this compliance.**

Another key player in the SES performance framework is the Network Manager (NM). Since 2011, with a specific consolidated local and network perspective, the NM has been forecasting, planning, monitoring and reporting to help deliver the performance targets of the Single European Sky. Since its establishment in December 2014, SDM has been closely cooperating with NM with the objective to build on NM’s wide experience, tools and findings and to ensure consistency with the Network Strategy Plan, Network Operations Plan (NOP) and European Route Network Improvement Plan (ERNIP). As an early result of this cooperation, the project view of the DP already flags the gaps in PCP implementation which are the most critical to network performance with a specific “N” label. **Pursuing in this direction, the performance assessment and CBA methodology described in the annex D to the DP is closely interrelated with NM’s tools and activities in the field of performance.**

Finally, the Global Cost-Benefit Analysis that SJU has delivered back to 2013 in support to PCP’s adoption sets the overall frame for SDM’s action in the field of performance. This document is referred to as the **“Reference and supporting material (EC) No 716/2014 article 5(C) Global cost-benefit analysis”**. With regards to the PCP CBA, SDM shall pursue several objectives:

- 1) Monitoring that CBA’s boundaries are met:** Taking advantage of more refined costs through implementation projects submissions and more robust assessments of expected benefits through SDM’s or Network Manager’s appropriate inputs as well as recent SJU’s validation campaigns and upcoming Large Scale Demonstrations, SDM shall monitor that PCP is implemented within the boundaries

of the CBA and that, in particular, the ranges assumed in the CBA for the 5 sensitivity drivers are met³⁷;

2) Addressing with high priority the potentially critical situation hidden behind the overall positive result of the CBA: whilst the PCP CBA shows an overall benefit of 2,4 billion € (Net Present Value) over the period 2014-2030, it highlights some critical issues on which SDM shall be vigilant, such as:

- AF5 and AF6 where CBA at AF level is negative;
- AF1, AF2, AF3, AF4 where the different investments and benefits are not necessary having similar ramp-up periods or payback timings;

Considering that PCP's CBA has been developed without taking into account the positive impact of any EU funding or financing mechanism, SDM shall play a key role in assessing EU grants' efficiency and targeting other EU financing mechanisms to adequately address those critical issues, ensuring that it is the whole PCP that will be rolled out timely and in compliance with the European regulations.

3) Gathering updated costs and benefits data in relation with PCP implementation that would be used to update PCP's CBA if EC decides a review of the PCP.

The three objectives above require close cooperation with NM and PRB as well as re-use by SDM of key financial assumptions and methodology that have been used by SJU when developing PCP's CBA.

4.2 Performance Assessment and CBA Methodology

SDM's performance assessment and CBA methodology is the cornerstone of SDM's performance policy. It bridges between technological investments required to achieve new ATM functionalities required through the PCP Regulation and ATM performance improvement. It contributes to ensure that all benefits expected from the whole PCP implementation will materialize whilst not exceeding the estimated cost. It is an essential tool in monitoring PCP implementation, assessing and monitoring cost and benefits of implementation projects submitted or not by operational stakeholders but also assessing the impact of "missing implementation projects", i.e. implementation projects not submitted timely and identifying solutions to recover such situations and get the whole PCP implemented.

The performance assessment and CBA methodology describes the different steps taken to set the baseline against which performance will then be monitored during DP execution. Detailed methodology is annexed to the DP as Annex D. In particular, the performance assessment and CBA methodology assumes that co-funding is awarded by INEA and reflected by the operational stakeholders in their investment plans in accordance with relevant regulations, in particular the Implementing Regulations (EU) on CEF (N° 1316/2013), on the Charging Scheme (N° 391/2013) and on the Performance Scheme (N° 390/2013).

³⁷ Air Traffic Growth, Fuel and CO2 savings, Delay Cost Savings, reduction of costs for the ATM service provision, PCP investments costs ground and airborne

The main updates of the SDM's performance assessment and CBA methodology are the following:

- An updated presentation of the performance indicators and their corresponding CBA metrics that allow quantifying benefits.
- A more detailed explanation of the top-down approach and the bottom-up approach in the measuring of the expected benefits.
- An additional chapter on the cost effectiveness analysis of the projects before submission.
- A detailed "consistency check" table between the Performance Indicators used by the SDM, the KPIs of the SES II Performance scheme and the KPIs of the ATM Master Plan. The three sets of indicators are coordinated between SDM/SJU/PRB.

4.3 DP expected contribution to performance

As per the project view developed in the chapter 3 above, the expected contribution of PCP implementation to performance could be divided in two blocks:

- The contribution to performance expected from the Implementation Projects awarded in 2015 as a result from the CEF Transport General Call 2014. See chapter 4.3.1;
- The contribution to performance expected from the Implementation Projects still to be awarded to the future CEF Transport Calls (2015 and the following years) in order to close the gaps identified in the DP 2015, supposing that all projects are submitted which is not necessarily the case. The contribution to performance expected from the Implementation Projects awarded in 2016 as a result from the CEF Transport General and Cohesion Calls 2015 will only be finalized after the DP 2016 will be published in September 2016.

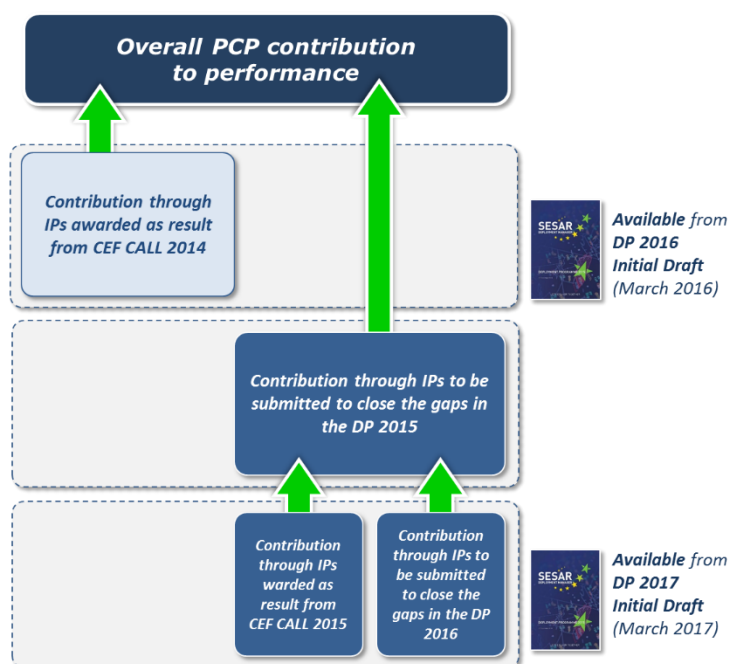


Fig. 27 – Overall PCP contribution to performance – Overview

4.3.1 Contribution from the Implementation Projects awarded through the CEF Call 2014

Performance analysis of the SGA IP 2014 has been prepared bottom-up, starting from contribution to performance expected from each implementation project (or thread³⁸ of implementation projects). These expectations have been declared initially by the projects themselves through an SDM performance grid, per KPAs and KPIs. After assessment by SDM and joint confirmation by SDM and the relevant implementing partners, the declared contributions to performance become “performance expectations” associated to each implementation projects. The contribution of the project managers has been essential to assess those figures with the understanding of local specificities for each project. Individual contributions are then summed up per AF to form the “performance expectations” at AF level and then for the whole SGA IP 2014 to form the “performance expectations” at SGA or action level. Those “performance expectations” constitute the reference against which projects or threads of projects, or AF, or action will be monitored until completion (see chapter 4.5.1, the so-called “monitoring”). After completion, SDM will further monitor that, after going operational, the projects actually delivers the expected contribution (see chapter 4.5.2, the so-called “final check” with examples of the first finalized projects).

