PRB | Performance review body of the single european sky

Performance Review Body Monitoring Report

Spain - 2023

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1 OVERVIEW

1.1 Contextual information

National performance plan adopted following Commission Decision (EU) 2022/776 of 13 April 2022

List of ACCs 5
- Barcelona ACC
- Madrid ACC
- Palma ACC
- Sevilla ACC
- Canarias ACC

No of airports in the scope of the performance plan:
- **≥80'K** 6
- **<80'K** 1

Exchange rate (1 EUR=)
- 2017: 1 EUR
- 2023: 1 EUR

Share of Union-wide:
- **traffic (TSUs) 2023** 10.2%
- **en route costs 2023** 11.6%

Share en route / terminal costs 2023 88% / 12%

En route charging zone(s)
- Spain Continental
- Spain Canarias

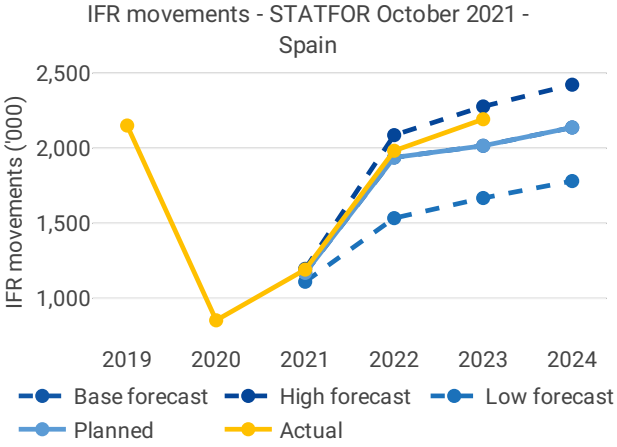
Terminal charging zone(s)
- Spain

Main ANSP
- ENAIRE

Other ANSPs
- FERRONATS
- ANSP EA

MET Providers
- AEMET

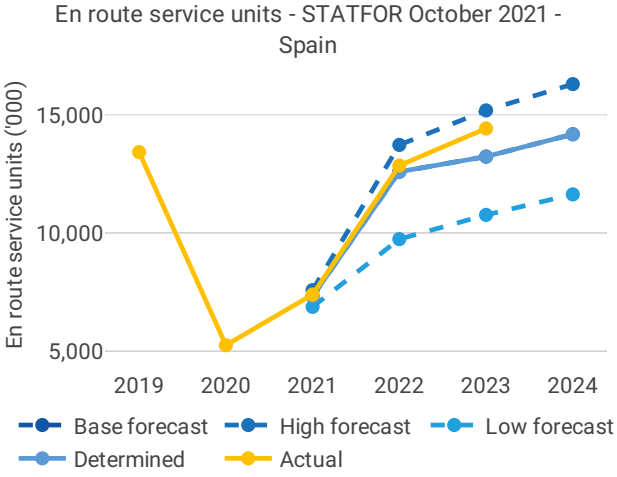
1.2 Traffic (En route traffic zone)



• Spain recorded 2,194K actual IFR movements in 2023, +11% compared to 2022 (1,984K).

• Actual 2023 IFR movements were +13% above the plan (1,940K).

• Actual 2023 IFR movements are +2% above the actual 2019 level (2,152K).

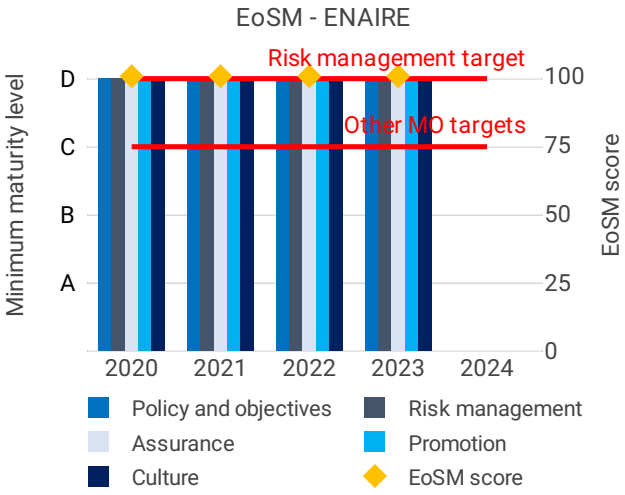


• Spain recorded 14,442K actual en route service units in 2023, +12% compared to 2022 (12,868K).

• Actual 2023 service units were +9% above the plan (13,248K).

• Actual 2023 service units are +7% above the actual 2019 level (13,439K).

1.3 Safety (Main ANSP)



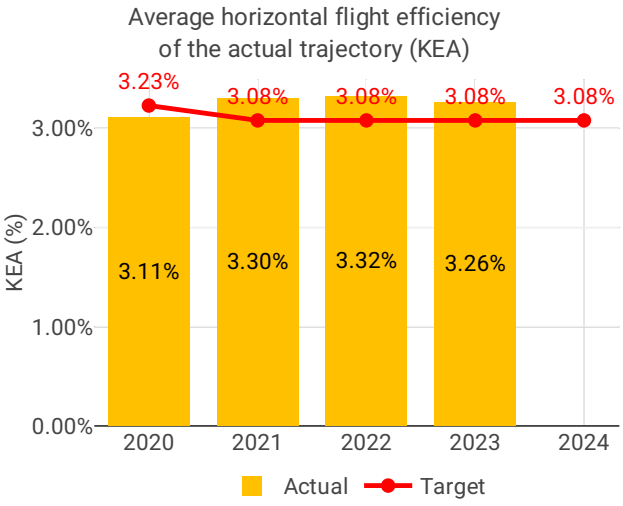
• ENAIRE has already exceeded the RP3 EoSM targets in 2020 and remained on or above the targets since then. ENAIRE implemented continuous monitoring process to ensure maintaining high safety performance.

• SKYWAY improved its performance achieving level D for safety policy and objectives, risk management and safety promotion in 2023. Consequently, SKWAY achieved the RP3 EoSM targets in all management objectives and exceed its performance according to the performance plan.

• Spain recorded an increase in the rate of separation minima infringements compared with 2022. The rate of runway incursions increased marginally. These indicators are monitored as a part of National Safety Plan.

• Spain uses specific automated safety data recording systems for ACC and TMA sectors and is one of the few ANSPs doing so.

1.4 Environment (Member State)



• Spain achieved a KEA performance of 3.26% compared to its target of 3.08% and did not contribute positively towards achieving the Union-wide target.

• The NSA states that despite the implementation of the projects outlined in the performance plan during 2023, the benefits have not yet been realised.

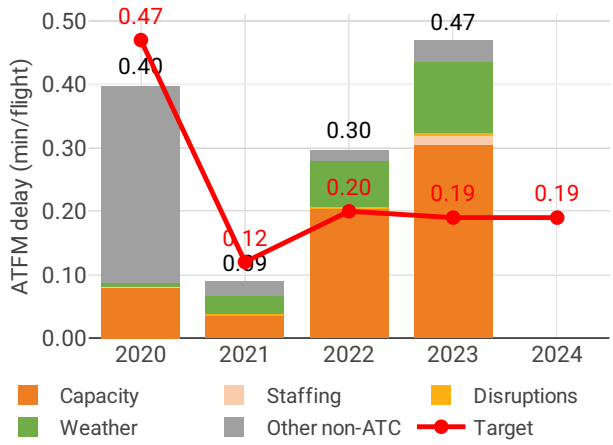
• Both KEP and SCR improved marginally in 2023 in comparison to 2022.

• The share of CDO flights increased marginally from 39.90% to 40.67% in 2023.

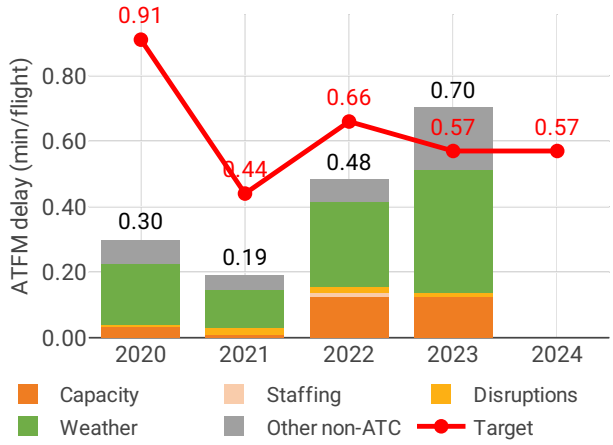
• During 2023, additional time in terminal airspace increased from 1.13 to 1.27 min/flight, while additional taxi out time decreased from 2.61 to 2.57 min/flight.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



Average arrival ATFM delay per flight by delay groups



• Spain registered 0.54 minutes of average en route ATFM delay per flight during 2023 which has been adjusted to 0.47 during the post-ops adjustment process, thus not achieving the local target value of 0.19. Delays in Spain increased by 0.17 minutes per flight year-on-year.

• Delays were highest between June and December, mostly due to ATC capacity, adverse weather conditions, industrial action and implementation of new TMA procedures.

