



Performance Review Body Monitoring Report

Portugal - 2021

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1 OVERVIEW

1.1 Contextual information

National performance plan adopted following Commission Decision (EU) 2022/767 of 13 April 2022

List of ACCs 1
Lisbon ACC

Exchange rate (1 EUR=)
2017: 1 EUR
2021: 1 EUR

Main ANSP
• NAV Portugal (Continental)

No of airports in the scope of the performance plan:

- ≥80'K 2
- <80'K 8

Share of Union-wide:
• traffic (TSUs) 2021 3.0%
• en route costs 2021 2.0%

Other ANSPs
• Estado Maior da Força Aérea
• Estado Maior da Armada

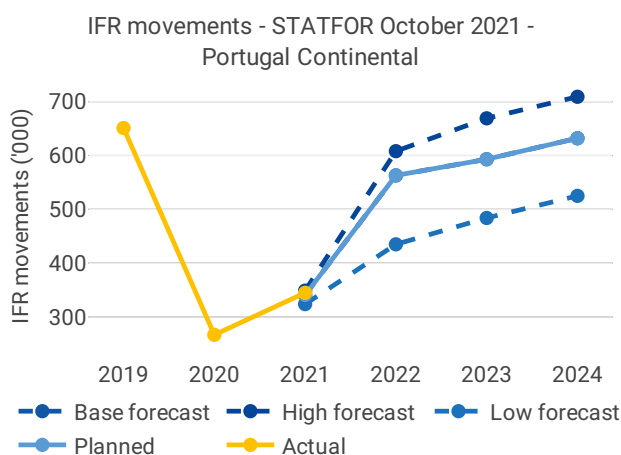
Share en route / terminal costs 2021 78% / 22%

MET Providers
• IPMA

En route charging zone(s)
Portugal Continental

Terminal charging zone(s)
Portugal

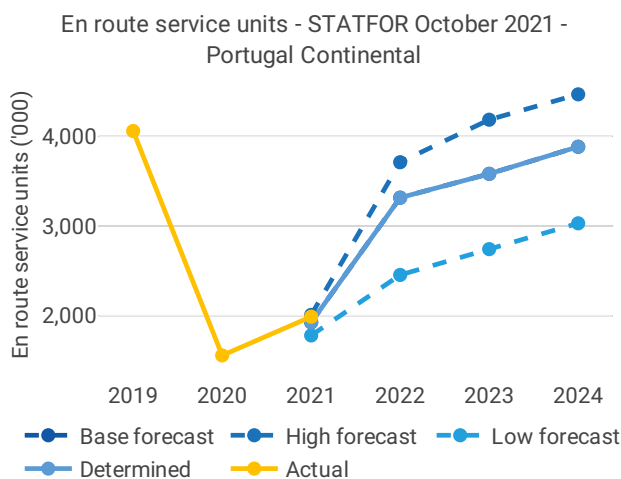
1.2 Traffic (En route traffic zone)



• Portugal recorded 345K actual IFR movements in 2021, +30% compared to 2020 (267K).

• Actual 2021 IFR movements were +1.3% above the plan (341K).

• Actual 2021 IFR movements represent 53% of the actual 2019 level (651K).

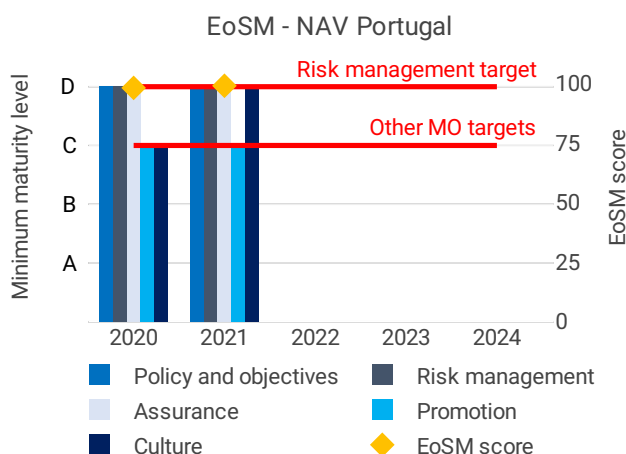


• Portugal recorded 1,988K actual en route service units in 2021, +28% compared to 2020 (1,556K).

• Actual 2021 service units were +3.3% above the plan (1,925K).

• Actual 2021 service units represent 49% of the actual 2019 level (4,060K).

1.3 Safety (Main ANSP)

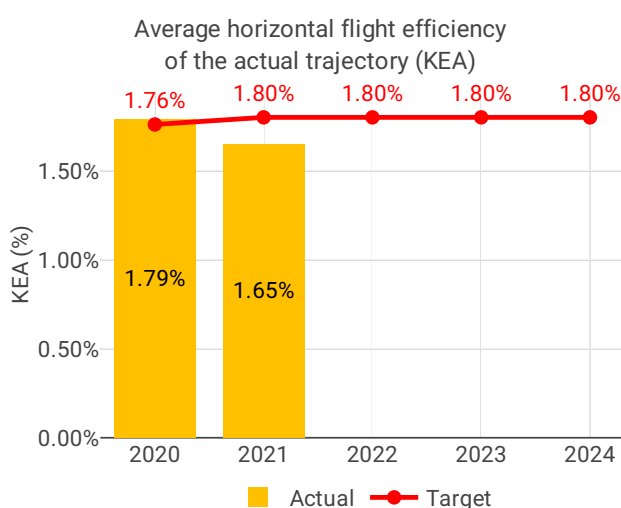


- NAV Portugal has continued the high safety performance and further exceeded the EoS M targets level in four management areas. NAV Portugal implemented continuous monitoring process with the development of new tools and indicators to ensure maintaining current safety performance.

- Portugal recorded stable performance with respect to safety occurrences. Rates increases relative to 2020, however rates in 2020 were low since no occurrences were reported. The NSA monitors the occurrences rate and implementation of specific measures through the regular audits, associated with the continuous supervision processes.

- NAV Portugal should improve its safety management by implementing automated safety data recording systems.

1.4 Environment (Member State)



- Portugal achieved a KEA performance of 1.65% compared to its target of 1.80% and contributed positively towards achieving the Union-wide target. KEA improved by 0.14 p.p. compared to 2020.

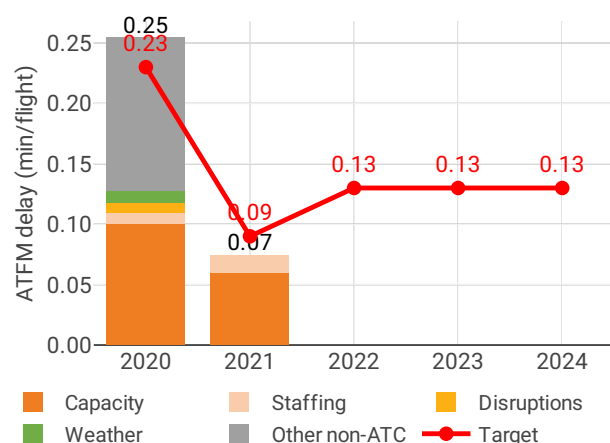
- SCR remained at similar levels to 2020, while KEP improved by 3%.

- The share of CDO flights decreased by two p.p..

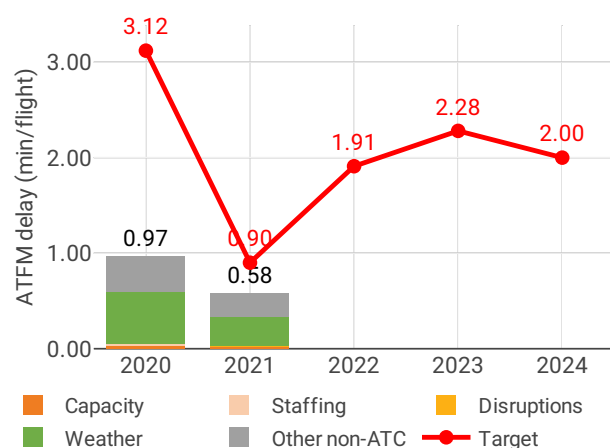
- Both additional time in terminal airspace and additional taxi out time have improved by 23% and by 16% respectively.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



Average arrival ATFM delay per flight by delay groups



low 2019 levels.

- Portugal registered 0.07 minutes of average en route ATFM delay per flight during 2021, thus meeting the local breakdown value of 0.09. The two main delay causes in Lisbon ACC were ATC capacity and ATC staffing during summer 2021.

- Delays should be considered in the context of lower traffic: in Portugal, IFR movements in 2021 were 47% lower than in 2019.

- Traffic is expected to grow, with 2019 levels likely being reached in 2023 (in high growth scenario) or 2024 (in base growth scenario) in Lisbon FIR. A significant increase in the number of ATCOs in OPS is planned in Lisbon ACC by the end of RP3.

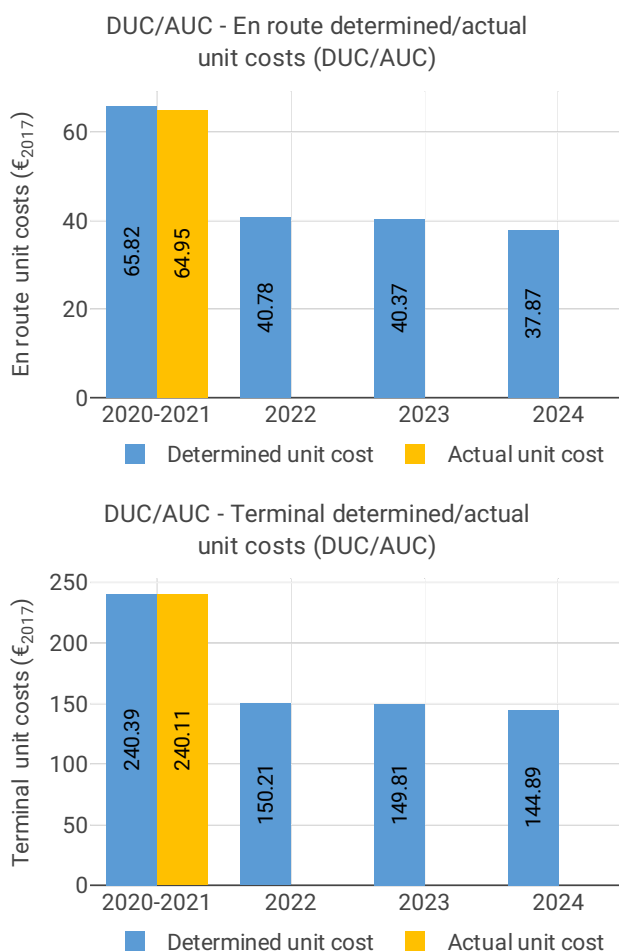
- Delays were highest between July and December, mainly due to ATC Capacity and Staffing.