For the purpose of the edition 2016 of the DP, this chapter presents the initial results of SDM performance assessment for SGA IP 2014. With the bottom-up approach, the total contribution to performance of SGA IP 2014 has been estimated to **3.4 Bn€ (1.6 Bn€ discounted), so in the range of 30% of the overall PCP benefits³⁹** for the period 2014-2030.

The following figure presents the distribution per AF of the overall performance value of the SGA IP 2014 after monetisation of the various contributions to performance.

³⁸ A thread is a group of projects that dependent from each other to jointly deliver their benefits. The notion of thread has been used to group some implementation projects when the reasoning for performance assessment and CBA analysis couldn't be applied to each of them in isolation. For the time being, only few threads have been defined and most of the implementation projects remain analyzed on an individual basis.

³⁹ PCP's global cost benefit analysis is available at

http://ec.europa.eu/transport/modes/air/sesar/doc/ec-716-2014_article4c_globalcba.pdf

It reports 12.1 Bn€ (4.9 Bn€ discounted) as overall PCP benefits.

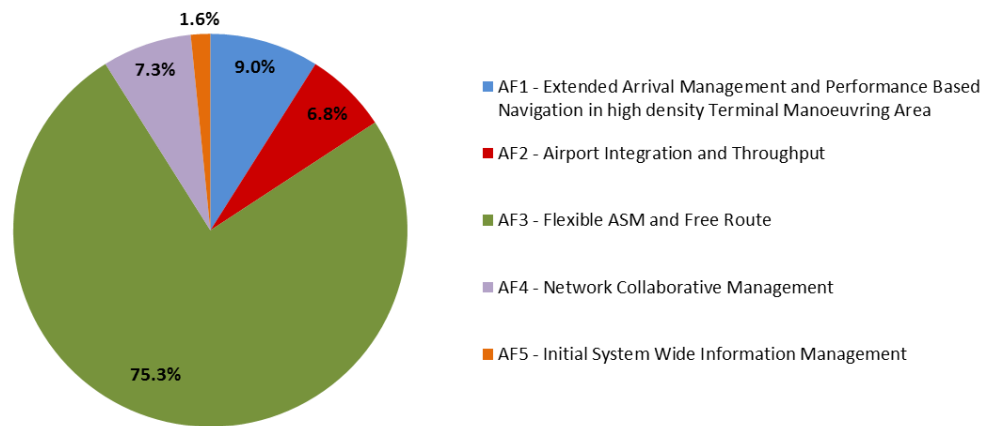


Fig. 28 – SGA IP 2014 – Expected Contribution to Performance per AF

75% of SGA IP 2014's contribution to performance is through implementations projects under AF3. AF1 represents 9%, AF2 and AF4 around 7%, and AF5 less than 2%.

The following figure shows the ramp-up profile between 2014 and 2030.

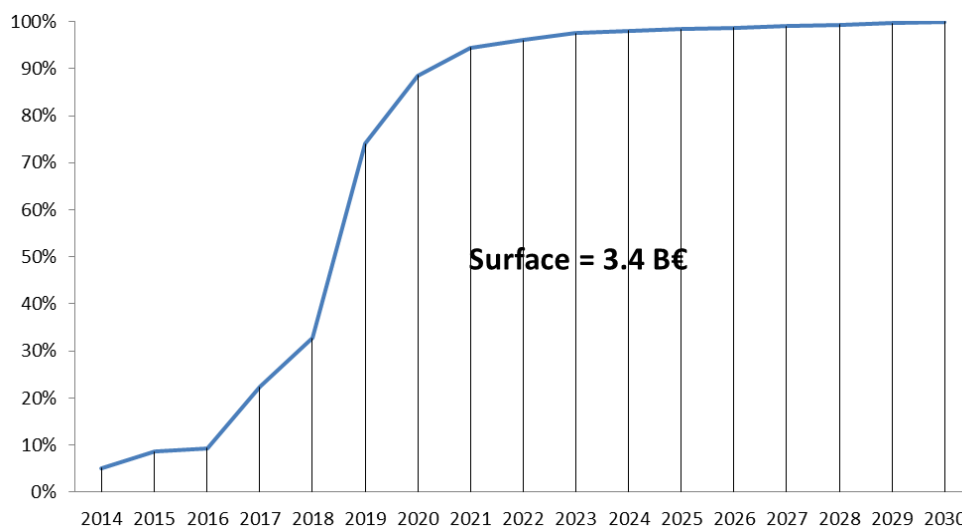


Fig. 29 – SGA IP 2014 – Ramp up of contribution to performance (2014-2030)

The curve is built from the sum of all expected benefits year by year (undiscounted) for all the projects. Most of the benefits are expected to ramp-up very quickly between 2018 and 2020. This chart doesn't pretend to reflect the exact future trend but it is an effort of transparency of what is reported in the Project Portfolio Management tool of SDM. Obviously, over the 16 years, the forecast is less and less accurate year after year because the different assumptions may be wrong and shall be revised. So, this curve shall be taken for a transparent understanding of what the shared work done on performance brings altogether.

The overall picture shows already the importance of ATM functionality AF3. Considering the limited number of submitted projects under this AF, project management and of

change management practices by the relevant implementing partners are of special importance and will be carefully monitored by SDM.

The following figure also represents total **SGA IP 2014 contribution to performance but from a Key Performance Areas (KPA) perspective**. It is important to note that the Safety KPA is not monetized at this stage, therefore counted for 0.

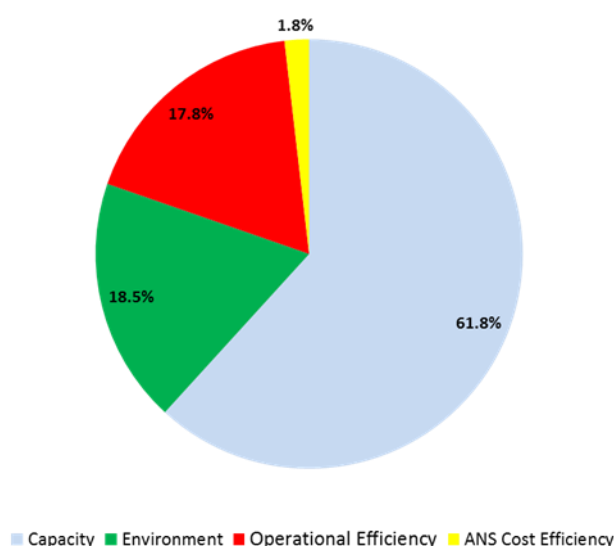


Fig. 30 – SGA 2014 – Contribution to Performance per KPA

Capacity represents the biggest share in Euro value with 62%, followed by the Environment, the Operational Efficiency and the ANS Cost Efficiency. For transparency, the detail figures of the amount for each performance indicator are as following:

KPA	Performance indicator	Amount
Capacity	En Route ATFM Delay (min)	73,000,000
Capacity	En Route ATFM Delay (TMA) (min)	900,000
Capacity	Airport ATFM Delay (min)	200,000
Environment	Saving linked to fuel consumption (ton)	766,000
Environment	Saving linked to CO2 reduction (ton)	2,357,000
ANS Cost Efficiency	Gate to Gate ANS Cost (€)	62,000,000
Operational Efficiency	ASMA Time (additional) (min)	1,300,000
Operational Efficiency	ASMA Time (unimpeded) (min)	400,000
Operational Efficiency	Taxi In Time (additional) (min)	300,000
Operational Efficiency	Taxi Out Time (additional) (min)	2,600,000
Operational Efficiency	Taxi Out Time (unimpeded) (min)	700,000
Operational Efficiency	ATC Delay (min)	200,000
Operational Efficiency	Saving minutes linked to fuel (auxiliary variable) (min)	11,400,000

The amounts here are those introduced in the system aggregating all projects providing benefits round up.