• The share of delayed flights with delays longer than 15 minutes in Spain decreased by 1 percentage point compared to 2022 and was lower than 2019 values.

• The average number of IFR movements was 2% above 2019 levels in Spain in 2023.

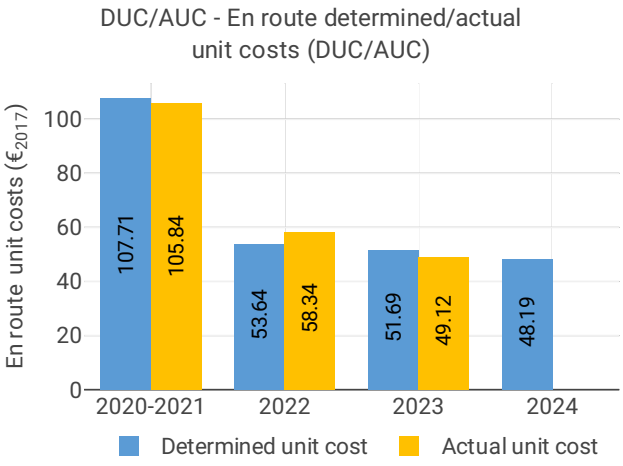
• The number of ATCOs in OPS is expected to stay the same by 2024, with the actual value being below the 2023 plan in Barcelona by 7 FTEs. The number of ATCOs in OPS is expected to increase by 4% by 2024, with the actual value being over the 2023 plan in Canarias by 4 FTEs. The number of ATCOs in OPS is expected to decrease by 6% by 2024, with the actual value being over the 2023 plan in Madrid by 41 FTEs. The number of ATCOs in OPS is expected to decrease by 7% by 2024, with the actual value being over the 2023 plan in Palma by 9 FTEs. The number of ATCOs in OPS is expected to decrease by 5% by 2024, with the actual value being over the 2023 plan in Sevilla by 13 FTEs.

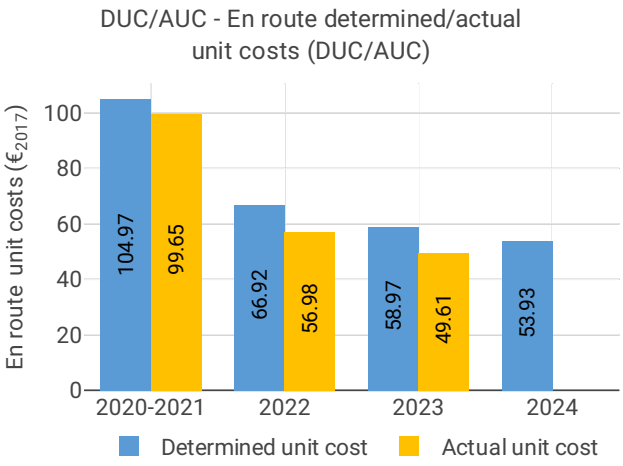
• The yearly total of sector opening hours in Canarias ACC was 28,630, showing a 2.3% increase compared to 2022. Sector opening hours are 2.3% above 2019 levels. The yearly total of sector opening hours in Madrid ACC was 95,807, showing a 3.5% increase compared to 2022. Sector opening hours are 7.1% below 2019 levels. The yearly total of sector opening hours in Barcelona ACC was 61,756, showing an 8.4% increase compared to 2022. Sector opening hours are 2% above 2019 levels. The yearly total of sector opening hours in Sevilla ACC was 40,067, showing a 4.4% increase compared to 2022. Sector opening hours are 2% below 2019 levels. The yearly total of sector opening hours in Palma ACC was 36,458, showing a 2% decrease compared to 2022. Sector opening hours are 5.9% below 2019 levels.

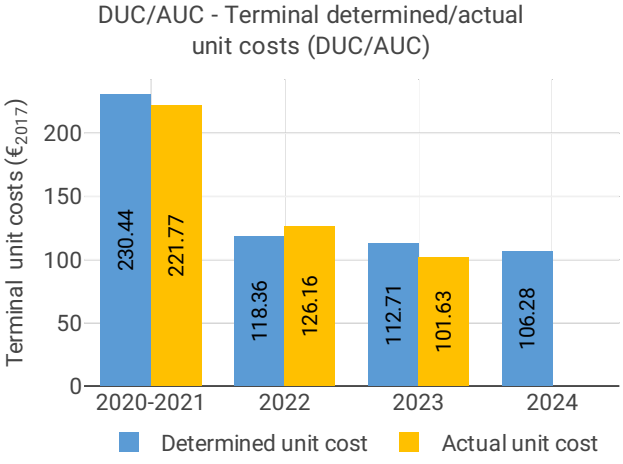
• Canarias ACC registered 13.28 IFR movements per one sector opening hour in 2023, being 3.9% above 2019 levels. Barcelona ACC registered 15.8 IFR movements per one sector opening hour in 2023, being 1.5% above 2019 levels. Madrid ACC registered 12.41 IFR movements per one sector opening hour in 2023, being 8.7% above 2019 levels. Palma ACC registered 9.5 IFR movements per one sector opening hour in 2023, being 13.8% above 2019 levels. Sevilla ACC registered 12.37 IFR movements per one sector opening hour in 2023, being 18.2% above 2019 levels.

• Year-on-year traffic growth in Spain was 11% in 2023, while traffic was 9% above the STATFOR October 2021 Base forecast. The regional distribution of traffic growth and unexpected changes in seasonality combined with minor ATCO issues resulted in a capacity gap despite the improvements in capacity provision. Spain needs to focus on resolving the remaining ATCO issues and further enhance capacity to close the gap.

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







• The en route 2023 actual unit cost of Spain Continental was 49.12 €2017, -5.0% lower than the determined unit cost (51.69 €2017). The en route 2023 actual unit cost of Spain Canarias was 49.61 €2017, -16% lower than the determined unit cost (58.97 €2017). The terminal 2023 actual unit cost of Spain was 101.63 €2017, -9.8% lower than the determined unit cost (112.71 €2017).

• The en route 2023 actual service units of Spain Continental (12.5M) were +7.0% higher than the determined service units (11.6M). The en route 2023 actual service units of Spain Canarias (2.0M) were +24% higher than the determined (1.6M).

• In 2023, Spain Continental increased en route total cost by +10 M€2017 (+1.7%) compared to determined. The primary factor behind this difference was a significant overspend in the cost of capital for ENAIRE (+9.3 M€2017, or +37%). This gap mainly stemmed from the average interest rates exceeding the planned levels (from 0.8% to 3.3%).

• In 2023, Spain Canarias increased en route total cost by +3.8 M€2017 (+4.0%) compared to determined. The main contributor to this difference was an overspend in other operating costs (+2.6 M€2017, or +17%), which is primarily due to energy costs that were significantly higher than planned.

• ENAIRE spent 141 M€2017 in 2023 related to costs of investments for both en route and terminal charging zones, +6.4% more than determined (132 M€2017). The increase is attributed to the cost of capital, which was primarily driven by a significant rise in average interest rates, from 0.8% to 3.3%.

• The en route Spain Continental actual unit cost incurred by users in 2023 was 59.21€ (+9.4% above the 2023 DUC), while the en route Spain Canarias actual unit cost incurred by users was 38.20€ (-38% below the 2023 DUC). The terminal actual unit cost incurred by users was 34.16€ (-71% below the 2023 DUC). The difference between the AUCU and the DUC in en route charging zones is primarily attributed to the cross-financing adjustment that transferred 36 M€ from Spain Canarias to Spain Continental. In terminal charging zone, the difference between the AUCU and the DUC is primarily attributed to adjustment of other revenues (-80 M€).

2 SAFETY - SPAIN

2.1 PRB monitoring

• ENAIRE has already exceeded the RP3 EoSM targets in 2020 and remained on or above the targets since then. ENAIRE implemented continuous monitoring process to ensure maintaining high safety performance.

• SKYWAY improved its performance achieving level D for safety policy and objectives, risk management and safety promotion in 2023. Consequently, SKWAY achieved the RP3 EoSM targets in all management objectives and exceed its performance according to the performance plan.

• Spain recorded an increase in the rate of separation minima infringements compared with 2022. The rate of runway incursions increased marginally. These indicators are monitored as a part of National Safety Plan.