- The share of delayed flights with delays longer than 15 minutes in Portugal decreased by 12.38 p.p. compared to 2020 and was lower than 2019 values.

- The yearly total of sector opening hours in Lisbon ACC was 51,972, showing an 8.1% increase compared to 2020. Sector opening hours are 24.8% below 2019 levels.

- Lisbon ACC registered 6.06 IFR movements per one sector opening hour in 2021, being 30.9% below 2019 levels.

1.6 Cost-efficiency (En route/Terminal charging zone(s))



- The en route 2020/2021 actual unit cost of Portugal was 64.95 €2017, -1.3% lower than the determined unit cost (65.82 €2017). The terminal 2020/2021 actual unit cost was 240.11 €2017, in line with the determined unit cost (240.39 €2017).

- The en route 2021 actual service units (1,988K) were +3.3% higher than determined (1,925K).

- In 2021, Portugal increased total costs by +1.1 M€2017 (+0.9%) compared to determined costs. The increase was driven by an increase of +7.0% in staff costs (+5.4 M€2017) due to an increase in pension fund costs, contingent liabilities, and non-materialised capitalised work.

- All the other cost categories decreased compared to determined. Cost of capital decreased by -34% (-1.1 M€2017) due to a postponement in the implementation of the new ATM System.

- NAV Portugal spent 13 M€2017 in 2021 related to costs of investments, -3.0% less than determined (14 M€2017), due to a postponement in the implementation of the new ATM System (TOPLIS – TOPSKY) as requested by the Network Manager in order to avoid simultaneous transitions of ATM systems with the Reims and Marseille ACCs (also planned for the beginning of 2022).

- The en route actual unit cost incurred by users in 2020/2021 was 66.27€, while the terminal actual unit cost incurred by users was 246.22€.

2 SAFETY - PORTUGAL

2.1 PRB monitoring

- NAV Portugal has continued the high safety performance and further exceeded the EoSM targets level in four management areas. NAV Portugal implemented continuous monitoring process with the development of new tools and indicators to ensure maintaining current safety performance.

- Portugal recorded stable performance with respect to safety occurrences. Rates increases relative to 2020, however rates in 2020 were low since no occurrences were reported. The NSA monitors the occurrences rate and implementation of specific measures through the regular audits, associated with the continuous supervision processes.

- NAV Portugal should improve its safety management by implementing automated safety data recording systems.

2.2 Effectiveness of Safety Management (EoSM) (KPI#1)



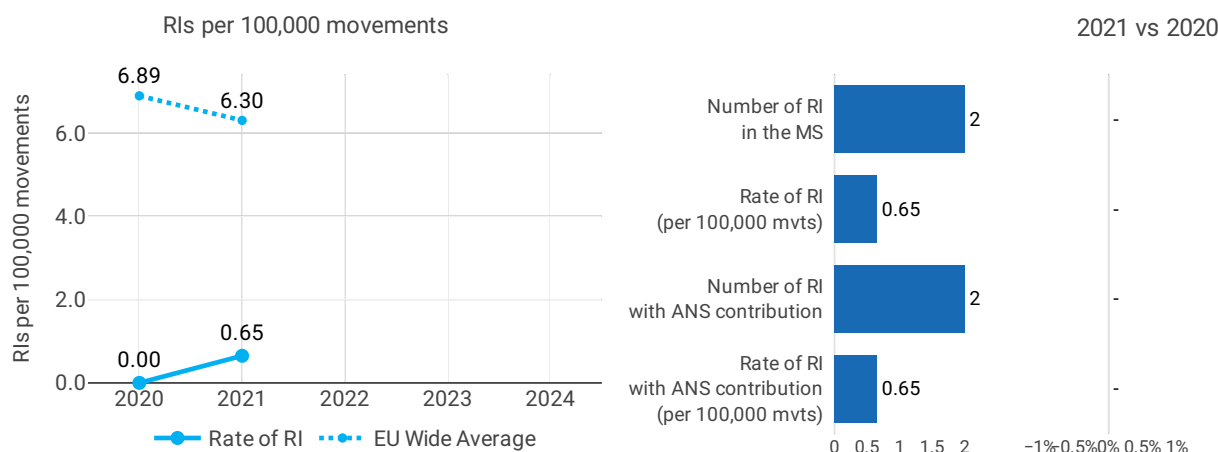
Focus on EoSM

All five EoSM components of the ANSP meet, or exceed, already the 2024 target level. Improvements in maturity has been observed with respect to 2020 in “Safety Culture”.

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

2.3 Safety occurrences

2.3.1 Rate of runway incursions (RIs) (PI#1)



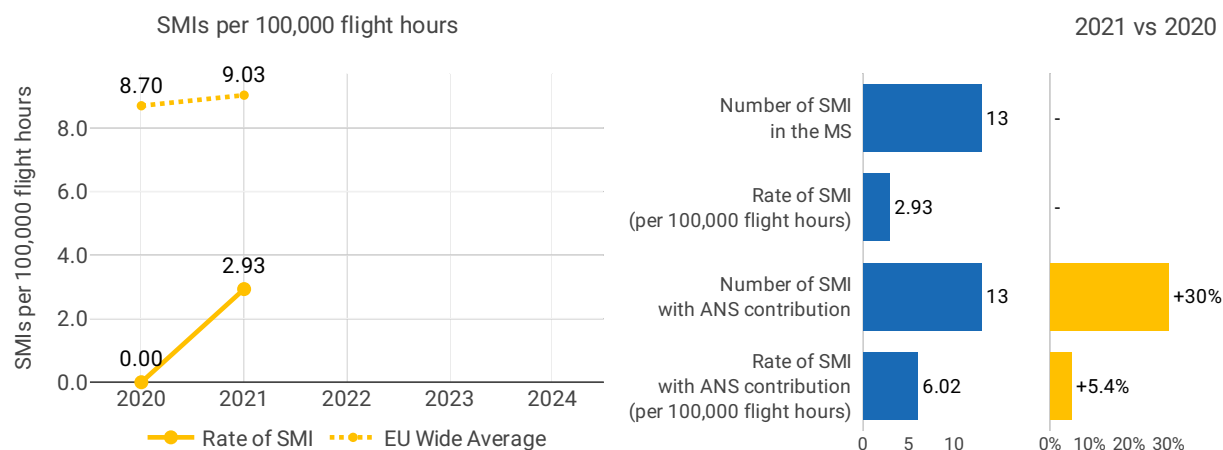
Rate of RIs per 100,000 airport movements - Portugal

#	Airport name	APT movements	Number of RI	Rate RI per 100,000
1	Lisbon	116,116	0	0.00
2	Cascais	56,793	1	1.76
3	Porto	54,179	1	1.85
4	Faro	35,414	0	0.00
5	Ponta Delgada	17,508	0	0.00
6	Madeira	17,387	0	0.00
7	Horta	4,640	0	0.00
8	Porto Santo	3,065	0	0.00
9	Santa Maria	2,698	0	0.00
10	Flores	1,689	0	0.00
11	Montijo	NA	NA	NA

Focus on runway incursions

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

2.3.2 Rate of separation minima infringements (SMIs) (PI#2)



Rate of SMI with ANS contribution per 100,000 flight hours

#	ANSP	Flight hours					Number of SMIs				
		2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	NAV Portugal	175,009	215,958	NA	NA	NA	10	13	NA	NA	NA

#	ANSP	Rate of SMI per 100,000 flight hours					% variation in rate of SMIs				
		2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	NAV Portugal	5.7	6.0	NA	NA	NA	NA	+5%	NA	NA	NA