Going one level down, the following figure represents the distribution per performance indicator transformed in euro values according with the methodology.

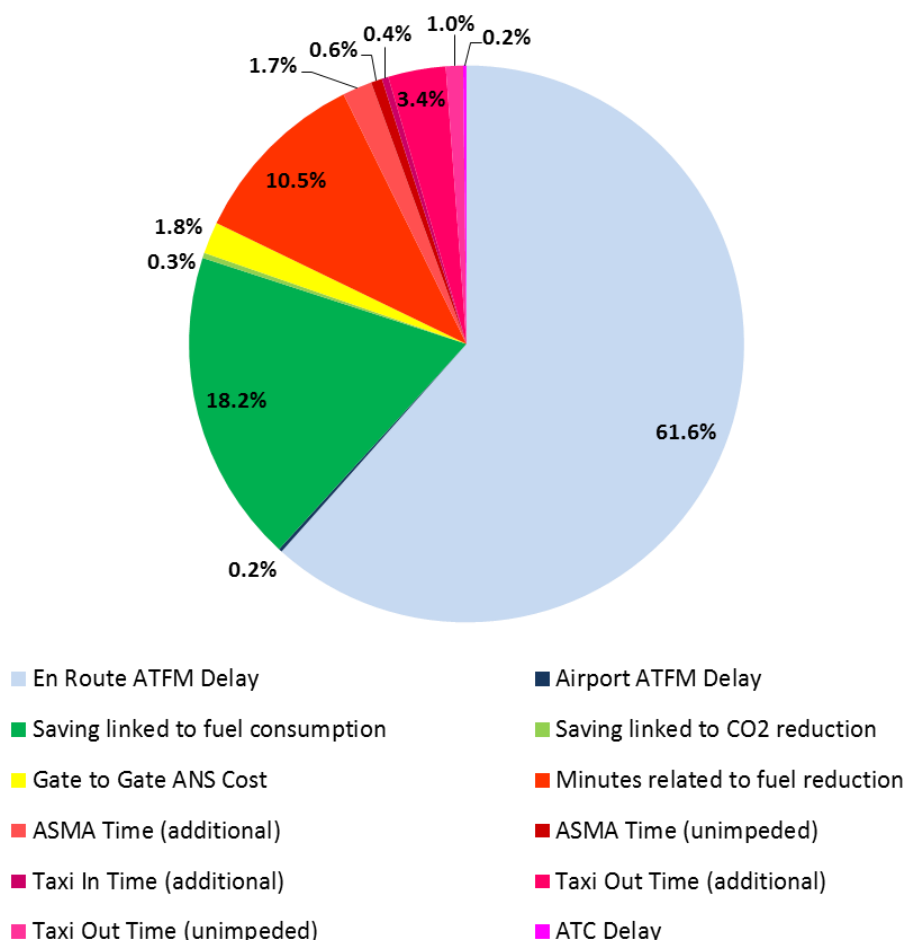


Fig. 31 – SGA 2014 – Contribution to Performance per KPI

In echo to AF3 predominance in figure 18, it is logical to have En-Route ATFM delays (73 million minutes) and the savings in fuel consumption (766 thousands of tons) as the main contributors.

Finally, the **ANS cost efficiency** is 1.8% of the overall amount.

These overall figures are hiding the unbalanced contribution of the main projects compared with those with no or very low benefits. This unbalanced situation is further more analysed taking into account the cost impact in the chapter on cost benefit analysis.

4.3.2 Contribution from the Implementation Projects to close the gaps in the DP 2015

The remaining gaps on which a performance forecast can be elaborated are the gaps of DP2015. These gaps shall be filled by future projects to cover the implementation of the PCP. Many of them have been submitted for the CEF Call 2015, others would be submitted to future calls or eventually not submitted through the SDM.

Also, because of the time it will take to assess the performance contribution of the CEF Call 2015 that will be awarded, the DP2016 can only base its performance view on the top-down evaluations it has been doing and would rely only on the SGA IP 2014 projects to ensure consistency between top-down approach and bottom-up one.

It seems therefore premature to give an overall estimation of the global benefits without additional consistency checks with the national investment plans and the national performance plans.

The first calculations tend to show that the relative importance of the AF in terms of contribution to performance would be maintained. With the caveat that the consistency checks are still missing, AF3 and AF4 together (because they are jointly assessed from a top-down approach) would cover around 80% of the total benefits.

With the CEF Call 2015 projects awarded, the SDM will be in a much better position to assess the overall situation in the DP2017

4.4 DP Cost Benefit Analysis

DP CBA builds on:

- Monetization of implementation projects' contribution to performance – the benefits; and
- Planned costs of the implementation projects', directly derived from the templates of the projects already awarded (2014) or submitted (2015), or estimated for the projects still to be submitted through future CEF Transport Calls.

The methodology used to perform the DP CBA is detailed at Annex D, "Performance Assessment and Cost Benefit Analysis Methodology". It gives a description of the CBA metrics used and the assumptions taken to monetize the performance improvements drawn from the projects and turn them into benefits.

As per the project view developed in the chapter 3 above, the PCP CBA could be divided in 2 blocks:

- The CBA for the Implementation Projects awarded in 2015 as a result from the CEF Transport General Call 2014. See chapter 4.4.1;
- The CBA for the DP2015 gaps. In the same way, this CBA will also be later on divided in two blocks:
 - The CBA of the Implementation Projects awarded in 2016 as a result from the CEF Transport General and Cohesion Calls 2015;
 - The CBA for the Implementation Projects still to be submitted to the future CEF Transport Calls in order to close the gaps identified in the DP 2016.

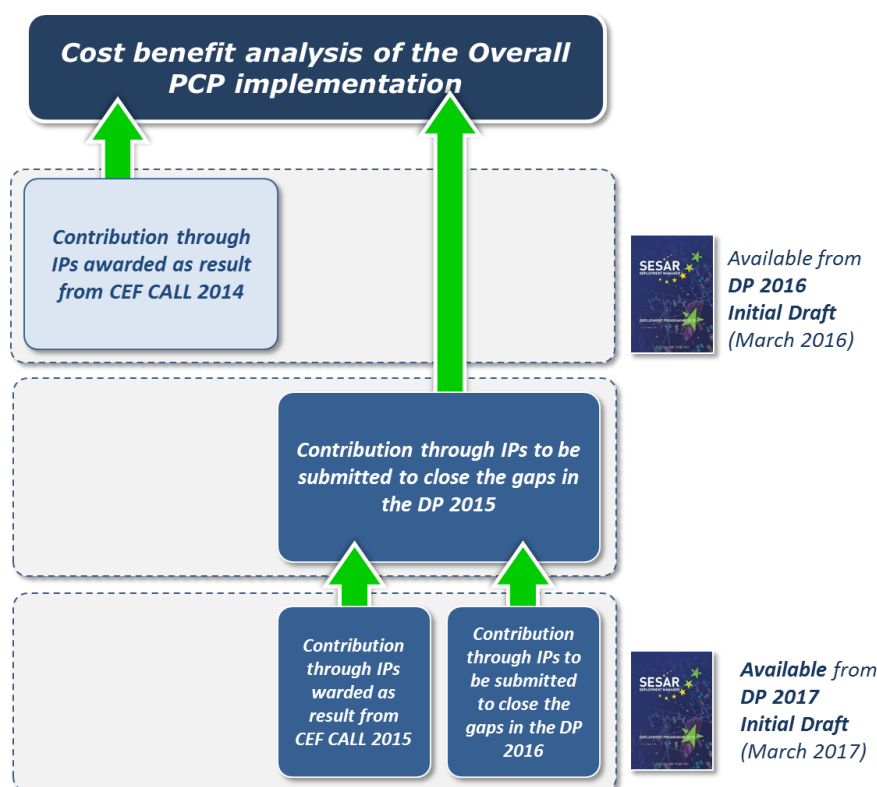


Fig. 32 – Overall PCP CBA – Overview

4.4.1 CBA for the Implementation Projects awarded through the CEF Call 2014

This section gives the February 2016 figures of the CBA/Performance assessment of the projects of the 2014 SGA, for all ATM Functionalities (AF) and then by AF.