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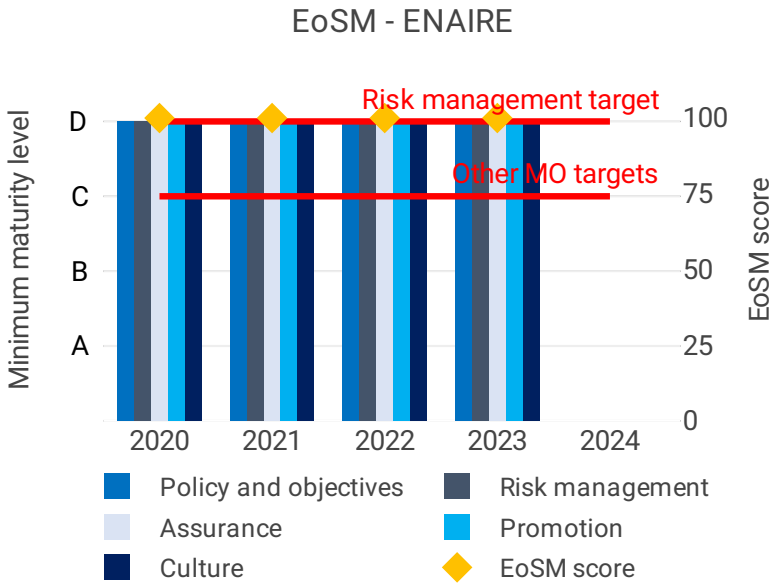
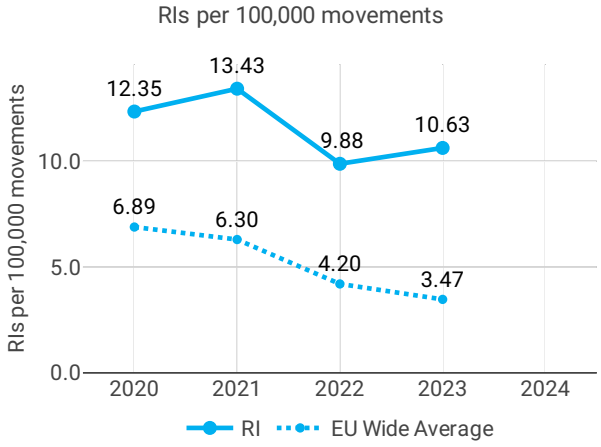
2.2 Effectiveness of Safety Management (EoSM) (KPI#1)

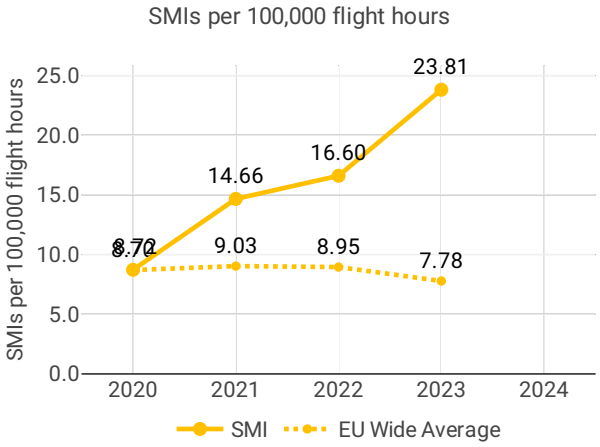


Focus on EoSM

All five EoSM components of ENAIRE meet or exceed the RP3 target level. Maximum maturity level is maintained. SKYWAY improved "Safety Risk Management" component over 2023 and consequently meet the RP3 target level for all five EoSM components.

2.3 Occurrences - Rate of runway incursions (RIs) (PI#1) & Rate of separation minima infringements (SMIs) (PI#2)





3 ENVIRONMENT - SPAIN

3.1 PRB monitoring

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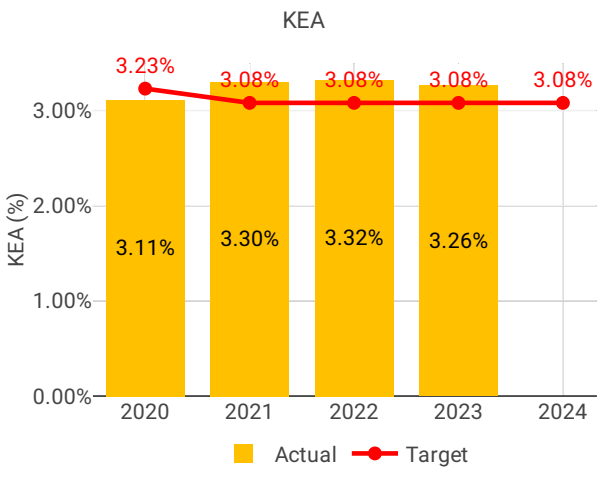
• Both KEP and SCR improved marginally in 2023 in comparison to 2022.

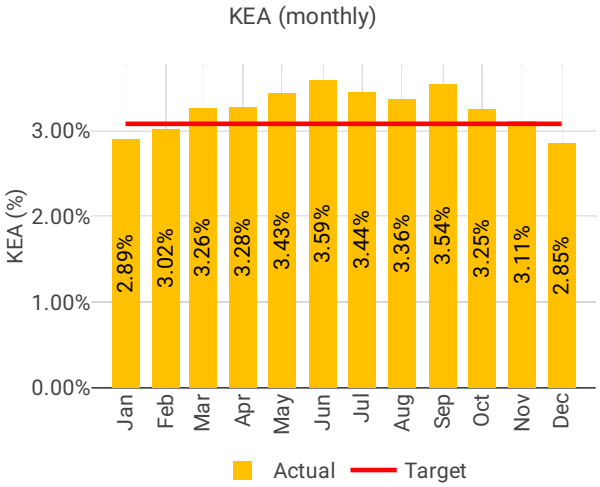
• The share of CDO flights increased marginally from 39.90% to 40.67% in 2023.

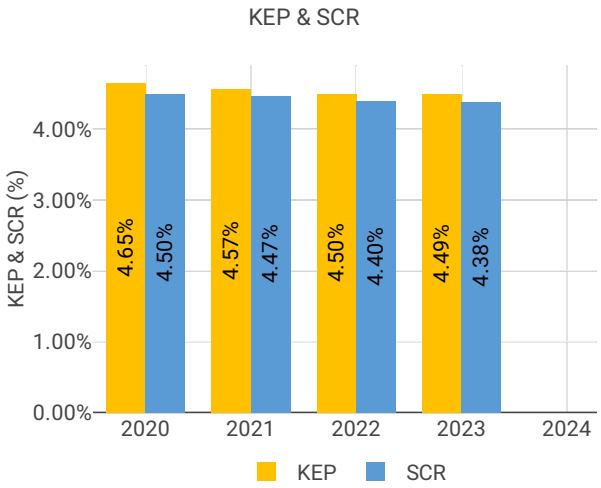
• During 2023, additional time in terminal airspace increased from 1.13 to 1.27 min/flight, while additional taxi out time decreased from 2.61 to 2.57 min/flight.

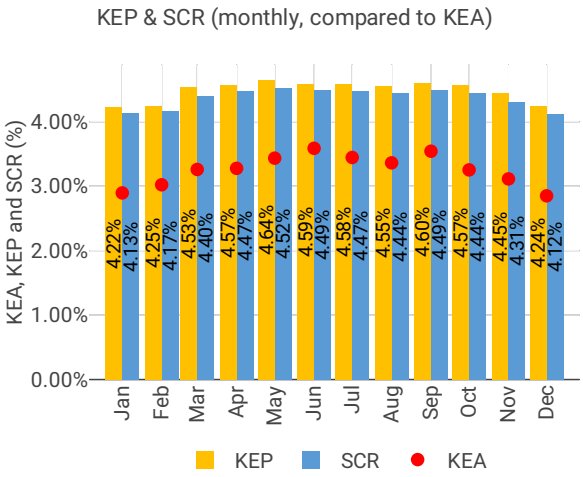
3.2 En route performance

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)