Focus on separation minima

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

2.3.3 Quality of occurrences reporting

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

2.4 Use of automated safety data recording system (ASDRS) (PI#3)

2021	
For RIs	For SMIs
X	X

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

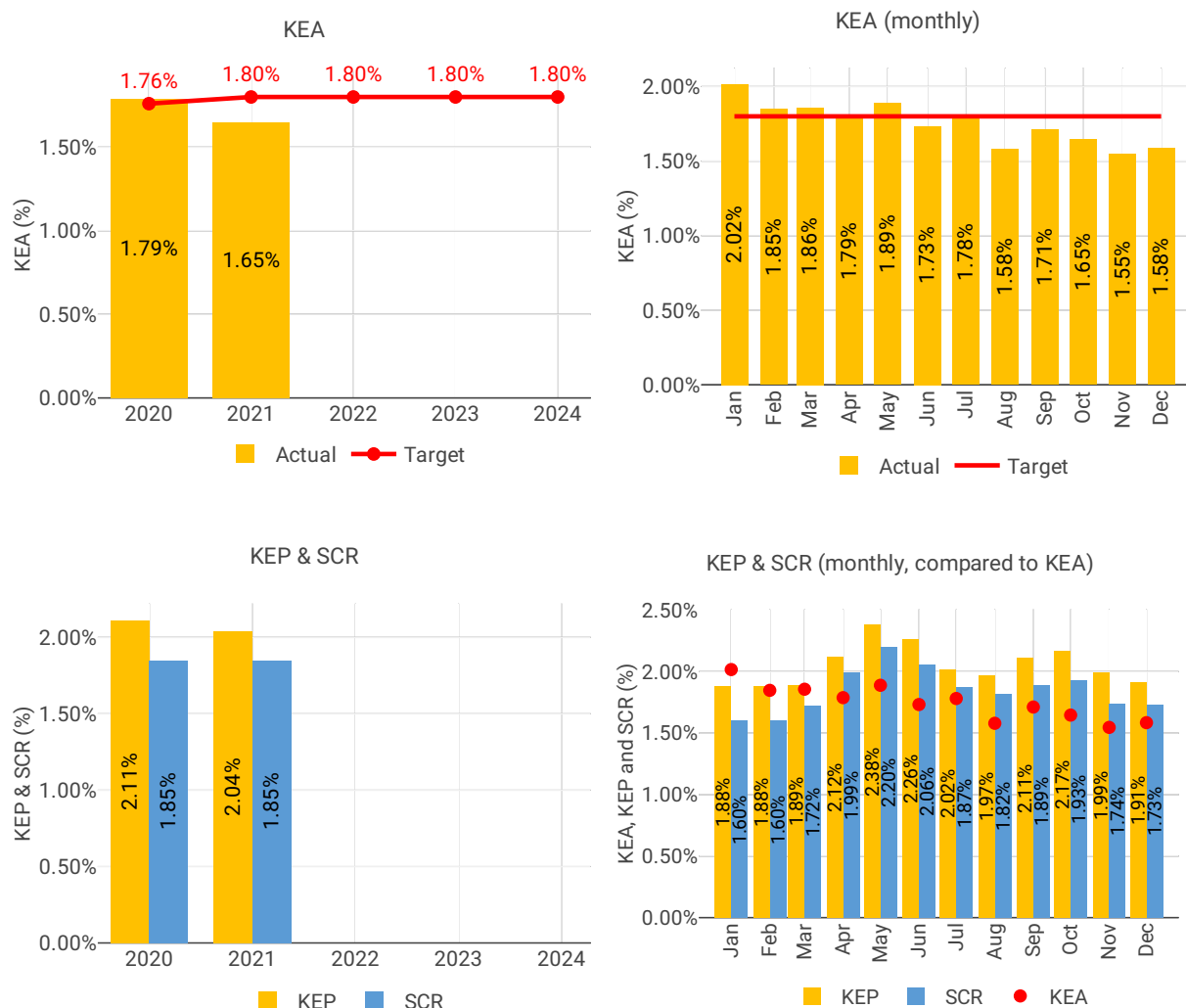
3 ENVIRONMENT - PORTUGAL

3.1 PRB monitoring

- Portugal achieved a KEA performance of 1.65% compared to its target of 1.80% and contributed positively towards achieving the Union-wide target. KEA improved by 0.14 p.p. compared to 2020.
- SCR remained at similar levels to 2020, while KEP improved by 3%.
- The share of CDO flights decreased by two p.p..
- Both additional time in terminal airspace and additional taxi out time have improved by 23% and by 16% respectively.

3.2 En route performance

3.2.1 Horizontal flight efficiency of the actual trajectory (KEA) (KPI#1), of the last filed flight plan (KEP) (PI#1) & shortest constrained route (SCR) (PI#2)



3.3 Terminal performance

3.3.1 Additional taxi-out time (AXOT) (PI#3) & Arrival Sequencing and Metering Area (ASMA) time (PI#4)



Focus on ASMA & AXOT

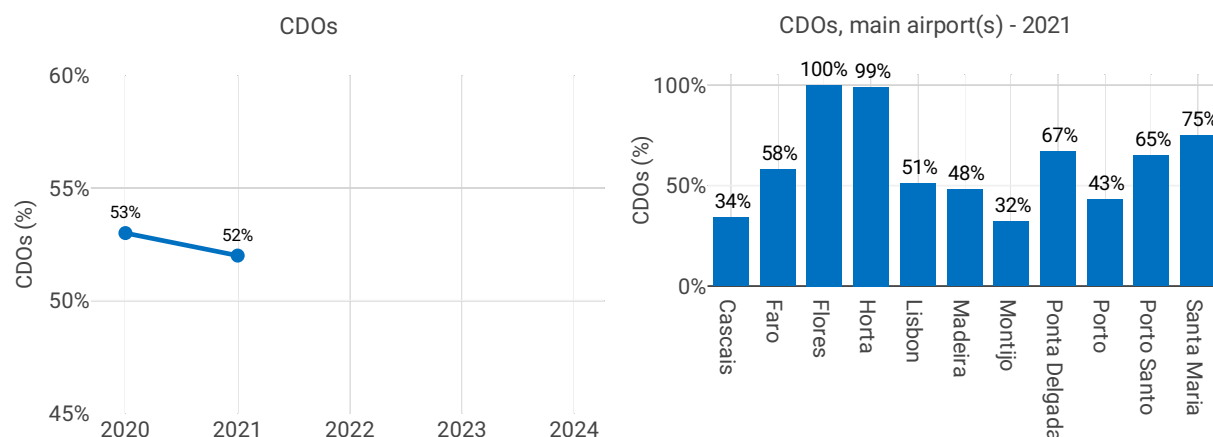
AXOT

Additional taxi-out times at Lisbon (LPPT; 2019: 3.96 min/dep.; 2020: 2.68 min/dep.; 2021: 1.93 min/dep.) decreased for the second year in a row. This decrease is driven by the performance during the first 4 months, considerably better than in 2020. However, in the second part of the year the additional taxi-out times increased in line with the traffic recovery, averaging 2.21 min/arr. between June and December. A similar monthly evolution with respect to 2020 was observed at Porto, where the additional taxi-out times in October and December averaged 2.54 min/dep..

ASMA

Like the additional taxi-out times, the additional times in the terminal airspace at Lisbon (LPPT; 2019: 2.75 min/arr.; 2020: 1.51 min/arr.; 2021: 1.15 min/arr.) further decreased in 2021 due to the much better performance in the first 3 months of the year 2021 compared with 2020. At Porto (LPPR; 2019: 1.34 min/arr.; 2020: 0.61 min/arr.; 2021: 0.57 min/arr.) the additional ASMA times were around 0.50 min/arr. for most of the year, reaching or exceeding 1 min/arr. only during May and December.

3.3.2 Share of arrivals applying continuous descent operations (CDOs) (PI#5)



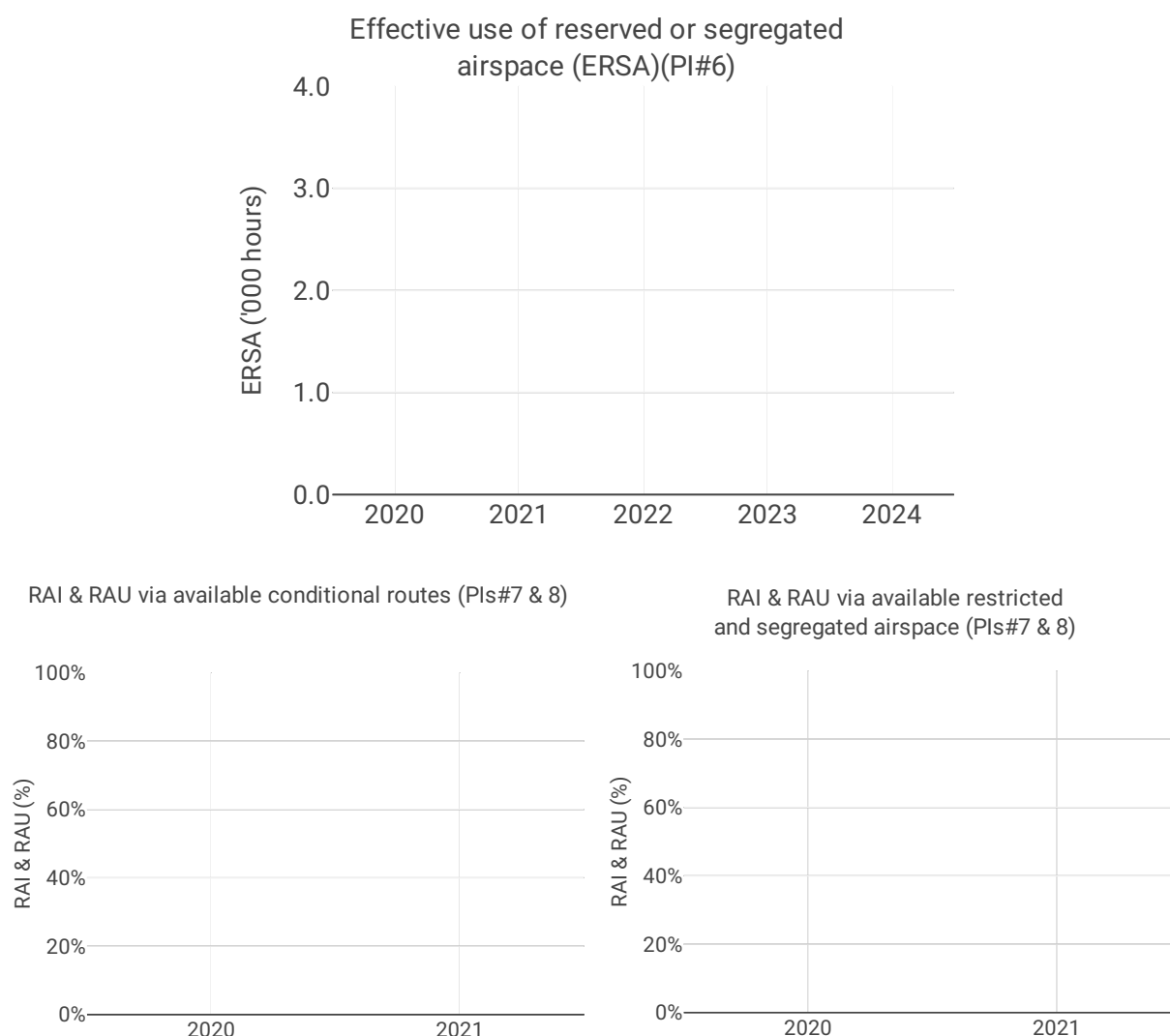
Focus CDOs

All airports have shares of CDO flights (well) above the overall RP3 value in 2021 (30.5%), ranging from 33.5% (Cascais - LPCS) to 100.0% (Flores - LPFL). It should however be noted that Flores and Horta had a limited number of flights in 2021: respectively 1 and 158 arrivals. All airports that were monitored in 2020 have a reduction of the share of CDO flights, except for Madeira, which had an increase of 1.3 percentage points. The monthly values at Cascais decreased significantly from 50.9% in March to 26.1% in December. According to the Portuguese monitoring report: *CDO is the basis for the arrival route structuring within Lisbon FIR. Nonetheless, most of the times a shorter route is provided to the arriving traffic. Since these shorter routes are not covered by the STARs, the resulting final CDO percentage is negatively affected, even though the traffic is flying more efficient and shorter routes.*

Airport level

Airport Name	Additional taxi-out time (PI#3)					Additional ASMA time (PI#4)					Share of arrivals applying CDO (PI#5)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Faro	0.27	0.65	NA	NA	NA	0.33	0.19	NA	NA	NA	62%	58%	NA	NA	NA
Lisbon	2.68	1.93	NA	NA	NA	1.51	1.15	NA	NA	NA	55%	51%	NA	NA	NA
Porto	1.45	1.67	NA	NA	NA	0.61	0.57	NA	NA	NA	46%	43%	NA	NA	NA
Cascais	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	42%	34%	NA	NA	NA
Madeira	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	46%	48%	NA	NA	NA
Montijo	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30%	32%	NA	NA	NA
Porto Santo	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	68%	65%	NA	NA	NA
Santa Maria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	75%	NA	NA	NA
Flores	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100%	NA	NA	NA
Horta	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99%	NA	NA	NA
Ponta Delgada	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	67%	NA	NA	NA

3.4 Civil-Military dimension



Focus on Civil-Military dimension

Update on Military dimension of the plan

Information from 2020 report repeated. No new information provided as an update.