The purpose of this CBA view at project level is to answer the important question of what is in the pipe of projects, what are the costs, what are the expected benefits, are we aligned with the expectations in terms of payback period according to the PCP CBA. The question to review all assumptions of the PCP CBA and proposed a revised CBA is not what is proposed in the DP2016. The SDM has not been mandated today to review the PCP CBA.

4.4.1.1. Overview

Figure 22 below is highlighting the evolution of costs, benefits and net benefits related to the deployment of Implementation Projects in the 2014 – 2030 timeframe. Specifically, the following color code is applied: planned costs are identified with blue bars, benefits with purple bars and net benefit with green bars. The net benefits are obtained by subtracting benefits from costs. Benefits are defined as “initial”, as they are calculated as first/preliminary estimates to be reviewed.

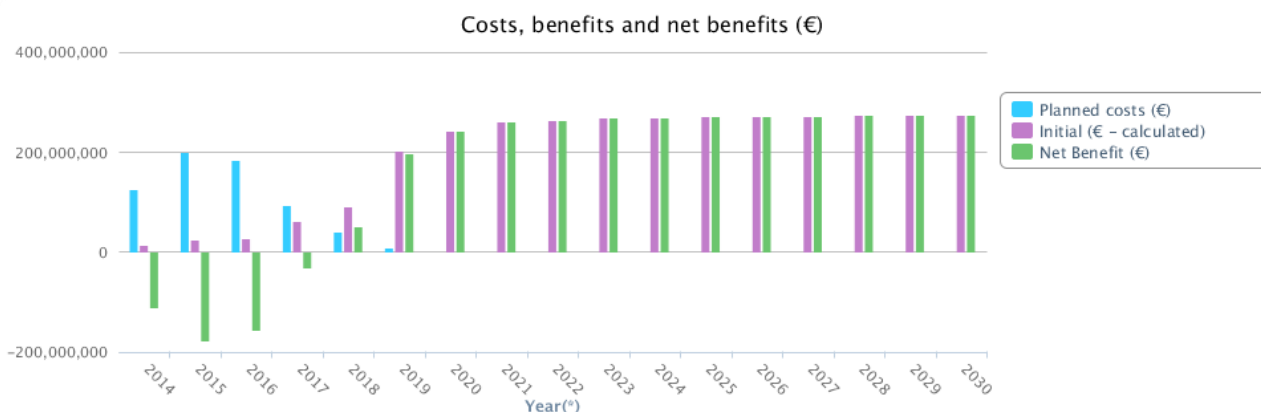


Fig. 33 – SGA 2014 - Evolution of costs, benefits and net benefits (2014 – 2030)

The chart shows:

- Investments (Planned costs in blue bars representing 649 mln€) are undertaken from 2014 to 2019
- Delivery of benefits (Initial in purple bars representing the 3.4 Bn€) is expected to start already as from 2014
- A positive net benefit (in green bars), on a yearly basis, is envisaged to be achieved starting from 2018

Figure 23 below shows the cumulated net benefit expected to be achieved. It is calculated by adding up the net benefits shown in figure 22 within the reference timeframe (2014 – 2030). The figure shows in particular when is the break-even point during the reference period, i.e. when cumulated net benefits go positive.

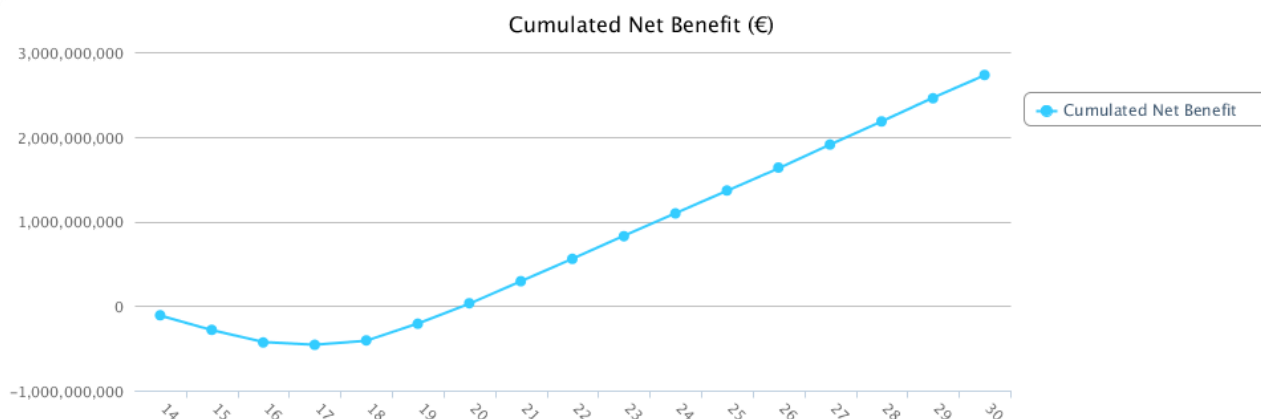


Fig. 34 – SGA 2014 – Cumulated Net Benefit in the 2014-2030 timeframe (€)

All AFs together, the cumulated net benefit for the implementation projects in the SGA IP 2014 is expected to turn positive in the year 2020 with a positive 32 mln€ Net Present Value.

After this period, the uncertainty about the right level of performance is bigger and the overall figure at the end of the period should be taken with care.

Down to the projects level but still with a transversal perspective, it should be underlined that, from an investment perspective:

- The 20 largest investment implementation projects in the SGA IP 2014 represent 80% of total SGA IP 2014 investment, leaving only 20% to the other 64 implementation projects;
- The largest investment implementation project in the SGA IP 2014 alone represents 29% of total SGA IP 2014 investment with the expectation to bring up to 52% of all SGA IP 2014 benefits. The fact that it is an AF3 implementation project confirms the criticality of this AF in terms of cost and benefit of the whole PCP implementation;
- These 20 implementation projects will be particularly monitored by the SDM as they play a key role in ensuring that PCP is implemented through the SGA IP 2014 within the boundaries of the PCP CBA envelope.

Also, from a benefit perspective:

- 83% of expected benefits discounted over 10 years are supported by 7 threads of projects. Those 7 threads of projects represent 43% of total investment. 6 of these threads are AF3 and one is AF1. Two of the AF3 threads are Network Manager projects which benefits are an estimated contribution to all AF3 projects that would only realize if the other related projects are implemented.
- 1 project "Thread #053AF3 DSN4 4 flight" represent 45% of expected quantified benefits discounted over 10 years. This project represents 29% of total investment.
- 42 threads of projects do not expected any quantified benefit. Those 42 threads of projects represent 33% of total investment
- Concerning the 37 threads of projects with quantified benefits, 10 of those have still a negative Net Present Value after 10 years.