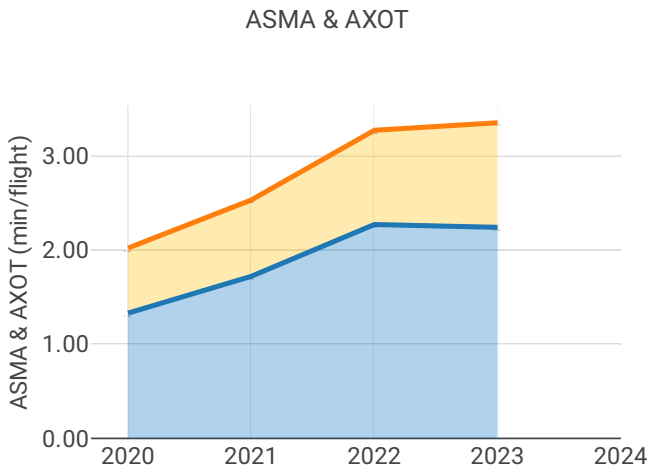


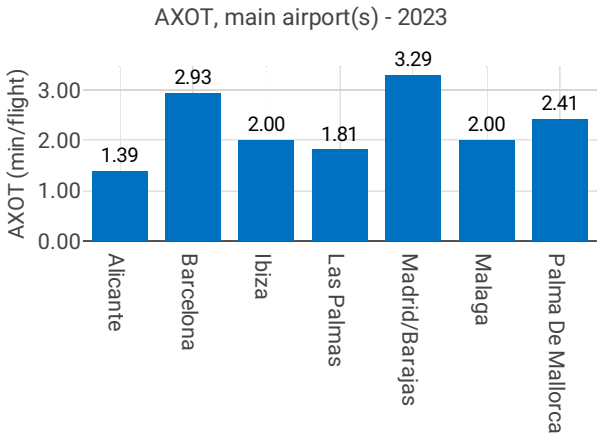


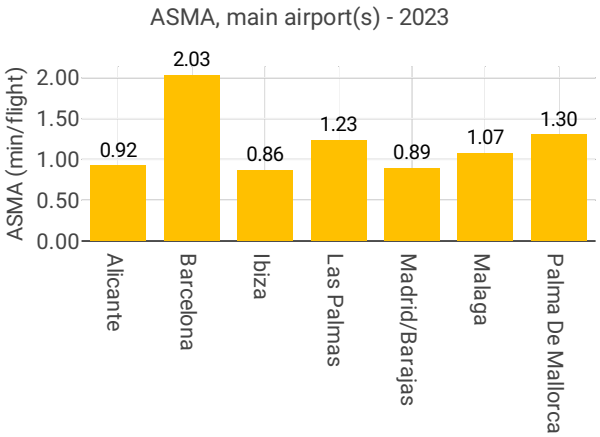


3.3 Terminal performance

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







Focus on ASMA & AXOT

AXOT

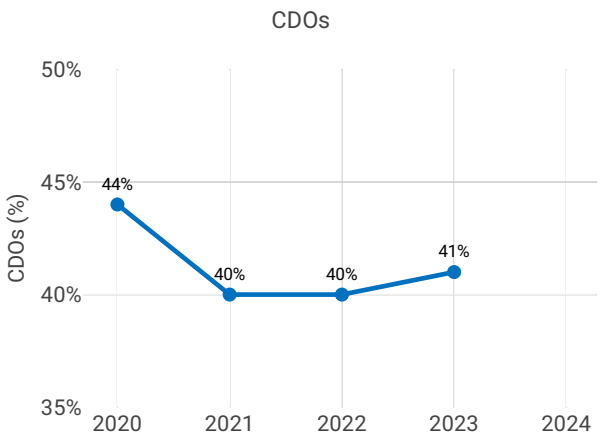
The additional taxi out time (aggregated for the 6 airports monitored in RP3) decreased in 2023 by 1.5% in relation to the value of 2022.
At Barcelona (LEBL; 2019: 4.48 min/dep.; 2020: 1.84 min/dep.; 2021: 2.33 min/dep.; 2022: 3.6 min/dep.; 2023: 2.93 min/dep.) there was a significant improvement although the 2023 value was still right above the SES average of 2.81 min/dep.

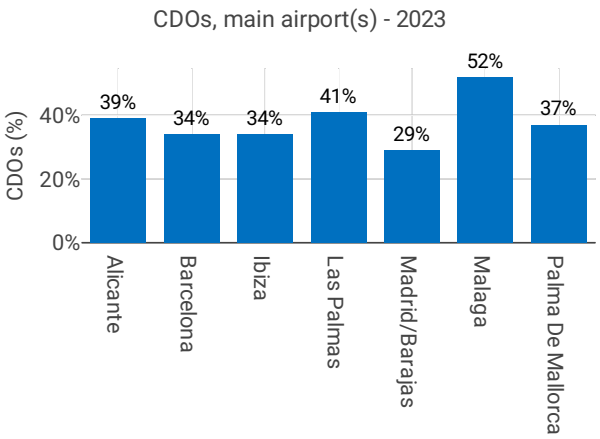
On the contrary, Madrid (LEMD; 2019: 4.01 min/dep.; 2020: 2.12 min/dep.; 2021: 2.11 min/dep.; 2022: 2.57 min/dep.; 2023: 3.29 min/dep.) observed a significant deterioration.
According to the Spanish monitoring report: *In general, the greatest increase throughout the year occurs in the high season months of each airport, variations in this indicator are related to traffic, especially at airports such as LEPA.*
In 2023 taxi times at LEMD are higher than 2022 due to traffic increase, taxi RWY closure during April for maintenance and frequent adverse weather conditions during May, June and July. There is a peak in taxi time at LEBL in March (RWY06L/24R closure for maintenance purpose).
There is work in progress regarding the improvement of A-CDM in Madrid, Barcelona, Palma y Málaga:
- The project related to more accurate Taxi times/stand is almost finished.
- New TWR UPDATE A-DPI has already been implemented.
Although LEIB did not reach >80k movements in 2016-2018, it does in 2023 and is monitored together with these 6 airports as it is one of the airports considered in the Spanish performance plan (ESPP3) for RP3. In 2023 it reaches a value of 2,0, -8,7% lower than the 2022 value (2,19). The additional taxi out time (aggregated for the 7 airports monitored in RP3) has a value of 2,57 at the same level as in 2022 (2,61).

ASMA

The additional time in terminal area (aggregated for the 6 airports monitored in RP3) in 2023 increased by 13.2% in relation to the value of 2022.
Barcelona observed the highest increase in the additional ASMA times (LEBL; 2019: 2.58 min/arr.; 2020: 1.13 min/arr.; 2021: 1.07 min/arr.; 2022: 1.7 min/arr.; 2023: 2,03 min/arr.) resulting in the third highest value across the SES monitored airports. Madrid and Alicante also observed increases in 2023 but their additional ASMA times remained under the SES average of 1.16 min/arr.
Together with Barcelona, Palma(LEPA) and Gran Canaria (GCLP) also resulted in additional ASMA time above the SES average.
According to the Spanish monitoring report: *In general, the greatest increase throughout the year occurs in the high season months of each airport, variations in this indicator are related to traffic, especially at airports such as LEPA.*
High ASMA times during the early part of the year at LEMD due to new procedures in Madrid TMA and frequent adverse weather conditions during May, June and July. There is a peak in ASMA times at LEBL due to RWY06L/24R closure for maintenance in march.
Some restructuring projects are planned for the coming years in the main TMAs in Spain:
- PBN STARs and RNP APCH in Madrid TMA
- PBN SIDs, ILS & RNP APCH in Palma TMA
- Reorganization of Canarias TMA
Although LEIB did not reach >80k movements in 2016-2018, it does in 2023 and is monitored together with these 6 airports since it is one of the airports considered in the Spanish performance plan (ESPP3) for RP3. In 2023 it reaches a value of 0,86, -4% lower than the 2022 value (0,90). The additional time in terminal area (aggregated for the 7 airports monitored in RP3) has a value of 1,27 in 2023, 12% higher than the previous year (1,13).

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





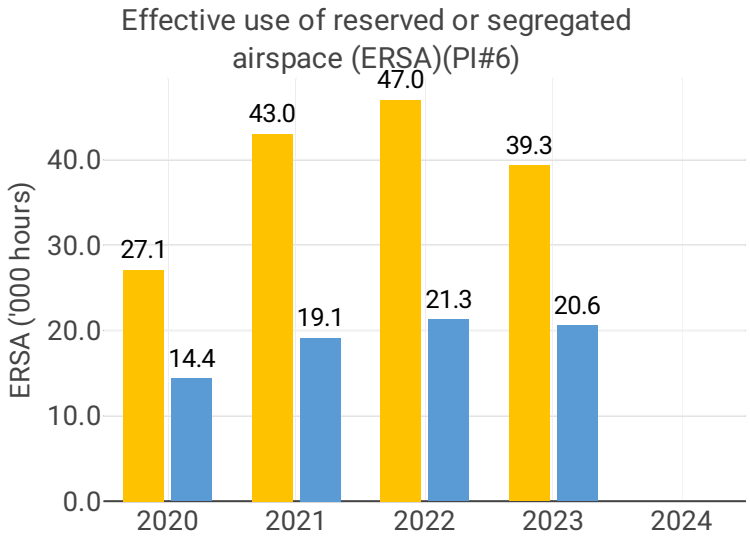
Focus CDOs

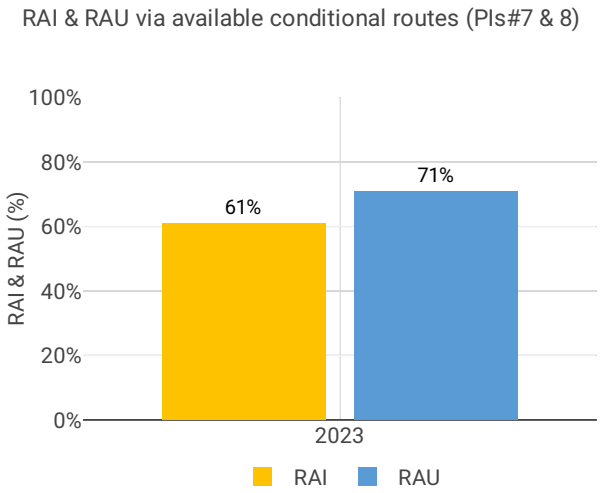
All airports had their share of CDO flights above the overall RP3 value in 2023 (28.8%), ranging from 29.0% (LEMD) to 52.4% (LEMG).
Ibiza (LEIB) had an increase of 2.0 percentage points while the values for Barcelona (LEBL) and Gran Canaria (GCLP) stayed almost the same.
Over the summer months, the share of CDO flights is generally lower.
According to the Spanish monitoring report: *The share of arrivals applying continuous descent operation (aggregated for the 7 airports monitored in RP3) has remained at the same level as in 2022 (+1,9%), despite traffic levels are already at pre-pandemic levels.*
In general, the greatest decrease throughout the year occurs in the high season months of each airport. Variations in this indicator are related to traffic, especially at airports such as LEPA.
The conditions of use of continuous descent procedures mean that the use of this type of procedure is not always compatible with the techniques used when it is necessary to manage medium/high traffic demands at airports/TMAs. Therefore, the authorisation of these procedures must be compatible with the airport's operations in order to meet the demand without establishing restrictions. In the long term, there are plans to modify the structure of the CDA procedures currently published at some airports and to transfer to the arrival procedures section of the AIP the information to proceed with the continuous descent from some point of the STARs to the IAF, to some point of the intermediate approach or to the IF, thus maximising the use of these operations.
This PI is monitored by AESA. If significant deviations are found, the possible causes will be analysed by contacting the relevant stakeholder.