Military - related measures implemented or planned to improve capacity

Environment: The military are updating the CNS equipment to be able to fly on more efficient routes, especially when operating as General Air Traffic. In this sense, several fleets are being modified to comply with the latest CNS requirements and new aircraft are scheduled for delivery soon. Regarding airspace design, Portugal is currently undergoing a major restructuring of its airspace structures in order to improve its overall capacity and adequacy to both military and civil requirements.

Capacity: As already mentioned in the environment KPA, a major airspace restructuring is currently ongoing in Portugal, involving all the main stakeholders, in order to accommodate for both the military and civil requirements.

Initiatives implemented or planned to improve PI#6

No data available.

Initiatives implemented or planned to improve PI#7

LARA interfaces and associated statistic tools are in the final stages of implementation by the ANSP.

Initiatives implemented or planned to improve PI#8

LARA interfaces and associated statistic tools are in the final stages of implementation by the ANSP.

4 CAPACITY - PORTUGAL

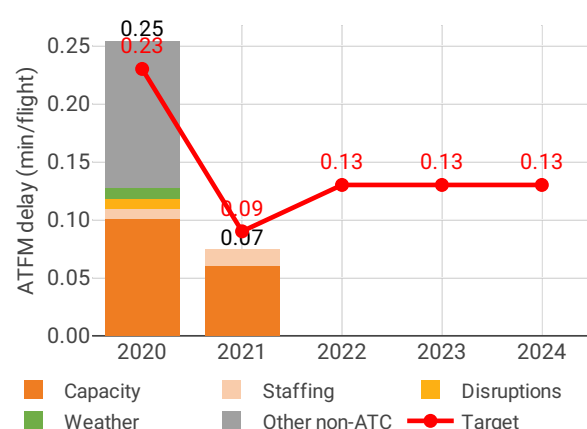
4.1 PRB monitoring

- Portugal registered 0.07 minutes of average en route ATFM delay per flight during 2021, thus meeting the local breakdown value of 0.09. The two main delay causes in Lisbon ACC were ATC capacity and ATC staffing during summer 2021.
- Delays should be considered in the context of lower traffic: in Portugal, IFR movements in 2021 were 47% lower than in 2019.
- Traffic is expected to grow, with 2019 levels likely being reached in 2023 (in high growth scenario) or 2024 (in base growth scenario) in Lisbon FIR. A significant increase in the number of ATCOs in OPS is planned in Lisbon ACC by the end of RP3.
- Delays were highest between July and December, mainly due to ATC Capacity and Staffing.
- The share of delayed flights with delays longer than 15 minutes in Portugal decreased by 12.38 p.p. compared to 2020 and was lower than 2019 values.
- The yearly total of sector opening hours in Lisbon ACC was 51,972, showing an 8.1% increase compared to 2020. Sector opening hours are 24.8% below 2019 levels.
- Lisbon ACC registered 6.06 IFR movements per one sector opening hour in 2021, being 30.9% below 2019 levels.

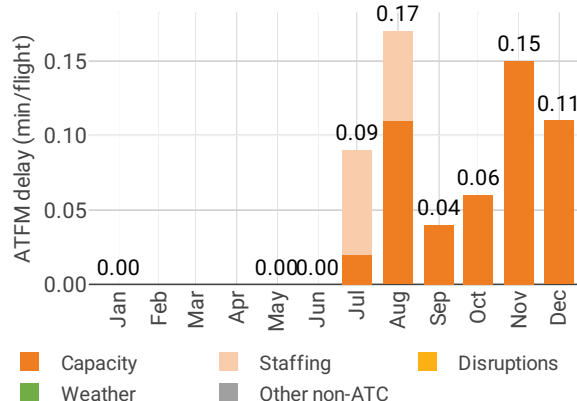
4.2 En route performance

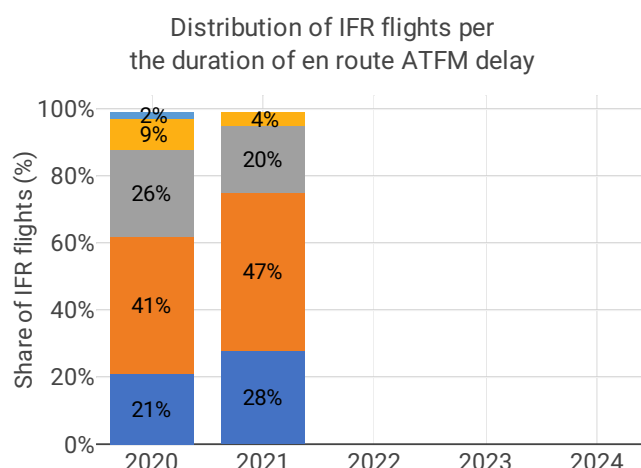
4.2.1 En route ATFM delay (KPI#1)

Average en route ATFM delay per flight by delay groups



Monthly distribution of en route ATFM delay by delay groups - 2021





Focus on en route ATFM delay

Summary of capacity performance

Portugal experienced an increase in traffic from 311k flights in 2020 to 401k flights in 2021. However, traffic levels were still substantially below the 733k flights in 2019.

In 2021, Portugal had 26k minutes of ATFM delay - with approximately 80% attributed to ATC capacity and 20% to ATC staffing.

NSA's assessment of capacity performance

During the first quarter of 2021 the traffic levels were still highly affected by the COVID 19 pandemic restrictions, but increased steadily to reach levels close to those of 2019 (only 16% below). Thus, even though the level of achievement has been very close to the required target, the unexpected continuous traffic increase throughout the year led to a final result that could lead to an interpretation of a very small annual variation. It is important not to overlook the fact that the target initially set was derived from a traffic forecast that was expected to still show COVID 19 limitations. However, these were not as relevant as expected, thus the forecast traffic numbers were underestimated.

Monitoring process for capacity performance

ANAC has established a procedure to monitor capacity that consists in quarterly reports by the ANSP and follow-up meetings to establish the need of corrective measures if and whenever necessary.

Capacity planning

The initially low traffic volumes of 2021 combined with rigorous planning of ATCO rostering (in order to balance the operational and training needs of the new system), created the conditions for the ANSP not to exceed the target set for 2021. Nonetheless, at some points when the traffic was close to the 2019 values, the ANSP was under pressure to accommodate traffic demand.

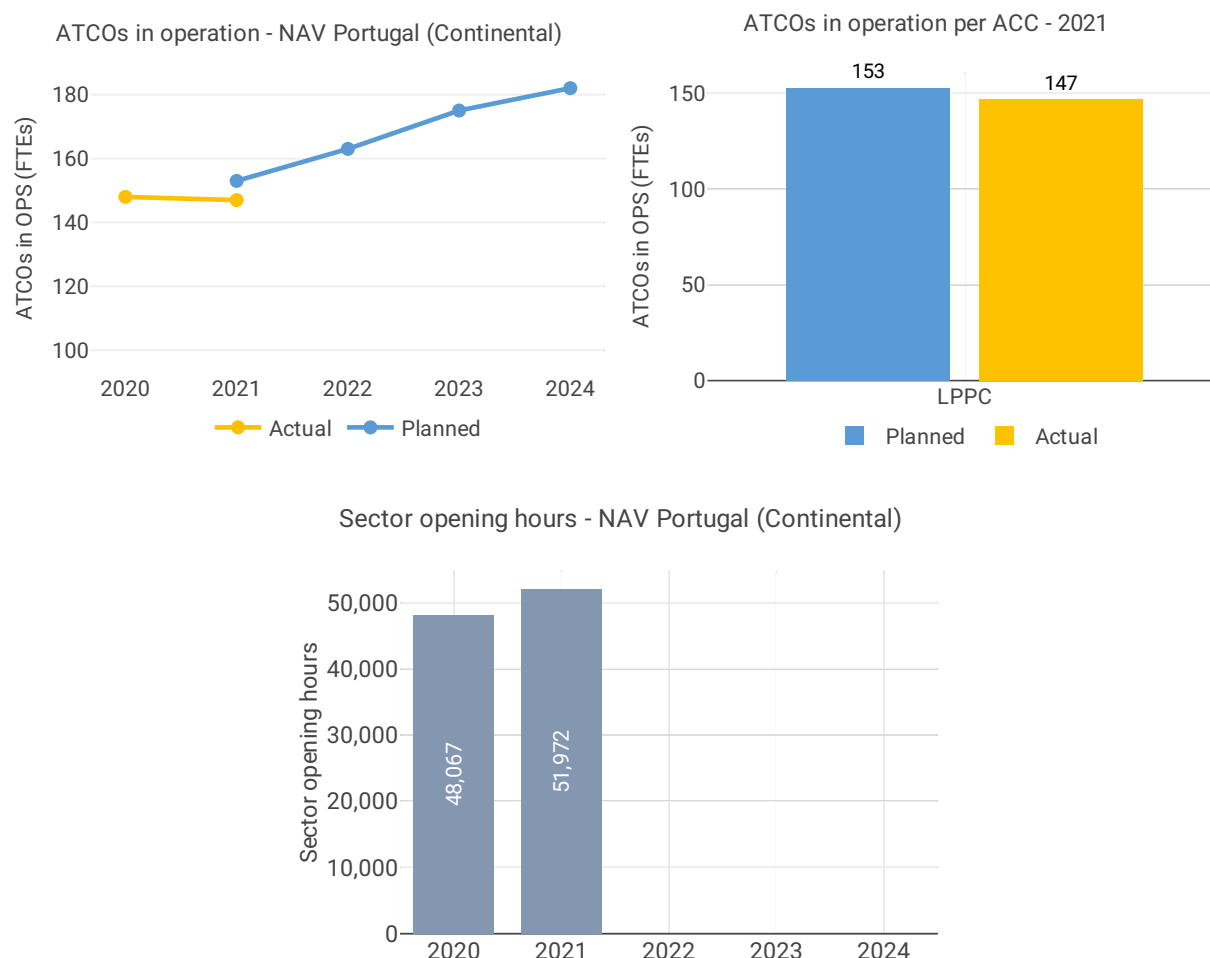
Application of Corrective Measures for Capacity (if applicable)

The recovery in traffic levels expected to occur in the summer of 2022 in the Lisbon FIR, and the transition to the new ATM System planned until October of 2022 together pose serious risks to the proposed performance targets. The ATM System transition risk had been identified and is being managed by NAV Portugal through a thorough preparation process. However, together with potentially higher than expected levels of traffic the risks associated are exponentiated.