Regarding the Net Present Value of the implementation projects in the SGA IP 2014, it should be noted that 64% of them (or group of them in case of threads) present a negative NPV, including 33% with no benefit at all. The analysis of these 64% is the following:

- 18% are AF5 SWIM projects for which negative NPV could be considered as normal due to the fact that PCP CBA states a negative NPV for the whole AF5;
- 25% are prerequisites to or phase 1 of a future implementation projects to which most of the expected benefits will be allocated. In these cases, negative NPVs result from the fragmentation of the implementation and it is the whole stream that should be considered at the end;
- 11% are Safety net, so increasing safety but without monetization of such benefit this could only result into negative NPV given the methodology applied;
- Only 10% of the other projects with negative 10 years NPV.

4.4.1.2. CBA Results – AF1

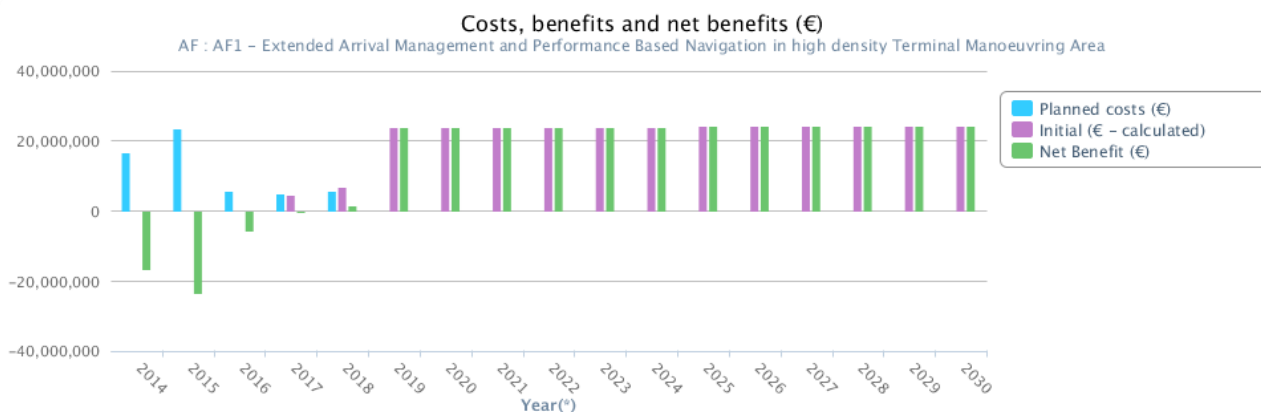


Fig. 35 – Evolution of costs, benefits and net benefits (2014-2030) – AF1

As shown by the chart:

- Investments for AF1 are undertaken from 2014 to 2018, they represent 9% of the overall SGA IP 2014 cost.
- The delivery of benefits is expected to start as from 2017 summing 301 mln€ over the period.
- A positive net benefit, on a yearly basis, is envisaged to be achieved starting from 2018.

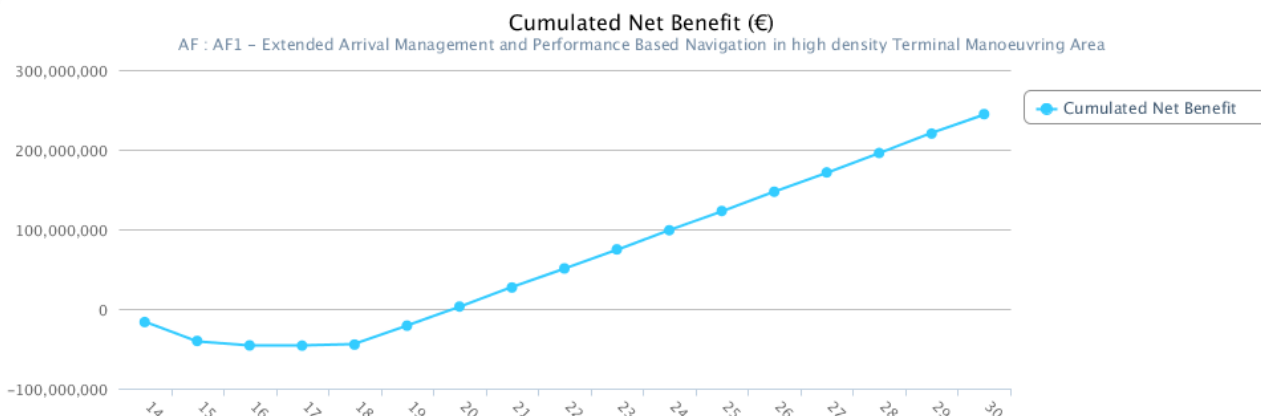


Fig. 36 – Cumulated Net Benefit in the 2014-2030 timeframe (€) – AF1

The cumulated net benefit is expected to turn positive in 2020 with a NPV of 3 mln€.

At project level, 79% of expected benefits discounted over 10 years are supported by 2 threads of projects. Those 2 threads represent 33% of total investment of AF1. There is no thread with multiple projects in AF1.

4.4.1.3. CBA Results – AF2

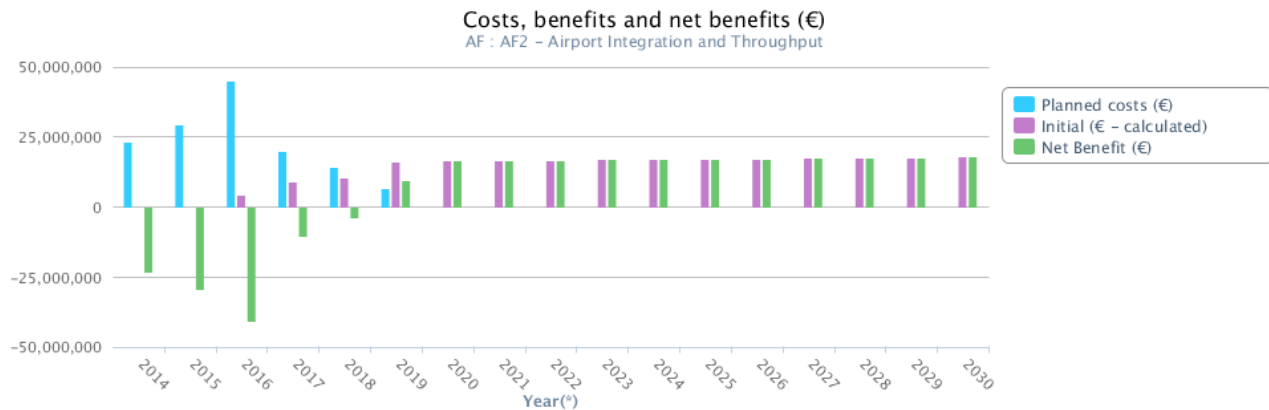


Fig. 37 – Evolution of costs, benefits and net benefits (2014-2030) – AF2

As shown by the chart:

- Investments for AF2 are undertaken from 2014 to 2019 and they represent 22% of the overall SGA IP 2014 cost.
- The delivery of benefits is expected to start from 2016 summing up 228 mln€ over the period.
- A positive net benefit, on a yearly basis, is envisaged to be achieved starting from 2019.

Two threads (CDG and ORY; NCE-Airport) were accommodated to link different projects together.