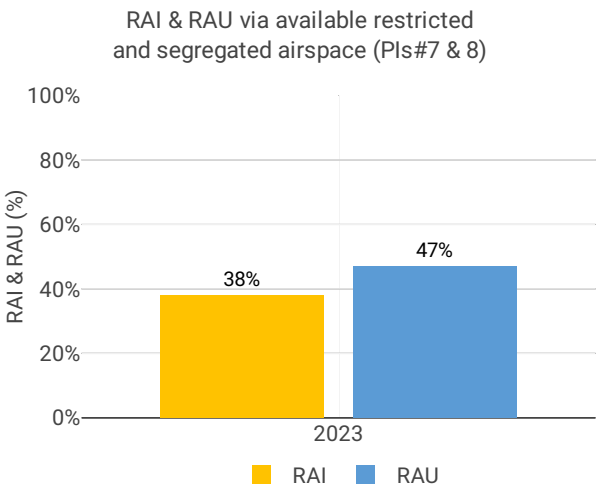
Airport level

	Additional taxi-out time (PI#3)					Additional ASMA time (PI#4)					Share of arrivals applying CDO (PI#5)				
Airport Name	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Alicante	0.70	1.15	1.49	1.39	NA	0.41	0.62	0.72	0.92	NA	45%	40%	37%	39%	NA
Barcelona	1.84	2.33	3.60	2.93	NA	1.13	1.07	1.70	2.03	NA	39%	36%	34%	34%	NA
Las Palmas	1.09	1.75	2.03	1.81	NA	0.84	1.08	1.29	1.23	NA	47%	43%	41%	41%	NA
Ibiza	1.18	1.94	2.19	2.00	NA	0.61	1.05	0.90	0.86	NA	41%	31%	32%	34%	NA
Madrid/Barajas	2.12	2.11	2.57	3.29	NA	0.62	0.52	0.64	0.89	NA	32%	28%	28%	29%	NA
Malaga	1.39	2.20	2.56	2.00	NA	0.81	0.95	1.08	1.07	NA	54%	47%	50%	52%	NA
Palma De Mallorca	0.69	1.83	2.32	2.41	NA	0.35	1.13	1.39	1.30	NA	47%	38%	37%	37%	NA
Stockholm/Arlanda	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43%	NA	NA	NA	NA
Geneva	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19%	NA	NA	NA	NA
Zurich	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21%	NA	NA	NA	NA

3.4 Civil-Military dimension







Focus on Civil-Military dimension

Update on Military dimension of the plan

Civil-Military coordination regarding Flexible Use of Airspace is on progress at strategic level established within the specific working group called UPEA inside CIDETRA (previous CIDETMA). Dissemination of progress on FUA to civil operators is considered an enabler to achieve Flight Plans using more efficient routes through the Civil Use of Release Airspace (CURA).
Spanish Air Force has been active participant in the general meetings to implement the Spanish Free Route Airspace Programme and an specific group composed by ENAIRE and Spanish Air Force was created in order to further improve the coordination for the implementation of FRA, with a special focus in ASM related matters. Furthermore, a close coordination work with the Network Manager is ongoing. A group of initiatives haven been implemented, such as the VPA, modulation of ARES and use of FUA-R.

Military - related measures implemented or planned to improve capacity

Based on the Principles of FUA, use of AUP and update in UUP is already well and robustly implemented as well as the tactical release of ARES in close coordination in between Civil and Military ACC ATCOs.
80% of implemtentation of the Spanish SCC transition plan has been completed. A civil-military procedure for creation of ARES of vriable vertical and lateral limits has been implemented. Further actions on improvements on civil military coordination for ad-hoc rquest or large exercises preparation have been on course. Spain Mil and Civ participate in OEP FUA initiatives as champoiosn is large exercise preparations.

Initiatives implemented or planned to improve PI#6

NSA monitors values and promotes a better adjustments on the booked them to the needs.2023 shows an increase of 7 points in the use percentage. It is worth to highlight that Spain provides with actual use figures, instead of ERSA.
The particularities of this indicator have been analyzed in our airspace since there are no monthly data published at SES portal and they are provided by the Spanish Air Force NSA.

Initiatives implemented or planned to improve PI#7

In the coming years, we expect to improve this PI with the definition of new FUA restrictions allowing new traffic flows through an RSA with military activity, the definition of adjustable boundary procedures, new modular RSAs, improvements in military RPAS activity management, etc. We also expect the implementation of FRA to improve flight planning through optimal routing.
This PI is monitored annually to evaluate the evolution of the indicators because our ANSP, ENAIRE, which provides the data to calculate the indicator, requests it from Eurocontrol and for the time being they are not in a position to request it on a more frequent basis. If significant deviations are found, the possible causes will be analysed by contacting the relevant stakeholder.

Initiatives implemented or planned to improve PI#8

In the coming years, we expect to improve this PI with the definition of new FUA restrictions allowing new traffic flows through an RSA with military activity, the definition of adjustable boundary procedures, new modular RSAs, improvements in military RPAS activity management, etc. We also expect the implementation of FRA to improve flight planning through optimal routing.
This PI is monitored annually to evaluate the evolution of the indicators because our ANSP, ENAIRE, which provides the data to calculate the indicator, requests it from Eurocontrol and for the time being they are not in a position to request it on a more frequent basis. If significant deviations are found, the possible causes will be analysed by contacting the relevant stakeholder.

4 CAPACITY - SPAIN

4.1 PRB monitoring

• Spain registered 0.54 minutes of average en route ATFM delay per flight during 2023 which has been adjusted to 0.47 during the post-ops adjustment process, thus not achieving the local target value of 0.19. Delays in Spain increased by 0.17 minutes per flight year-on-year.

• Delays were highest between June and December, mostly due to ATC capacity, adverse weather conditions, industrial action and implementation of new TMA procedures.

• The share of delayed flights with delays longer than 15 minutes in Spain decreased by 1 percentage point compared to 2022 and was lower than 2019 values.

• The average number of IFR movements was 2% above 2019 levels in Spain in 2023.

• The number of ATCOs in OPS is expected to stay the same by 2024, with the actual value being below the 2023 plan in Barcelona by 7 FTEs. The number of ATCOs in OPS is expected to increase by 4% by 2024, with the actual value being over the 2023 plan in Canarias by 4 FTEs. The number of ATCOs in OPS is expected to decrease by 6% by 2024, with the actual value being over the 2023 plan in Madrid by 41 FTEs. The number of ATCOs in OPS is expected to decrease by 7% by 2024, with the actual value being over the 2023 plan in Palma by 9 FTEs. The number of ATCOs in OPS is expected to decrease by 5% by 2024, with the actual value being over the 2023 plan in Sevilla by 13 FTEs.

• The yearly total of sector opening hours in Canarias ACC was 28,630, showing a 2.3% increase compared to 2022. Sector opening hours are 2.3% above 2019 levels. The yearly total of sector opening hours in Madrid ACC was 95,807, showing a 3.5% increase compared to 2022. Sector opening hours are 7.1% below 2019 levels. The yearly total of sector opening hours in Barcelona ACC was 61,756, showing an 8.4% increase compared to 2022. Sector opening hours are 2% above 2019 levels. The yearly total of sector opening hours in Sevilla ACC was 40,067, showing a 4.4% increase compared to 2022. Sector opening hours are 2% below 2019 levels. The yearly total of sector opening hours in Palma ACC was 36,458, showing a 2% decrease compared to 2022. Sector opening hours are 5.9% below 2019 levels.

• Canarias ACC registered 13.28 IFR movements per one sector opening hour in 2023, being 3.9% above 2019 levels. Barcelona ACC registered 15.8 IFR movements per one sector opening hour in 2023, being 1.5% above 2019 levels. Madrid ACC registered 12.41 IFR movements per one sector opening hour in 2023, being 8.7% above 2019 levels. Palma ACC registered 9.5 IFR movements per one sector opening hour in 2023, being 13.8% above 2019 levels. Sevilla ACC registered 12.37 IFR movements per one sector opening hour in 2023, being 18.2% above 2019 levels.

• Year-on-year traffic growth in Spain was 11% in 2023, while traffic was 9% above the STATFOR October 2021 Base forecast. The regional distribution of traffic growth and unexpected changes in seasonality combined with minor ATCO issues resulted in a capacity gap despite the improvements in capacity provision. Spain needs to focus on resolving the remaining ATCO issues and further enhance capacity to close the gap.