In order to minimize potential impacts NAV Portugal is taking several measures, as reinforcing training hours and anticipating the implementation of system components that allow higher capacity. Notwithstanding, with the higher traffic the risks also increase.

The NSA has been supervising closely the ATM System transition process, in particular the shadow operation which started in March.

4.2.2 Other indicators



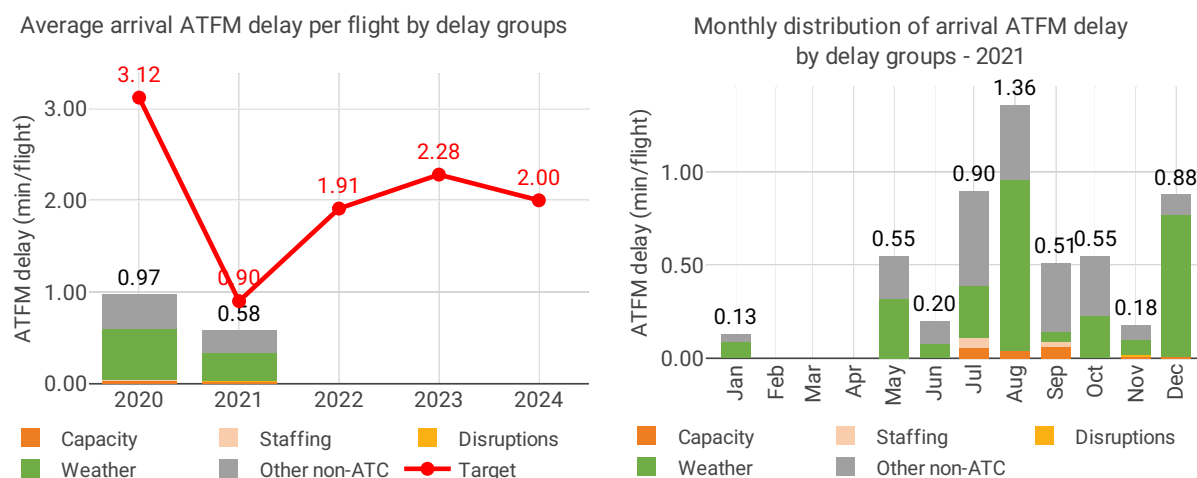
Focus on ATCOs in operations

The delta between the expected number of new ATCOs and the actual final figure is mainly the result of three factors:

- 1 -A longer period of training caused by the effect of the pandemic that, not only forced several interruptions in the training process and thus prolonging the normal training period, but also created a non-standard traffic demand, thus making it more difficult to qualify the ATCOs with the required proficiency level to cope with 2019 traffic numbers. As such 3 ATCOs began working in the OPS room in January and February of 2022, instead of 2021.
- 2 -The early retirement of several ATCOs, due to health reasons and lack of motivation associated with the traffic reduction and also due to the near implementation of a new ATM system;
- 3 - Student ATCO failing their final rating evaluation (1 student ATCO failed).

4.3 Terminal performance

4.3.1 Arrival ATFM delay (KPI#2)



Focus on arrival ATFM delay

The scope of RP3 monitoring for Portugal comprises 10 airports in 2020. However, in accordance with IR (EU) 2019/317 and the traffic figures, only two of these airports (Lisbon (LPPT) and Porto (LPPR)) must be monitored for pre-departure delays. The Airport Operator Data Flow, necessary for the monitoring of these pre-departure delays, is correctly established where required and the monitoring of all capacity indicators can be performed. Nevertheless, the quality of the reporting from Porto does not allow for the calculation of the ATC pre-departure delay, with more than 60% of the reported delay not allocated to any cause. Traffic at these 10 airports, that had increased considerably during RP2, and regardless of an increase versus 2020 of 32% was still in 2021 42% lower than in 2019.

Average arrival ATFM delays in 2021 was 0.58 min/arr, compared to 0.97 min/arr in 2020. ATFM slot adherence has improved (2021: 96.1%; 2020: 95.3%).

The national average arrival ATFM delay at Portuguese airports in 2021 was 0.58min/arr, significantly lower than the 0.97 min/arr of 2020 and drastically lower than the 2.76 min/arr in 2019. At airport level, only Lisbon and Porto registered delays (Madeira observed only marginal delays)

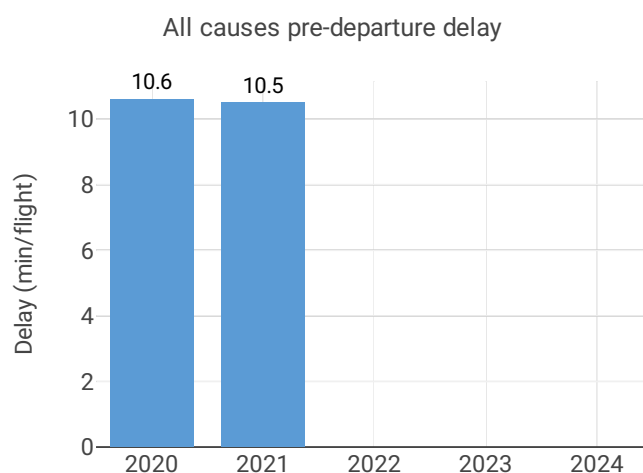
At Porto (LPPR; 2019: 3.09 min/arr; 2020: 0.77 min/arr; 2021: 2.14 min/arr) delays have significantly increased with respect to the previous year, concentrated in the period May to December and attributed mostly to weather (56%) and aerodrome capacity (39%). Lisbon (LPPT; 2019: 4.13 min/arr; 2020: 1.72 min/arr; 2021: 0.28 min/arr) on the other hand has drastically decreased the delays. 40% of these delays were attributed to weather, 28% to aerodrome capacity and 13% to airspace management issues.

According to the Portuguese monitoring report: *The initially low traffic figures during 2021 were dully handled at airport level, particularly by Lisbon airport, which was the main source of delays before the pandemic. However, when traffic numbers approached those of 2019, the airport infrastructure, once more with emphasis for Lisbon, was under pressure to accommodate the demand. In the Lisbon airport the expectation of traffic recovery for the summer of 2022 is now higher than when the Performance Plan was presented in October 2021. In particular stakeholders are expecting traffic levels to be close to 2019. Considering that the Lisbon airport is highly constrained in terms of infrastructure capacity, the performance issues witnessed in 2019 may come back in 2022. On the ANSP side, a plan to minimize the impact of the ATM System transition is being developed, including the anticipation of implementation of the new system tools that allow higher approach capacity.*

The Portuguese NSA developed an action plan to prepare the summer of 2022 encompassing all civil aviation stakeholders, which is underway. The action plan includes most of the Portuguese airports, although the Lisbon airport given its circumstances is key in this process. The traffic numbers for 2021 were still highly affected by the aftermath of the COVID19 pandemic, thus not indicative of the real demand on normal conditions.

The provisional national target on arrival ATFM delay in 2021 was met. In accordance with Article 3 (3) (a) of Implementing Regulation (EU) 2020/1627: The incentive scheme shall cover only the calendar years 2022 to 2024.

4.3.2 Other terminal performance indicators (PI#1-3)



Airport level

Airport name	Avg arrival ATFM delay (KPI#2)					Slot adherence (PI#1)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Cascais	NA	NA	NA	NA	NA	82.6%	88.9%	NA%	NA%	NA%
Faro	0.00	0.00	NA	NA	NA	95.8%	94.3%	NA%	NA%	NA%
Horta	NA	NA	NA	NA	NA	93.8%	90.9%	NA%	NA%	NA%
Lisbon	1.72	0.28	NA	NA	NA	96.5%	98.8%	NA%	NA%	NA%
Madeira	NA	0.03	NA	NA	NA	93.2%	93.7%	NA%	NA%	NA%
Montijo	NA	NA	NA	NA	NA	0.0%	50.0%	NA%	NA%	NA%
Ponta Delgada	NA	NA	NA	NA	NA	98.2%	97.6%	NA%	NA%	NA%
Porto	0.77	2.14	NA	NA	NA	93.4%	93.5%	NA%	NA%	NA%
Porto Santo	NA	NA	NA	NA	NA	92.9%	97.4%	NA%	NA%	NA%
Santa Maria	NA	NA	NA	NA	NA	100.0%	100.0%	NA%	NA%	NA%

Airport name	ATC pre departure delay (PI#2)					All causes pre departure delay (PI#3)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Cascais	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Faro	0.09	0.58	NA	NA	NA	8.2	8.5	NA	NA	NA
Horta	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lisbon	2.14	1.22	NA	NA	NA	12.0	11.0	NA	NA	NA
Madeira	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Montijo	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ponta Delgada	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Porto	0.26	0.25	NA	NA	NA	9.2	10.7	NA	NA	NA
Porto Santo	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Santa Maria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Focus on performance indicators at airport level

ATFM slot adherence

With the drastic drop in traffic, the share of regulated departures from Portuguese airports virtually disappeared until July 2021. Most Portuguese airports showed adherence around or above 90%. The national average was 96.1%, an improvement with respect to 2020's performance (95.3%). With regard to the 3.9% of flights that did not adhere, 3% was early and 0.9% was late.