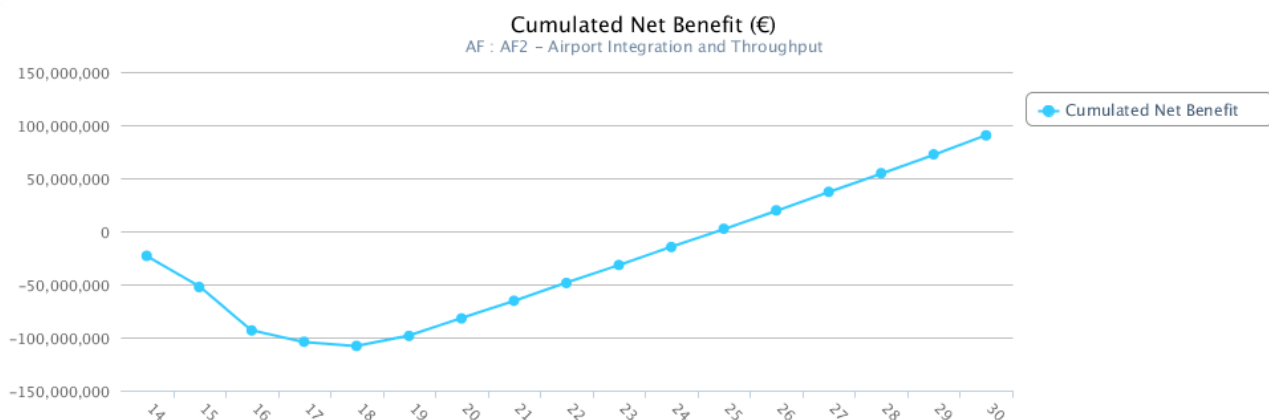


Fig. 38 – Cumulated Net Benefit in the 2014-2030 timeframe (€) – AF2

As shown by the chart, the cumulated net benefit is expected to turn positive in 2025 with a 2.4 mln€ value.

At project level, 78% of expected benefits discounted over 10 years are supported by 5 threads of projects. Those 5 threads represent 34% of total investment of AF2.

It is important to note that 9 projects (17% of the total investment of AF2) are related to safety net which is not monetized. Other projects may have also additional safety qualitative benefits.

4.4.1.4. CBA Results – AF3

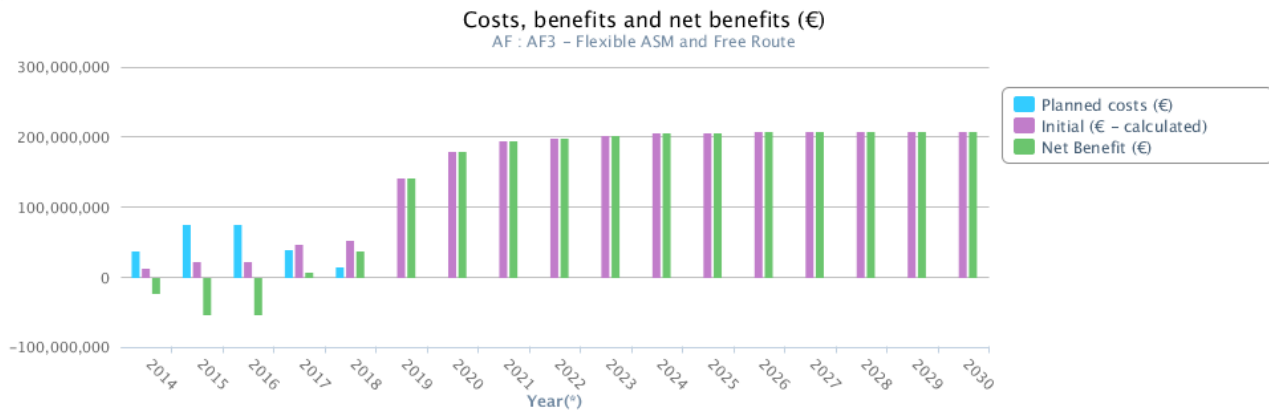


Fig. 39 – Evolution of costs, benefits and net benefits (2014-2030) – AF3

As shown by the chart:

- Investments for AF3 are undertaken from 2014 to 2018 and they represent 39% of the overall SGA IP 2014 cost.
- The delivery of benefits is accounted as having started as from 2014 summing up to 2.5 Bn€ over the period.
- A positive net benefit, on a yearly basis, is envisaged to be achieved starting from 2017.

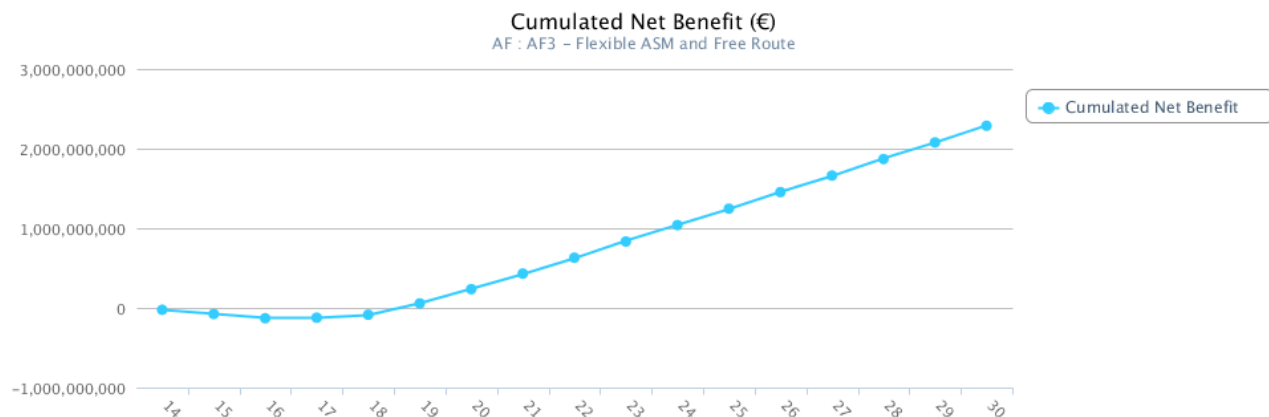


Fig. 40 – Cumulated Net Benefit in the 2014-2030 timeframe (€) – AF3

As shown by the chart, the cumulated net benefit is expected to turn positive in 2018 with a 56 mln€ value.

At project level, 80% of expected benefits discounted over 10 years are supported by 3 threads of projects. Those 3 threads represent 75.5% of total investment. In these 3 threads, one is the NM DCT FRA support project that will only deliver actually all its benefits if all related AF3 projects are implemented. One thread is accommodated to include two projects.

4.4.1.5. CBA Results – AF4

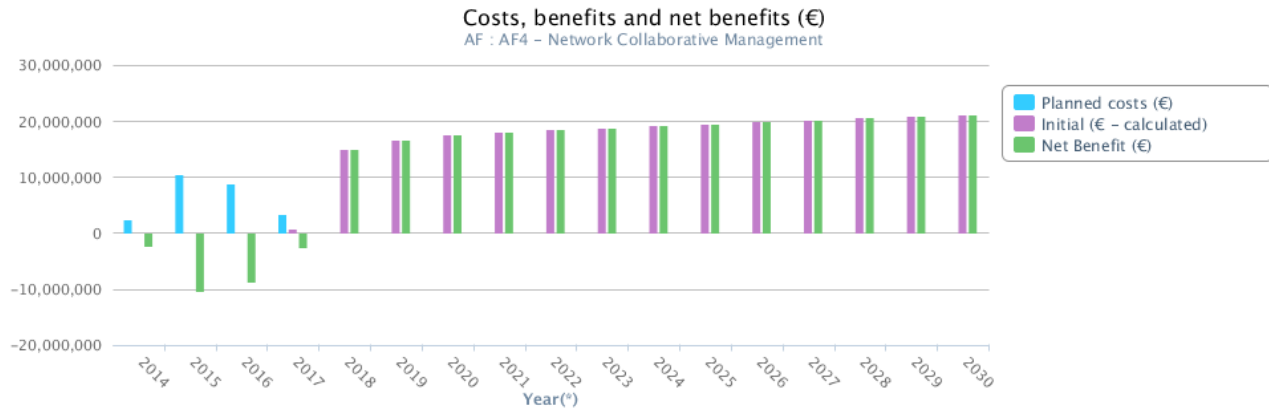


Fig. 41 – Evolution of costs, benefits and net benefits (2014-2030) – AF4

As shown by the chart:

- Investments for AF4 are undertaken from 2014 to 2017 and they represent 4% of the overall SGA IP 2014 cost.
- The delivery of benefits is expected to start from 2017 summing up to 247 mln€ over the period.
- A positive net benefit, on a yearly basis, is envisaged to be achieved starting from 2018.