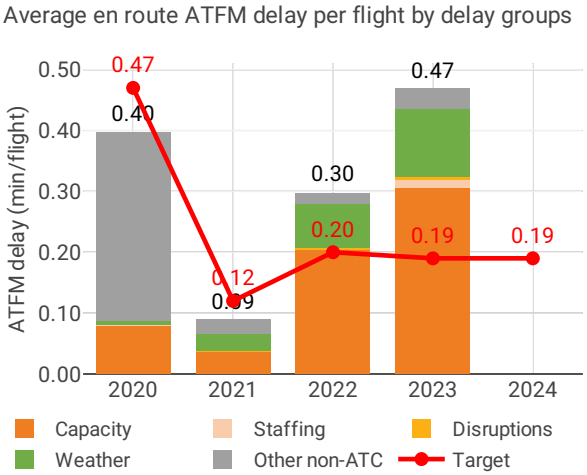
• Spain registered an average airport arrival ATFM delay of 0.70 minutes per flight in 2023, thus not achieving the local target of 0.57 minutes.

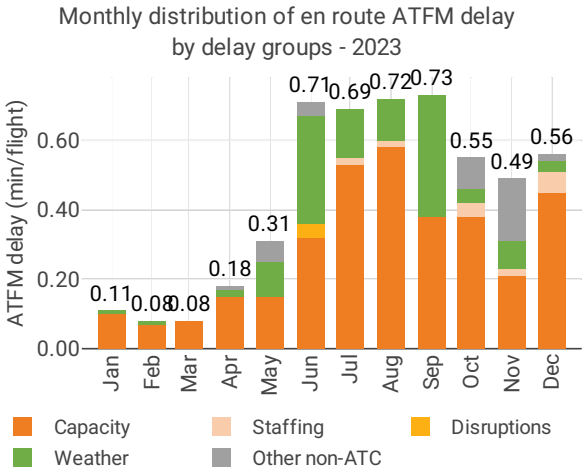
• Compared to 2022, average arrival ATFM delays in Spain were 45% higher in 2023, while the number of IFR arrivals increased by 9%.

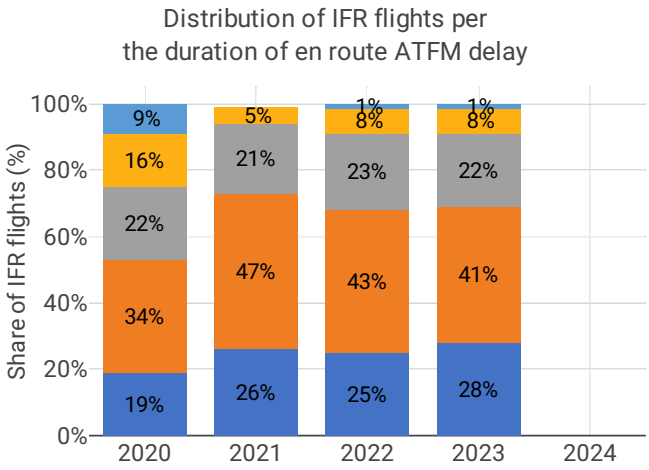
• The main reasons for delays were weather, accounting for 53% of delays, and other, non-ATC related reasons, responsible for 27%.

4.2 En route performance

4.2.1 En route ATFM delay (KPI#1)







Focus on en route ATFM delay

Summary of capacity performance

Spain experienced an increase in traffic from 1 983k flights in 2022, with 588k minutes of en route ATFM delay, to 2 194k flights in 2023, with 1 029k minutes of en route ATFM delay.
There was an additional 101k minutes of en route ATFM delay originating in the Spanish ACCs that were re-attributed to other ANSPs via the NM post operations delay attribution process:
71k minutes of en route ATFM delay were re-attributed to DSNA and a further 29k minutes of en route ATFM delay were re-attributed to the DFS as part of the eNM/S23 measures.

NSA's assessment of capacity performance

Regarding the Continental Spain en-route area, it was expected to reach 1,888 thousands of flights in line with the scenario base of STATFOR forecast October 2021. However the actual figure in 2023 amounts to 2,063 thousands of flights, which means an increase of 9.3% above forecasted and a 2,2% above 2019 traffic.
En route delay has been above the 2023 target, as previously informed to the Commission before the end of 2023 and according to Regulation (EU) 2019/317 Article 37(1).

En-route has already exceeded pre-pandemic traffic levels, being 2% higher than 2019, while delay is virtually similar and only 1% higher than 2019.
In general projects have been implemented solving the problems that had been identified but new challenges have arisen such as the large increase in traffic in the (Seville) LECS region (16% higher compared to 2019), changes in traffic flows that saturate sectors and increase their complexity, etc. All these pose new challenges that require new measures that are already under consideration.

Monitoring process for capacity performance

By 2023 the minutes reallocated by network measures (eNM/23) and the information related to the Post-Operations Performance (approved Post-Ops cases) distributed by Eurocontrol throught the Post-operations performance adjustment process, have been taken into account. Since March, en route traffic has been higher than the equivalent of 2019. In some regions the recovery with respect to pre-pandemic has been faster and already since January they were at values above the 2019 equivalents in Canarias ACC (GCCC), Palma ACC (LECP) and Seville ACC (LECS), while other regions such as Madrid ACC (LECM) did not exceed pre-pandemic levels until August. Despite the increase in traffic, national delay levels remained below target until May and ERD values in 2023 have always remained lower than those of 2019 until the end of the year when they equaled it, i.e. an ERD value similar to 2019 has been reached but managing 2% more en-route traffic.
From June onwards, with the reactivation of traffic and the development of the high season in most ACCs, more delay minutes were generated, concluding the year with their non-compliance. Delays were mainly caused by C-ATC Capacity (65% of the 2023 total, compared to 69% in 2022) and W-Weather (24% of the 2023 total, compared to 25% in 2022). At GCCC, the RNAV1 implementation in October-November resulted in about 30k min of delay due to P-Special Event during the transition procces but an improvement in operations is expected from 2024 onwards. At LECB, weather accounts for one third of the delay. In LECM, LECP and LECS, most of the delay is due to C-ATC Capacity (70-75%). In LECP, the delay is mainly concentrated in Jul-Aug. In LECS, during the second half of the year there were some minutes of delay due to S-Staffing which is an increase over 2022 but still well below the values that were in 2019 for this cause, also the implementation of MIDAS during November caused minutes of delay due to P-Special Event during the transition procces.
The AESA Monitoring Process continues to monitor this indicator on a monthly basis taking into account the different causes of delay, since the incentive system implemented for RP3 considers a mechanism modulated by causes of delay. The evolution of the attributable and non-attributable delay causes is monitored in order to apply the incentive mechanism and to identify the reasons in the event of non-compliance.
The alert mechanism continues to be active to warn, months before the end of the year, of possible non-compliance. In 2023 this mechanism was activated to report to the Commission the expected non-compliance of this indicator, which finally ocurred.

Capacity planning

The NOP Rolling Seasonal Plan during 2023 has changed, covering now an outlook of eight weeks instead of six. The time horizon and frecuency of the updates is regularly reviewed.
Every week Enaire updated data to the plan (planned sector openings, maximum possible sector openings, sector capacity reductions if any, availability of support to operations staff, additional information -e.g. other constraints to be highlighted- and special events and major projects). The plan is a living document regularly updated and published by NM in order to be adapted to the changed conditions of the Air Navigation Service. Also a NOP for the 2024-2029 period was elaborated.
Regarding the current status of the main projects planned for 2023:
-Capacity and Quality of Service & Airspace
•LECB ACC: Capacity of the LEBL final approach sector was improved, on 18-Aug-2023, from 40 to 41 in East and West configurations. New sector LECBPLC and new configurations (3D, 5E) created.
Phase 2 of the FRA project is progressing as planned, with publication of additional connectivities in June 2023 and (scheduled for) December 2023. This project will continue until end of 2025, but the milestones for 2023 have been completed successfully.
The BALSE sector splitting was performed on May 18, 2023. Together with this splitting, new sectorizations were created, and the division flight level between LECBMNL and LECBMNU was changed from FL325 to FL345.
•GCCC ACC: New sector configurations have been created in October, 2023. In addition, the capacities of

GCCCNEX and GCCCNEL sectors was increased (NEX increased from 30 to 32 traffics/h, and NEL from 32 to 35 traffics/h).
Phase 2 of the FRA project is progressing as planned, with publication of additional connectivities in June 2023 and (scheduled for) December 2023. This project will continue until end of 2025, but the milestones for 2023 have been completed successfully.
Cooperation with Morocco for the improvement of the interface is progressing, but at a very slow pace.
•LECM ACC: New sectors and configurations published on Feb. 23, 2023 with the implementation of parallel independent approaches. Significant increase of capacity in LEMD final approach sectors.
Phase 2 of the FRA project is progressing as planned, with publication of additional connectivities in June 2023 and (scheduled for) December 2023. This project will continue until end of 2025, but the milestones for 2023 have been completed successfully.
Coordination of activities between Nav Portugal, Enaire regarding implementation of cross border free route with Lisboa are ongoing.
Significant changes in traffic flows are observed in Madrid ACC after recovery from COVID. Splitting of ZGZ/TER is ready to be implemented, but no benefit is expected from the project with current patterns. Therefore the project effective implementation has been postponed until benefits justify the implementation.
•LECP ACC: The MXX sector was split on 28 May, 2023. This sector split, together with the capacity increase of MXX performed in August 2022, is improving delivered capacity in a sector that was generating significant delays since 2018.
Redesign of Palma TMA, delayed for years due to environmental issues, will not be ready for 2025, and a new plan is being prepared. Currently it includes implementation of new procedures for LEMH and SIDs for LEPA in 2027, and new approach procedures for LEPA in 2028.
•LECS ACC: Redesign of MAR sector together with global redesign of several en-route sectors and associated configurations. Redesign of MAR sector, initially planned for 2024, was successfully implemented on November 2nd, 2023, ahead of schedule. The project implied a major redesign of several sector volumes and operational procedures, and was implemented together with the new procedures in Malaga TMA. During the transition plan capacities were reduced and some delays (Special Event) were generated. In the medium and long term, the project will provide additional overall capacity.
Phase 2 of the FRA project is progressing as planned, with publication of additional connectivities in 2023. This project will continue until end of 2025, but the milestones for 2023 have been completed successfully.