ATC pre-departure delay

The performance at Lisbon, the only Portuguese airport where this indicator can be calculated has further improved with respect to the previous years (LPPT; 2019: 4.16 min/dep.; 2020: 2.13 min/dep.; 2021: 1.22 min/dep.) and even if it increased in the second half of 2021, it was lower than the 2019 values. Nevertheless, this delay is still the highest in the SES area. The quality of the airport data reported by Porto was too low, preventing the calculation of this indicator for this airport, but the quality of the reporting has improved in the second half of 2021 alongside the traffic recovery.

All causes pre-departure delay

The total (all causes) delay in the actual off block time at Lisbon decreased in 2021 (LPPT: 2020: 12.02 min/dep.; 2021: 11.03 min/dep.) and increased at Porto (LPPR: 2020: 9.15 min/dep.; 2021: 10.70 min/dep.). The higher delays for Lisbon were observed in the second part of the year, while the situation at Porto was changing from month to month registering the highest delays in August (16 min/dep.).

According to the Portuguese monitoring report: *The traffic numbers for 2021 were still highly affected by the aftermath of the COVID19 pandemic, thus not indicative of the real demand on normal conditions.*

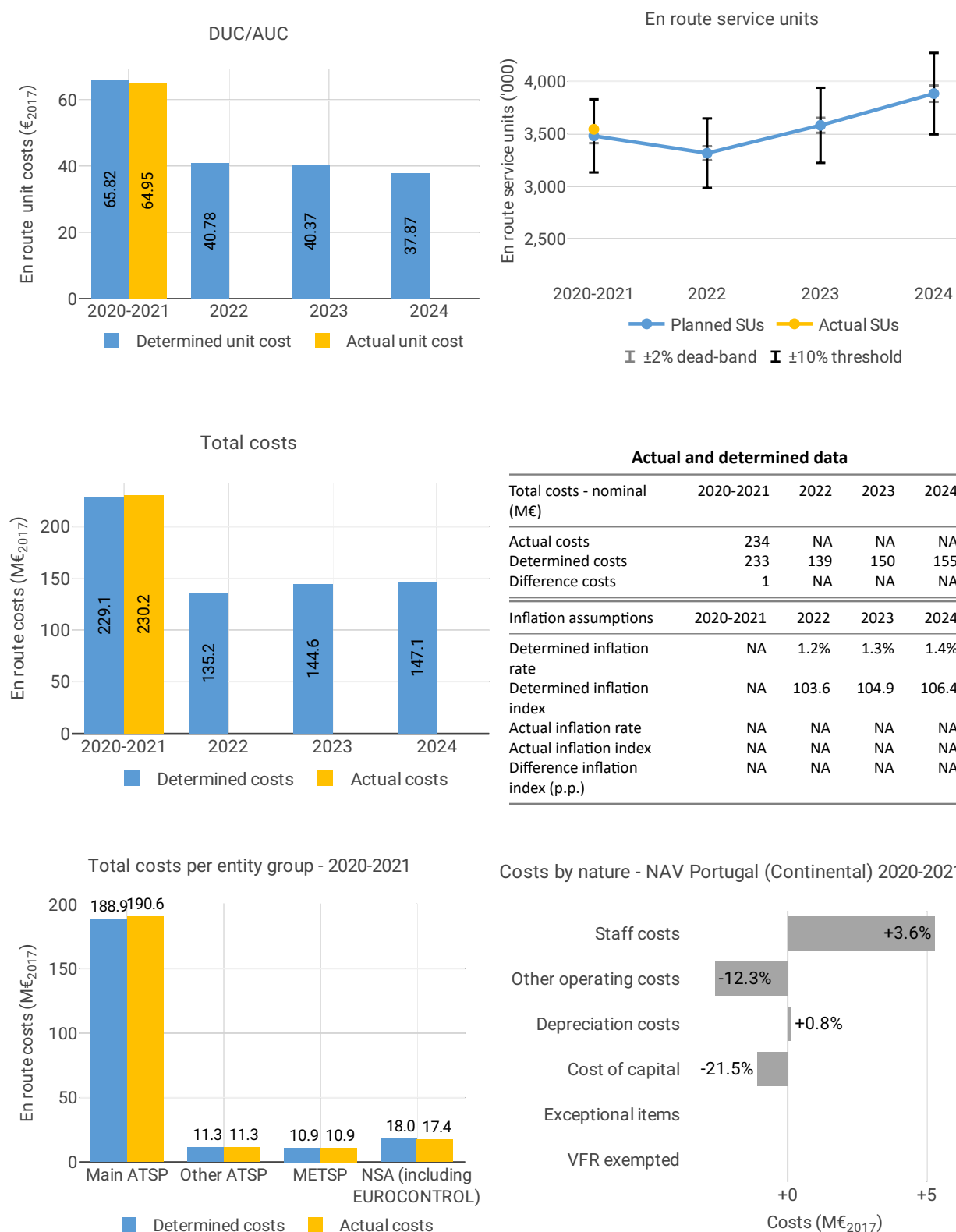
5 COST-EFFICIENCY - PORTUGAL

5.1 PRB monitoring

- The en route 2020/2021 actual unit cost of Portugal was 64.95 €2017, -1.3% lower than the determined unit cost (65.82 €2017). The terminal 2020/2021 actual unit cost was 240.11 €2017, in line with the determined unit cost (240.39 €2017).
- The en route 2021 actual service units (1,988K) were +3.3% higher than determined (1,925K).
- In 2021, Portugal increased total costs by +1.1 M€2017 (+0.9%) compared to determined costs. The increase was driven by an increase of +7.0% in staff costs (+5.4 M€2017) due to an increase in pension fund costs, contingent liabilities, and non-materialised capitalised work.
- All the other cost categories decreased compared to determined. Cost of capital decreased by -34% (-1.1 M€2017) due to a postponement in the implementation of the new ATM System.
- NAV Portugal spent 13 M€2017 in 2021 related to costs of investments, -3.0% less than determined (14 M€2017), due to a postponement in the implementation of the new ATM System (TOPLIS – TOPSKY) as requested by the Network Manager in order to avoid simultaneous transitions of ATM systems with the Reims and Marseille ACCs (also planned for the beginning of 2022).
- The en route actual unit cost incurred by users in 2020/2021 was 66.27€, while the terminal actual unit cost incurred by users was 246.22€.

5.2 En route charging zone

5.2.1 Unit cost (KPI#1)



Focus on unit cost

AUC vs. DUC

In the combined year 2020-2021, the en route AUC was -1.3% (or -0.87€2017) lower than the planned DUC. This results from the combination of higher than planned TSUs (+1.8%) and higher than planned en-route costs in real terms but in a lesser proportion (+0.5%, or +1.1 M€2017).

En route service units

The difference between actual and planned TSUs (+1.8%) falls within the $\pm 2\%$ dead band. Hence the resulting additional en-route revenue is kept by the ANSPs.

En route costs by entity

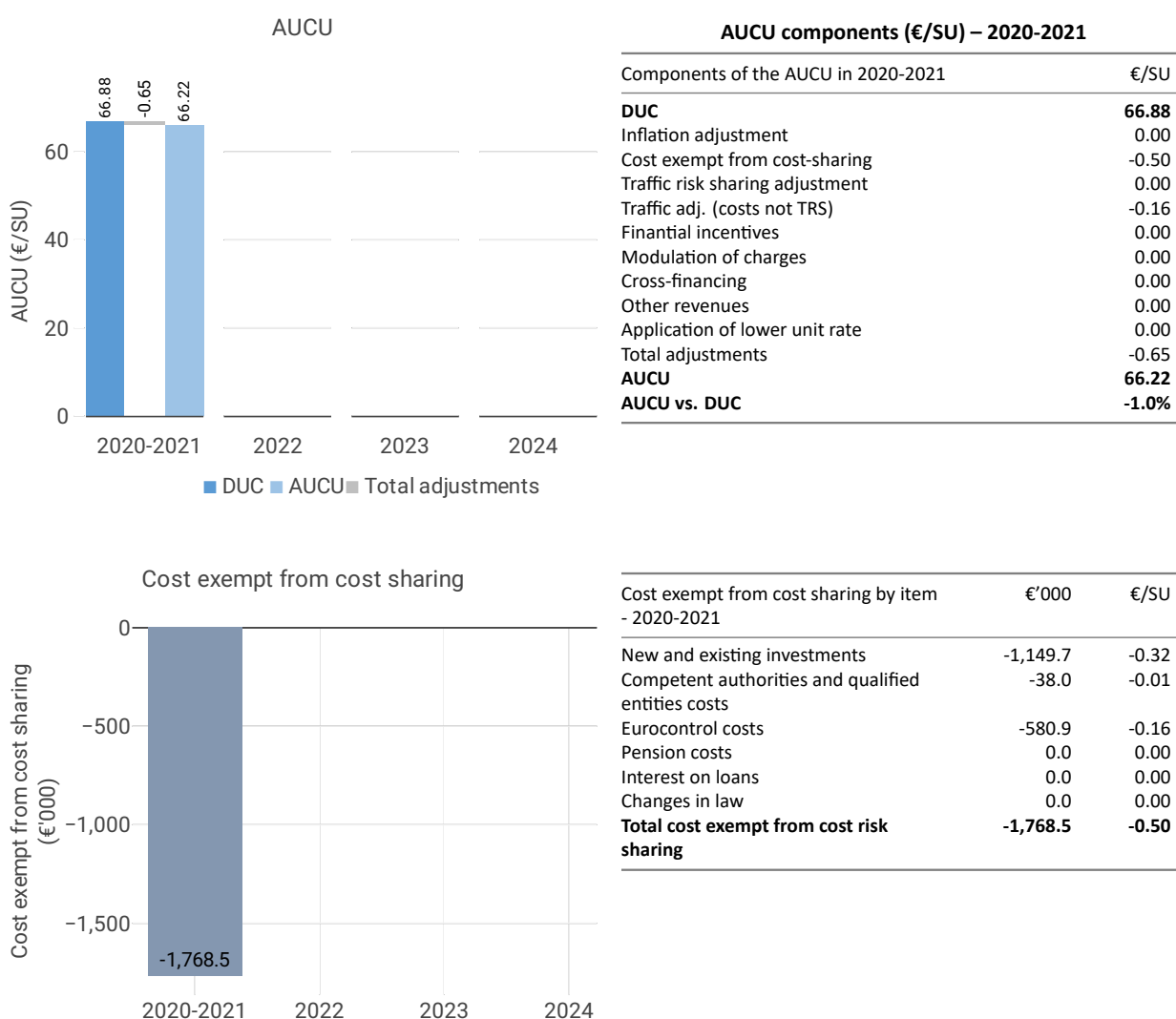
Actual real en route costs are $+0.5\%$ (+1.1 M€2017) higher than planned. This is driven by the main ANSP, NAV Portugal ($+0.9\%$, or +1.7 M€2017), while the costs of the SAR provider and the MET provider are in line with the plan ($+0.1\%$ and -0.03% , respectively) and the NSA/EUROCONTROL costs are lower than planned (-3.4% , or -0.6 M€2017).