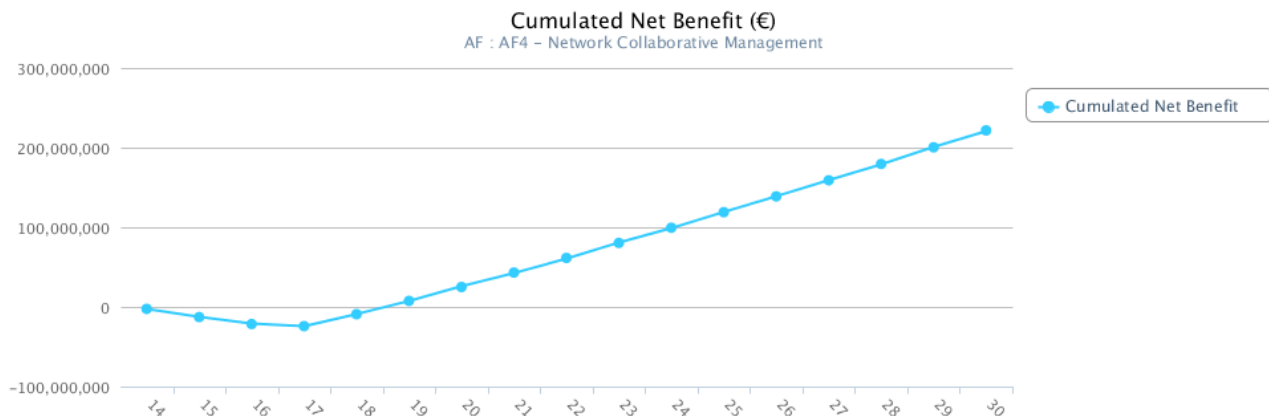


Fig. 42 – Cumulated Net Benefit in the 2014-2030 timeframe (€) – AF4

As shown by the chart, the cumulated net benefit is expected to turn positive in 2019 with 7.5 mln€ value.

Out of 5 threads, 3 are projects with benefits and two of them represent 83% of the total expected benefits. These 2 threads represent 67% of the total costs of the AF4.

4.4.1.6. CBA Results – AF5

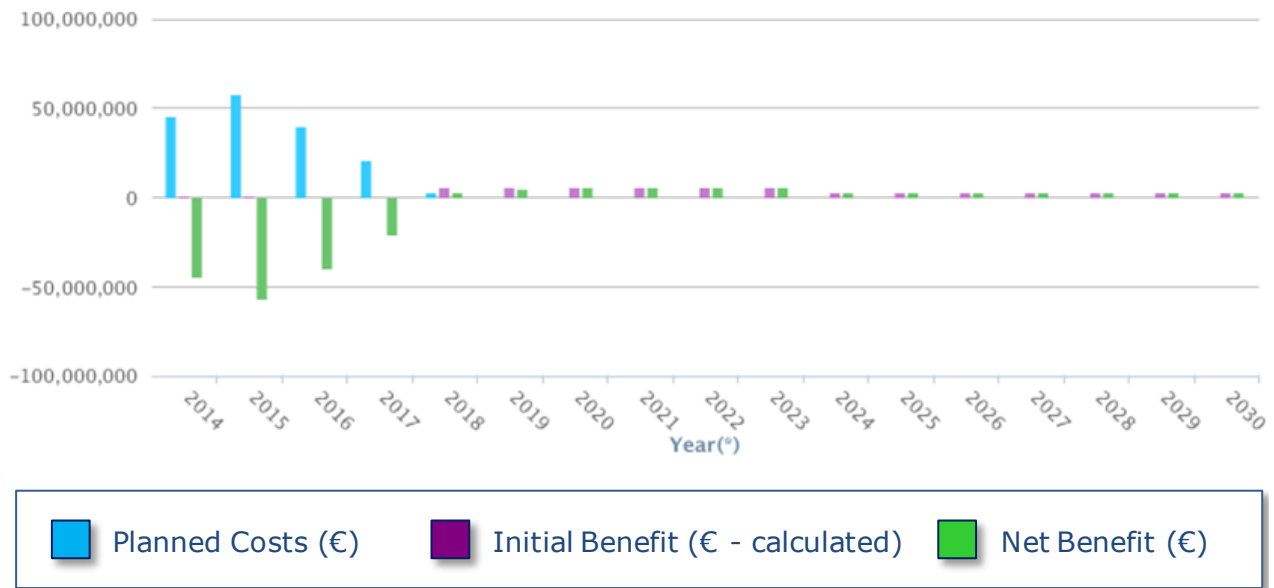


Fig. 43 – Evolution of costs, benefits and net benefits (2014-2030) – AF5

As shown by the chart:

- Investments for AF5 are undertaken from 2014 to 2018 and they represent 27% of the overall cost.
- The delivery of benefits is expected to start from 2018 summing up 53.5 mln€ over the period.
- A positive net benefit, on a yearly basis, is envisaged to be achieved starting from 2018.

Most AF5 projects are expected to generate only costs, as SWIM is an enabler for the other ATM functionalities and future Common Projects. However, out of the 16 projects, few projects are expecting to generate some savings in running costs.

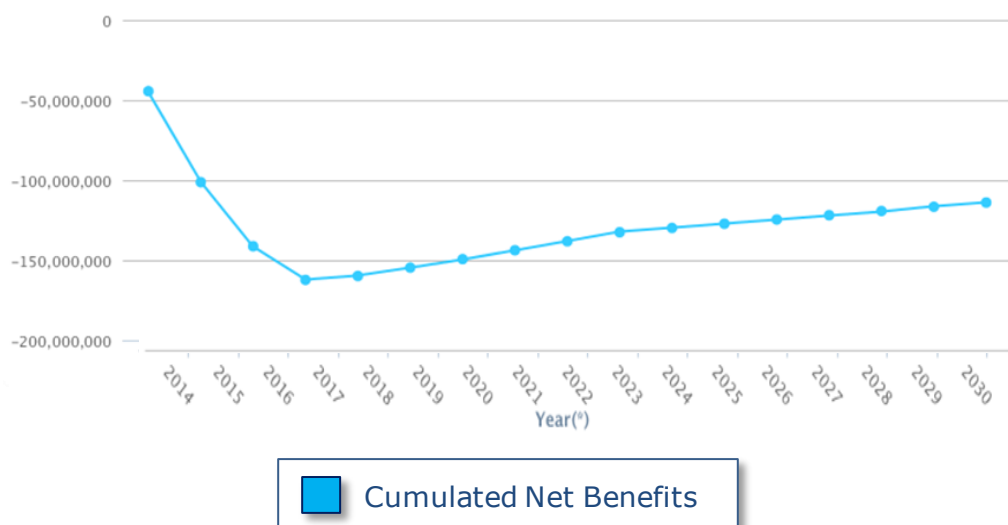


Fig. 44 – Cumulated Net Benefit in the 2014-2030 timeframe (€) – AF5

As shown by the chart, the cumulated net benefit is not expected to turn positive during the reference period. This is in line with PCP CBA's results on AF5.

At project level, 90% of expected benefits discounted over 10 years are supported by 2 threads of projects. Those 2 threads represent 36% of total investment of AF5.