Application of Corrective Measures for Capacity (if applicable)

Targets in LECB, LECM, LECS and GCCC have not been met. In all ACCs except GCCC, C-ATC Capacity is the main cause of delay, representing 65% of the total delay. In LECB it is 61% but in LECM, LECP and LECS it is between 71% and 75%. In GCCC it is only 40% because the minutes caused by the implementation of RNAV1 procedures during October-November have resulted in many minutes for P-Special Event delay, being the first cause of delay with 41% of the total in that ACC. In LECB the delay due to W-Weather accounted for 34% of the total in this ACC, the highest percentage of the 5 ACCs; in the others, W-Weather accounted foe between 11% and 19% and in the 5 ACCs as a whole it represents 24%. P-Special Event delay accounted for 5% of the total due mainly to the contribution of RNAV1 implementation during October-November at GCCC, due to MIDAS during November at LECS and due to an Ocuupancy Trial during May at LECM.
Compared to 2019, it should be noted that LECB and LECM improved delay values even taking into account that the recovery of traffic to pre-pandemic levels has been achieved and surpassed in 2023. Traffic in 2023 has been higher than expected. In Sevilla there has been an increase of 16% taking 2019 as reference; in Palma, there has been a 7% increase. The rest of ACCs also with increase over 2019 figures, and even over 2022 figures. Sevilla with an increase of 13% over 2022 figures.These are average figures, but peak demand has been very strong.
The ERD ATT indicator of attributable causes of delay (CRSTMP) has also not met its target at national level, as well as by region, where only LECP has remained below the target. Despite C-ATC Capacity being the main cause of delay, fewer minutes have been reported compared to 2019 even having managed 2% more traffic. In contrast W-Weather delay has increased by almost 50% compared to 2019 minutes for this cause. Flight, airport and air traffic operations all suffered from volatility of demand, in general. Weather regulations were particularly volatile in 2023. Weather affected operations earlier this summer

(May) and continued through July-September. One of the sectors more affected in Spain by weather regulations in 2023 was the LECBCCC, which is indeed one of the most affected areas by thunderstorms in Spain.
The sector accumulating highest delay in Seville was LECSSUR. Demand increased above all expectations due to significant increase of traffic to and from Morocco. In addition, Moroccan companies refuse to overfly Algers, and plan their flights via Sevilla ACC and the Southern part of Barcelona ACC. The Santiago Oceanic (LECMSAO) sector also experienced a significant increase in trans-oceanic flights. These flights cause high workload, since ATCOs need to coordinate and transmit the oceanic clearance individually. Regulations are introduced to control complexity of the sector and this explains the high delay figures in this sector. Other circumstances could be new distribution of traffic flows due to changes in the en-route unit rates.
As reported to the Commission in December 2023, the non-compliance of the indicator ERD was foreseen and communicated according to Regulation (EU) 2019/317 Article 37(1). In that report, the situation was analyzed at route level and in each region, concluding that the improvements in capacity that could have led to meeting the targets were not met due to the large increase in traffic handled, in particular in the flow to Morocco causing overload in the LECSSUR sector, demand for overflying increased above expected, the negative contribution of Weather to a more optimal management of traffic flows and demand drift during the day that was causing problems for the night shift in many occasions. In general, the projects contemplated in ESPP3 were being implemented on time but did not appear to be sufficient to meet the targets set given the volume of traffic managed.
Recommendations to the ANSP to rectify the situation: In the report to the Commission submitted in December 2023, some of the additional measures planned by ENAIRE were explained. Some of the planned projects are the split of LECSSUR sector planned in April 2024, a change in the division level between the LECSSEVL and LECSSEVU sectors, the redesign of LECMSAN/LECMSAO sectors for 2025, new procedures for LECBCC to reduce the delay due to Weather, etc.
Endorse ENAIRE to continue implementing the capacity plan in order to achieve the objectives of delays and better air traffic management, focusing on projects that have an impact on the increase of available capacity, as well as on the implementation of projects that improve operations to manage traffic increases above pre-pandemic levels.
Special attention should be paid to the aspects mentioned in relation to the increase in traffic, since these are new circumstances not contemplated in the ESPP3 capacity plan and therefore the necessary measures are already taken through the additional measures described above to alleviate the problems that have arisen.
Measures put in place by the ANSP:

Continued effort to increase staffing levels and.or availability in Madrid ACC and Barcelona ACC - provide additioanl ATCOs - continuous and ongoing;
Continued alignment of traffic demand and sector opening times in Madrid ACC and Barcelona ACC - adapt configurations and sector openings constantly to traffic demand - achieved in 2023;
Cross-border scenarios LECB -LECP - to balance traffic between feeders to Palma airport. Some scenarios converted to static measures (RAD) - achieved in 2023;
France/Spain airspace restructuring project and re-sectorisation in Barcelona ACC and Madrid ACC - DSNA/EUROCONTROL/ENAIRE working group established - implementation in 2024;
Particpiation in Operational Excellence Program of EUROCONTROL - ASM-ATFM practices - achived in 2023;
Canarias ACC participation in the knock-on-delay trial initiative - new traffic counting methodology - implemented in 2023;
Significant use of scenarios in LECM - to manage overloads in upper sectors; some re-routings to avoid congested areas - achieved in 2023;
New scenarios created in LECSSUR sector - management of traffic increase - achieved in 2023.
Identified Risks to Capacity PerformanceAESA is aware that there is a certain risk of not meeting the performance target in 2023 given the degree of seasonality that exists in some units. The various monitoring activities will continue, monthly and annual monitoring, as well as periodic monitoring of the assignment of delay causes in order to know the evolution of the KPIs and the specific characteristics of each unit. This results in a better knowledge of the behavior of the indicators and a fluid communication and coordination with the ANSP. Additionally, AESA is monitoring the cases reported by our ANSP through

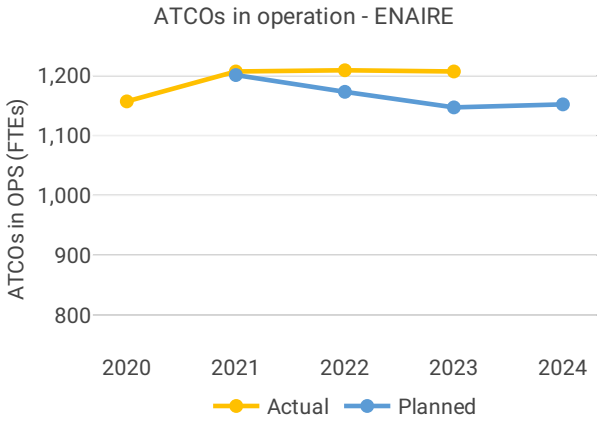
the Post-OPS performance adjustment process, collaborating with both ANSPs and other stakeholders with the aim of deepening the analysis of the cases.
As the year progresses and especially as the summer season unfolds, with the existing follow-up mechanisms thanks to various monitoring and alert system in force, if this risk of non-compliance materializes, it will be notified to the Commission as established in the Regulation (EU) 2019/317.

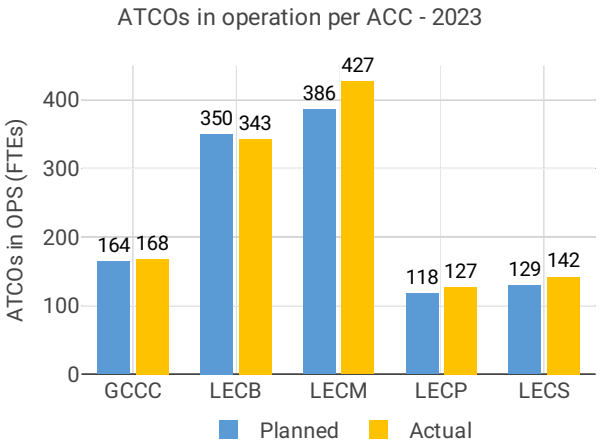
Additional Information Related to Russia's War of Aggression Against Ukraine Due to the Ukaine war, Oceanic traffic is proceeding via the Northern sectors in Madrid ACC, with particular impact on the SAO (Santiago Oceanic) sector. ATFCM procedures have been implemented to control workload on SAN/SAO when the level of oceanic traffic is high, and a new project has been planned to reorganize the Northern sectors and increase delivered capacity.
Other significant variations in traffic flows have been observed in 2023, but it is difficult to identify Russia's war against Ukraine as the main causal factor.