En route costs for the main ANSP at charging zone level

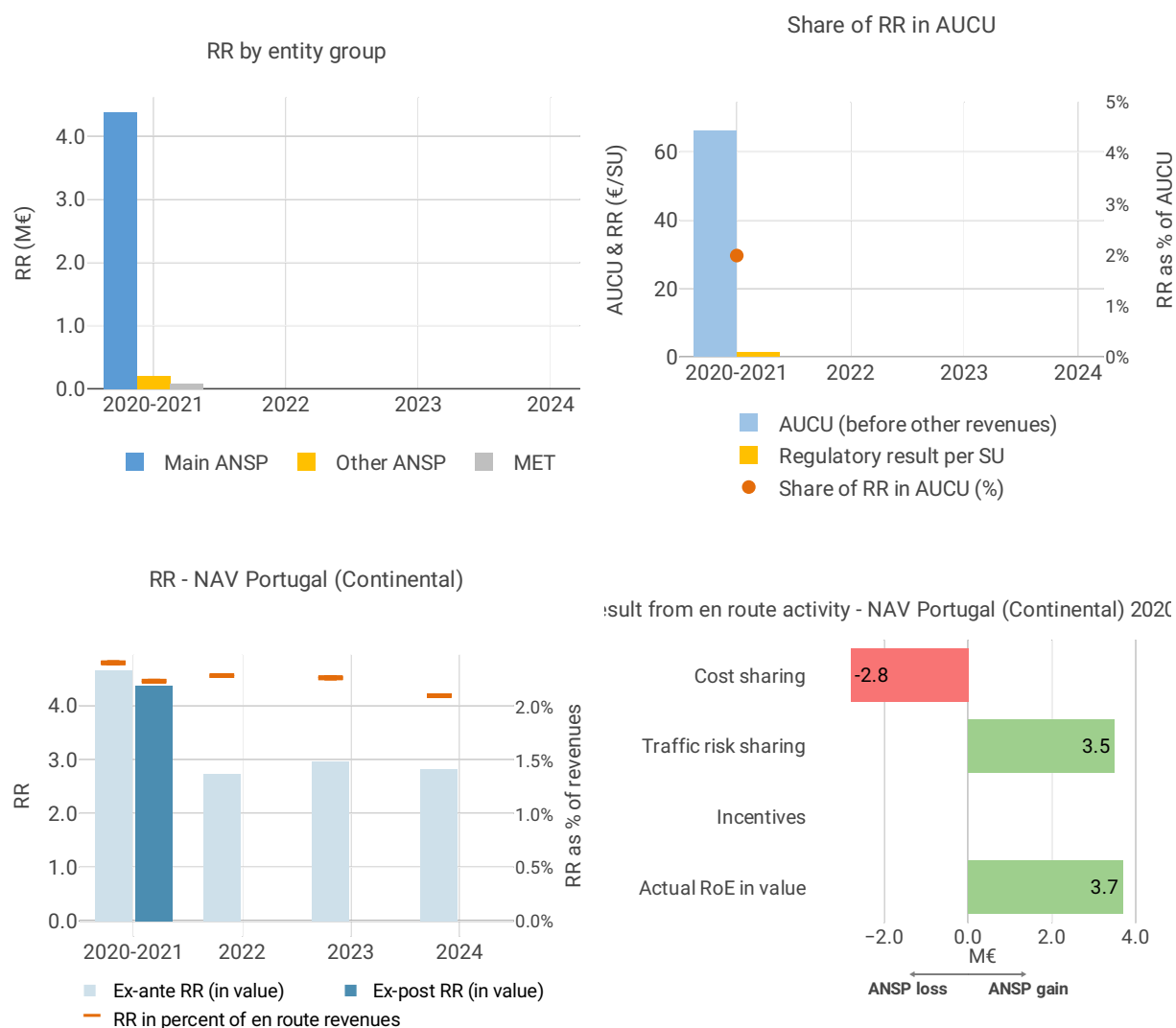
The higher than planned en route costs in real terms for NAV Portugal ($+0.9\%$, or +1.7 M€2017) result from:

- higher staff costs ($+3.6\%$ for the period 2020-2021), “mainly due to the following factors: i) Higher pension fund costs, namely in NAV/CTA-MT; ii) Contingent liabilities arising from specific situations in which ATCOs do not meet the requirements for access to retirement status; iii) Capitalized work that did not materialize at the same level as planned;”
- lower other operating costs (-12.3%), mainly explained by lower spending on IT assistance and other outsourced services, repair and maintenance, communication and travel;”
- slightly higher depreciation ($+0.8\%$); and
- lower cost of capital (-21.5%), due to a slight delay in implementation of the new ATM System.

5.2.2 Actual unit cost incurred by the users (AUCU) (PI#1)



5.2.3 Regulatory result (RR)



Focus on regulatory result

NAV Portugal net gain on activity in Portugal Continental en route charging zone in the combined year 2020-2021

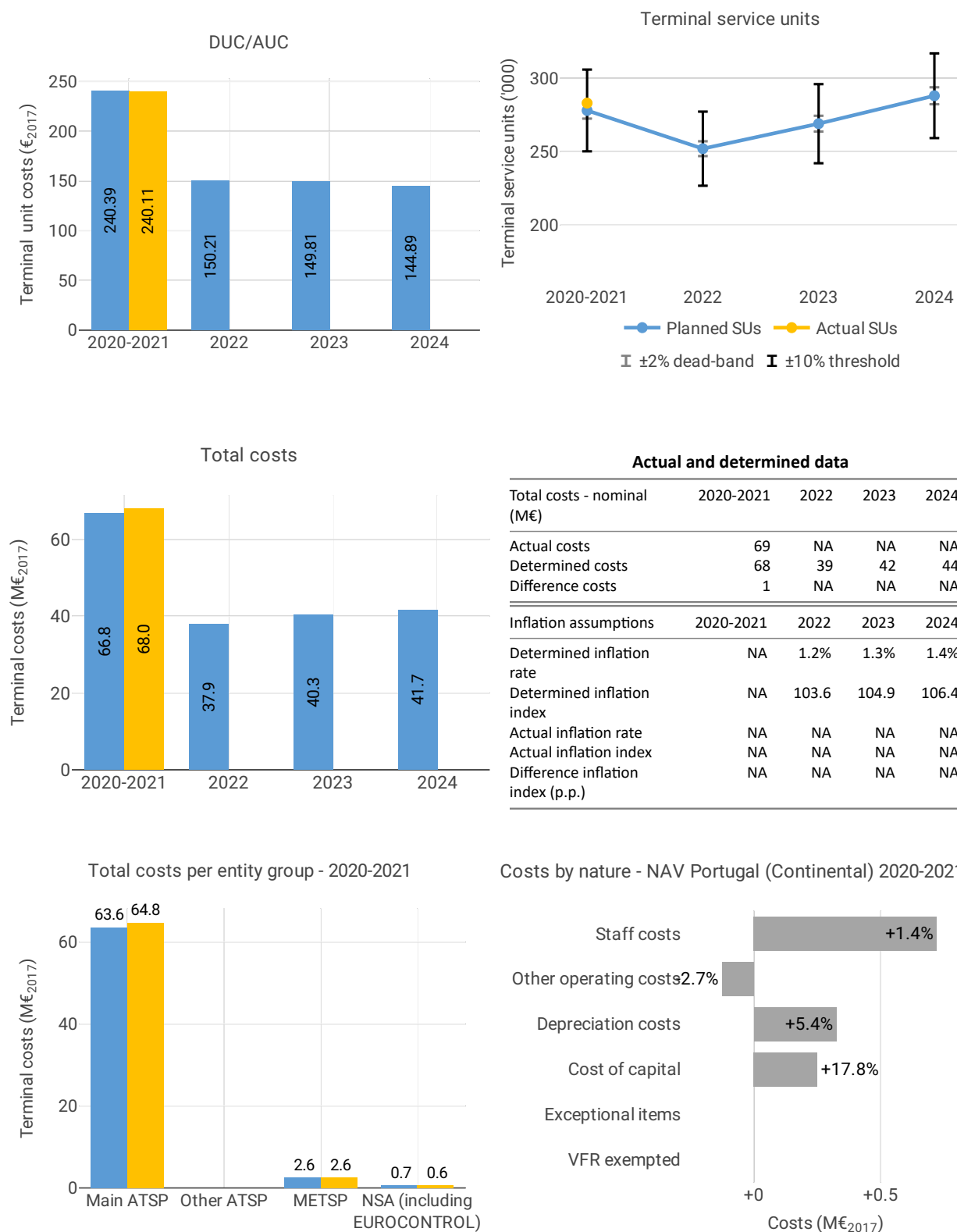
NAV Portugal generated a net gain of +0.7 M€, resulting from a loss of -2.8 M€ arising from the cost sharing mechanism and a gain of +3.5 M€ arising from the traffic risk sharing mechanism.

NAV Portugal overall regulatory results (RR) for the en route activity

Ex-post, the overall RR corresponding to the net gain from the en route activity mentioned above (+0.7 M€) and the RoE (+3.7 M€) amounts to +4.4 M€ (2.2% of the en route revenues). The resulting ex-post rate of return on equity is 7.2%, which is higher than the 6.0% planned in the PP.