4.4.1.7. **CBA Results – AF6**

No project in the SGA IP 2014

4.4.2 **Cost efficiency of the DP2015 gaps**

This section gives an overview of the cost efficiency analysis of the gaps remaining besides the SGA IP projects, which were defined in the DP 2015. The projects that are under the selection process of the CEF Call 2015 are not considered here after. Their CBA will only be assessed after selection, therefore available for DP 2017 initial draft.

To address the DP2015 gaps, we start from a first global assessment of the PCP implementation according to the Deployment Program. Then we will deduct from the global assessment the part representing the SGA IP 2014.

On the cost side, we take into account the PCP CBA reference as explained in the chapter on cost effectiveness analysis of the Annex D (Performance assessment and CBA methodology).

The discounted values for the PCP implementation on the 2014-2030 period are the following:

PCP CBA Cost references	
AF	Cost references - discounted
AF 1	€ 162.0 mln
AF 2	€ 680.9 mln
AF 3	€ 468.7 mln
AF 4	€ 309.7 mln
AF 5	€ 453.8 mln
AF 6	€ 420.4 mln
Totals	€ 2.495.5 mln

For AF2, the Safety Net families (2.5.1 and 2.5.2) have been identified separately with an expected discounted cost of 56.99 m€.

Now, summing up the cost references for the SGA IP 2014 projects, let's present the relative "consumption" of the cost references by the SGA IP 2014 by deducting the SGA IP 2014 from the expected cost of PCP deployment as assessed within the PCP CBA:

SGA IP 2014 and the PCP CBA		
AF	SGA IP 2014 Costs (discounted)	% of PCP CBA Cost references
AF 1	€ 51.1 mln	31.6 %
AF 2 not 2.5	€ 94.7 mln	15.2 %
AF2 (2.5)	€ 24.5 mln	43.0 %
AF 3	€ 213.8 mln	45.6 %
AF 4	€ 22.2 mln	7.2%
AF 5	€ 152.2 mln	33.5%
AF 6	€ 0 mln	0.0%
Totals	€ 558.5 mln	22.4%

In this respect, SGA IP 2014 has consumed globally 22.4% of the overall estimated cost of the PCP. It has consumed above 45% of its costs for AF3, and above 30% of its reference costs for AF1, AF5 and the Safety net part of AF2. Otherwise, it has consumed around 15% of its reference costs for AF2 and only 7% for AF4. Those numbers shall be taken into account for the sake of respect of the PCP CBA boundaries.

Deducting SGA IP 2014 costs, the remaining expected costs for the DP 2015 gaps that would respect the PCP CBA boundaries are:

DP 2015 Gaps Expected costs	
AF	Cost references (discounted)
AF 1	€ 110.9 mln
AF 2 (not 2.5)	€ 529.2 mln
2.5 Safety Nets	€ 32.5 mln
AF 3 and 4	€ 542.3 mln
AF 5	€ 301.6 mln
AF 6	€ 420.4 mln
Total	€ 1.936.9 mln

Considering that both the DP as well as the awarded projects include the cost for the implementation of some prerequisites and enablers critical to PCP deployment, SDM will undertake an assessment of the impact of these additional costs compared to the baseline PCP CBA in the framework of DP2017.

On the benefit side, as explained in chapter 4.3.2, because of the limited number of projects in SGA IP 2014 and the necessary checks that should be made to ensure consistency in the SES framework (the national performance plans for instance), the benefits will not be further discussed. At this stage, let's assume that they are in line with the PCP CBA.

4.5 Next Steps

4.5.1 Awarded Implementation Projects: monitoring the performance expectations

Once Implementation Projects are awarded by INEA and kicked-off under SDM's coordination as a result of a CEF call, SDM shall monitor that projects are being executed in such a way that agreed performance expectations for those projects or threads of projects remain within reach: costs are contained within initial envelop and expected contributions to performance are expected at the same level over time.

In the case where monitoring would reveal that a project or a threads of projects drifts from its initially agreed performance expectations to the extent that it becomes useless or even detrimental to PCP's overall CBA, SDM would issue recommendations to EC and INEA to recover the situation after due consultation with the relevant implementing partners. As a last resort, CEF rules would apply.

The monitoring of the performance expectations will materialize through the Performance and CBA monitoring annex of the Execution Progress Report of the DP published in May 2016. This report will give a detailed analysis per thread of projects, for the implementation projects awarded as a result of the CEF Transport General Call 2014 and which are now in the execution phase.

4.5.2 Completed Implementation Projects: the final check

During projects or threads of projects execution, SDM can monitor that everything is on track so that initially agreed performance expectations remain reachable by projects' or threads' completion. This is what is called the monitoring of the performance.

After projects or threads of projects completion, SDM intends to perform a final check to "close the loop" both in terms of contribution to performance and CBA. Different means are identified, including real life cross-checks with measurement tools by Airspace Users, NM, ANSPs or airports, and, of course follow-up of actual SES performance publication.

Close cooperation with PRB will be essential in performing this final check and drawing relevant conclusions. Although clearly foreseen as an important step to secure the visibility on the performance contribution of SESAR, this part of the methodology is not yet defined.

To date, nine implementation projects⁴⁰ have been reported as completed under SGA IP 2014. The final check analysis done at this stage is as follows:

1. #120AF1: London Airspace Management Programme (LAMP) leaded by NATS. Project completed by December 2015. No benefit expected at this stage until a second phase is launched. Although expected for 2021, they are some doubts about its completion.
2. #115AF2: A-SMGCS Renewal of the Surface Movement Radar (BORA) by Munich Airport. The project was completed in December 2015. The expected Taxi Out Additional Time reduction is of 2%. First measurable improvements are expected from 2017 onwards. Other benefits are expected but not quantified. It is anticipated that the Performance Review Report in May 2017 would bring some elements of confirmation. In the meanwhile, the SDM, involving also the project manager, will try to get actual data to check the assumption.
3. #024AF2: SAIGA by AdP. The project was completed in December 2015. The expected Taxi In Additional Time reduction of 4% in Orly and CDG will improve the situation during adverse weather conditions, which has been evaluated to 25 days and 63 days per year, respectively in CDG and Orly. The SDM would check those expectations after one year of operations. . It is anticipated that the Performance Review Report in May 2017 would bring also some elements of confirmation.
4. #008AF2: External Gateway System (EGS) by Austrocontrol. Project completed in December 2015. No benefit expected.
5. #006AF5: ATM Data Quality (ADQ) by Austrocontrol. Completed Nov 2015. No benefit expected.
6. #127AF5: National WAN Infrastructure - CANDI-IP preparation project by NAVIAIR. Completed April 2015. No benefit expected.
7. #097AF2: LHR TBS (Time based separation). The project is finalized and first observations by British Airways and NATS are delivering enthusiastic improvements, which are much higher than initially expected (+100% or €50M cumulated benefits by 2030). This positive development is reasoned by the increasing number of days with strong wind conditions in the London area. Currently some airspace users in coordination with the airport, have planned to check the improvements by comparison with actual traffic data when the weather conditions would allow it.
8. #100AF2: LHR Safety Net related to A-SMGCS will be an enabler for upcoming projects, but no quantified benefit was assessed at this stage.
9. #030AF2: Equipment of Ground Vehicles related to A-SMGCS in NCE is a safety related project and no quantified benefit was assessed.

⁴⁰ Project 120AF1a and 120AF1b have been analyzed together, as they represent a split of a single implementation initiative, thus are presented as only one implementation initiative (120AF1). In such view, the results from project 135AF2a and 051AF1b are not displayed yet, as the respective complementing implementing project (135AF2b and 051AFa) have not completed yet.

Furthermore, Implementation Project 086AF2 has been completed in September.