5.3 Terminal charging zone

5.3.1 Unit cost (KPI#1)



Focus on unit cost

AUC vs. DUC

The AUC for the combined year 2020-2021 is in line with the planned DUC (-0.1%, or -0.29 €2017). This is due to the combination of higher than planned TNSUs (+1.9%) and higher than planned terminal costs in real terms but in a lesser proportion (+1.7%, or +1.2 M€2017).

Terminal service units

The difference between actual and planned TNSUs (+1.9%) falls within the $\pm 2\%$ dead band. Thus the resulting additional terminal revenue is kept by the ANSPs.

Terminal costs by entity

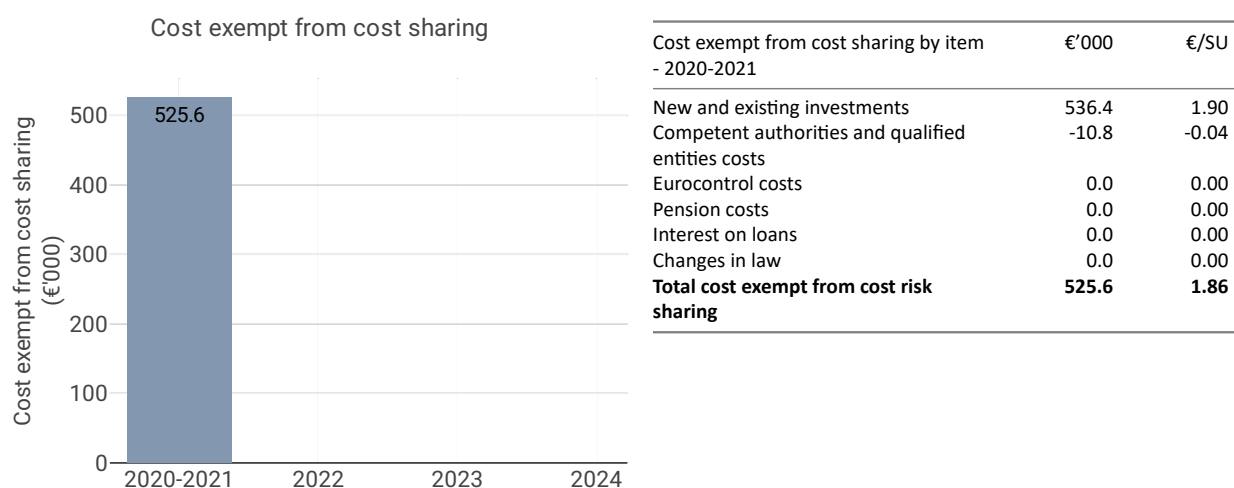
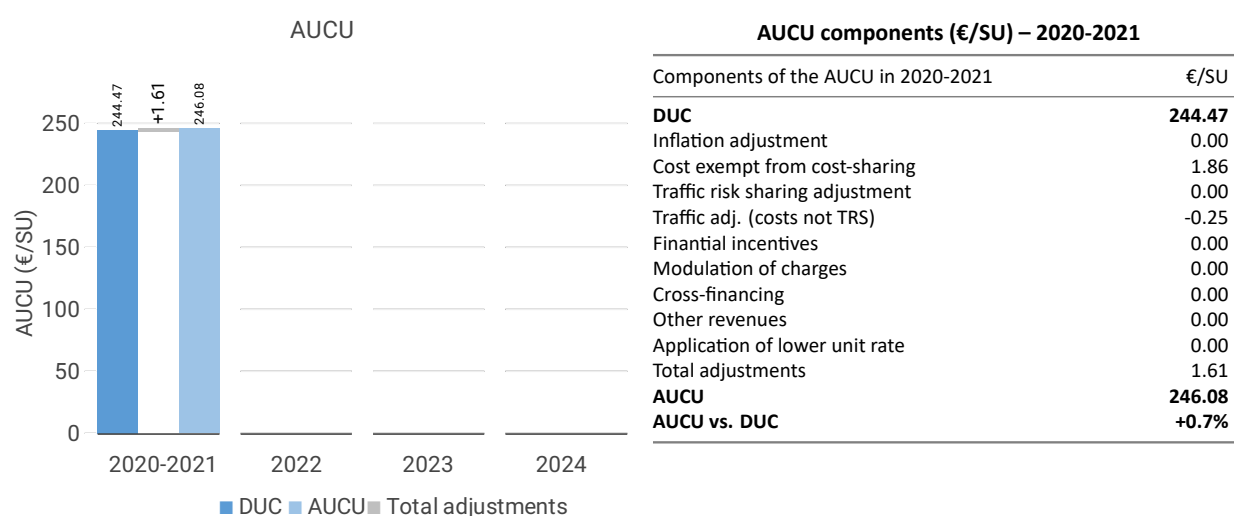
Actual real terminal costs for 2020-2021 are +1.7% (+1.2 M€2017) higher than planned. This result is driven by the main ANSP, NAV Portugal (+1.8%, or +1.2 M€2017), while the METSPs costs are in line with the plan and NSA costs are -1.7% lower than planned.

Terminal costs for the main ANSP at charging zone level

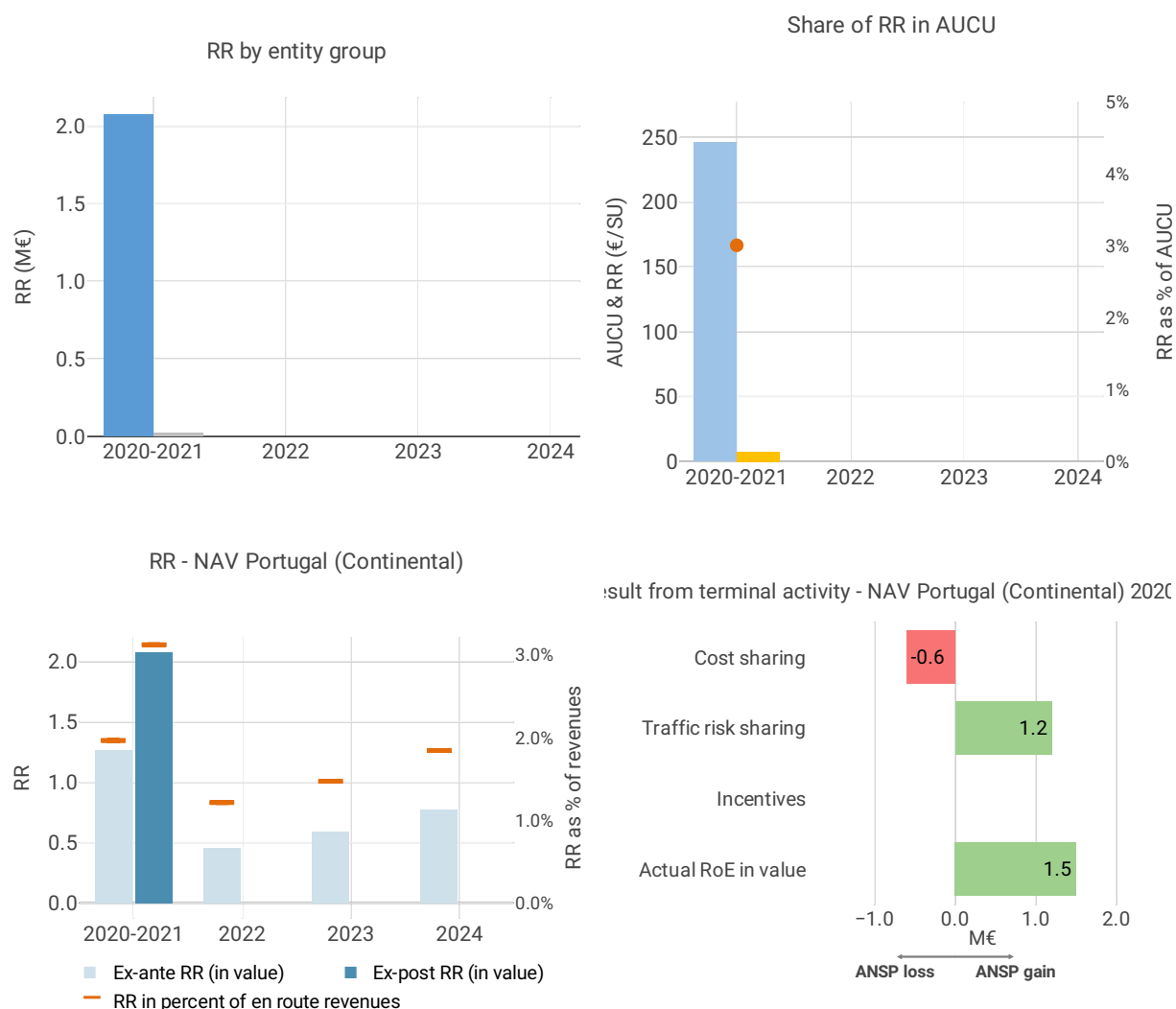
Overall, the terminal costs in real terms for NAV Portugal in 2020-2021 were higher than the determined costs from the performance plan (by +1.8%, or +1.2 M€2017). This results from:

- higher staff costs (+1.4% for 2020-2021), “mainly due to the following factors: i) Higher pension fund costs, namely in NAV/CTA-MT; ii) Contingent liabilities arising from specific situations in which ATCOs do not meet the requirements for access to retirement status; iii) Capitalized work that did not materialize at the same level as planned.”
- lower other operating costs (-2.7%), “mainly explained by lower spending on IT assistance and other outsourced services, repair and maintenance, communication and travel.”
- higher depreciation (+5.4%); and higher cost of capital (+17.8%), due to a “higher than expected incorporation of investments over the period”, also “reflected in the net book value of fixed assets”.

5.3.2 Actual unit cost incurred by the users (AUCU) (PI#1)



5.3.3 Regulatory result (RR)



Focus on regulatory result

NAV Portugal net gain on activity in Portugal terminal charging zone in the combined year 2020-2021

NAV Portugal generated a net gain of +0.6 M€, resulting from a loss of -0.6 M€ arising from the cost sharing mechanism and a gain of +1.2 M€ arising from the traffic risk sharing mechanism.

NAV Portugal overall regulatory results (RR) for the terminal activity

Ex-post, the overall RR corresponding to the net gain from the terminal activity mentioned above (+0.6 M€) and the RoE (+1.5 M€) amounts to +2.1 M€ (3.1% of the terminal revenues). The resulting ex-post rate of return on equity is 8.3%, which is higher than the 6.0% planned in the PP.