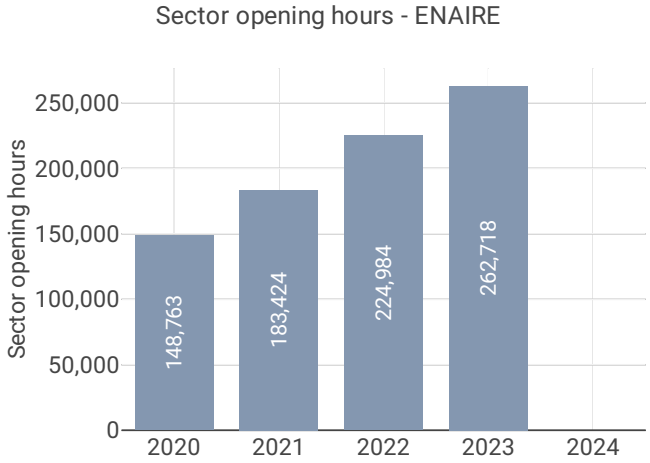
En route Capacity Incentive Scheme

Spain uses an incentive scheme based only on delays attributed to C,R,S,T,M & P delay codes. The new target was set at 0.144 minutes per flight and the actual performance is reported as 0.35 minutes per flight (CRSTMP only). This results in a reported malus of 3,034,031 €********CRSTMP Capacity target

4.2.2 Other indicators





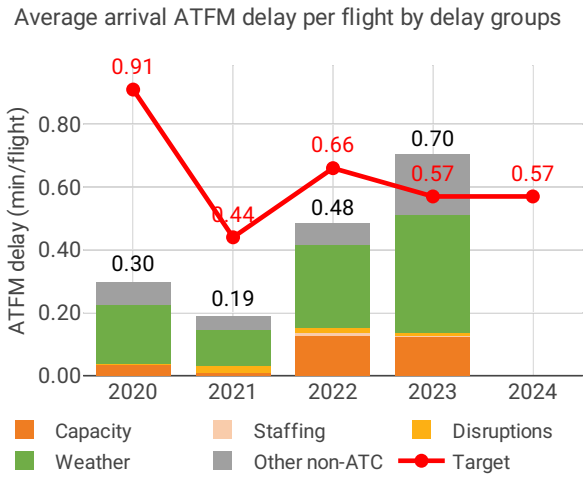


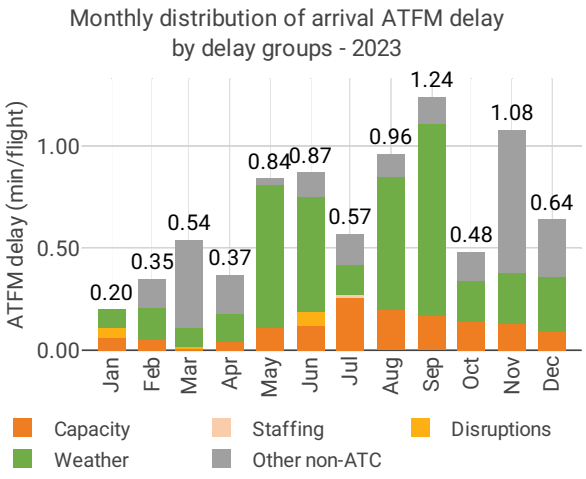
Focus on ATCOs in operations

N/A

4.3 Terminal performance

4.3.1 Arrival ATFM delay (KPI#2)





Focus on arrival ATFM delay

Spain includes seven airports under RP3 monitoring. However in accordance with IR (EU) 2019/317 and the traffic figures, Ibiza is not monitored for pre-departure delays.
The Airport Operator Data Flow, necessary for the monitoring of these pre-departure delays, is correctly implemented where required. Nevertheless, the quality of the reporting from 5 of the 6 the Spanish airports 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 the ensemble of Spanish airports under monitoring in 2023 was only 2% lower than in 2019, with an increase of 9% with respect to 2022. Gran Canaria, Palma, Malaga and Ibiza surpassed the 2019 traffic.
Average arrival ATFM delays in 2023 was 0.70 min/arr, compared to 0.48 min/arr in 2022. The national target was not met.
ATFM slot adherence remained very high (2023: 98%; 2022: 97.9%).

The national average arrival ATFM delay at Spanish airports in 2023 was 0.70 min/arr., an increase with respect to the 2022 value (0.48 min/arr) but still lower than the 2019 value (1.02 min/arr).
All Spanish airports under monitoring observed a deterioration to some extent in their performance, with Palma registering the highest arrival ATFM delay per flight (LEPA: 2023: 1.32 min/arr.)
53% of the delays at Spanish airports were attributed to Weather followed by 18% to ATC Capacity.
According to the Spanish monitoring report: *The capacity KPI #2 was above reference values in 2023 for Spain and only one airport met its targets (LEBL). The six other airports were above them. By 2023 the information related to the Post-Operations Performance (approved Post-Ops cases) distributed by EUROCONTROL through the Post-operations performance adjustment process, have been taken into account.
Pre-pandemic traffic levels have recovered later than en-route and were not above 2019 equivalents until October. The recovery has been uneven depending on the airport, some already exceeded their 2019 equivalents since the first months of the year (LEMG, LEIB, LEPA, LEAL, GCLP), while others have done it at the end of the year (LEBL) or have not yet done so (LEMD). The recovery of cumulative traffic in all 2023 is very remarkable in LEMG (12%) and LEIB (10%) but there are other airports that have not yet exceeded 2019 levels, LEMD (-9%), LEBL (-7%), so that the set of the seven airports (SPA7) stands at -2% compared to 2019. At the national level (SPA7) the traffic level was 2% lower than 2019 but the delay was 24% lower than 2019. The TAD indicator remained below target until July but has finally exceeded the target even though it has improved compared to the values achieved in 2019.
In the first quarter the year, the delay was moderate. From May onwards, with the reactivation of traffic and the development of the high season in most airports, more delay minutes were generated. The main cause of delay is W-Weather (53% of the 2023 total, similar to 2022 and compared to 49% in 2019), almost half of the minutes are concentrated in LEPA, also remarkable in LEBL and LEMD. The second cause of delay is C-ATC Capacity (18% of the 2023 total, compared to 26% in 2022 and 24% in

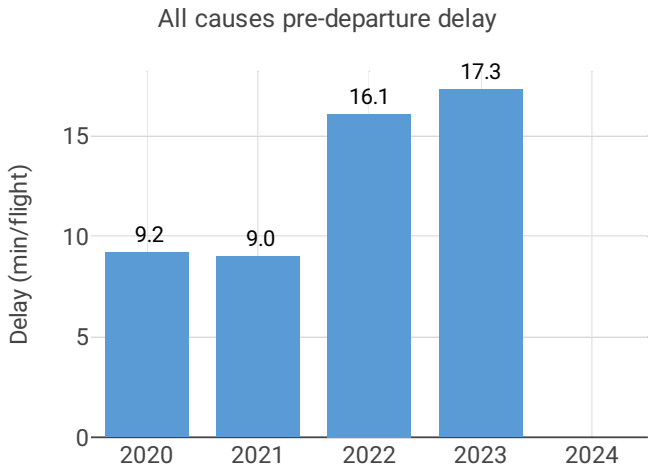
2019) but 2023 minutes have almost half reduced compared to 2019, more than half of the minutes are concentrated in LEMD, also highlights in LEPA. Compared to 2019, there is some reduction in delay minutes per G-Aerodrome Capacity (11% of the 2023 total) but an increase in minutes per P-Special Event cause (10% of the 2023 total) due to the effects of the implementation of AMBAR in LEMD in the first months of the year and MIDAS in LEMG in the last months of 2023.**Regarding the particularity of the LEAL and LEIB airports, in which different ANSPs are involved, from 2023 onwards it is necessary to differentiate TAD value for LEAL and LEIB aerodromes for incentive purposes. LEAL and LEIB arrival delay can be differentiate between SKYWAY (Aerodrome ATC service provider) and ENAIRE (Approach ATC service provider). According the document "Monitoring of delays in arrivals in RP3 for Alicante and Ibiza airports" prepared by AESA, the part of delay that would correspond to ENAIRE or SKYWAY (previously FerroNATS) for these two airports would be as follows:
LEAL: ENAIRE: 0,01 min/flight. SKYWAY: 0,06 min/flight. A few minutes due to G-Aerodrome Capacity and a few due to W-Weather, so much of it is allocated to the TWR-AD environment. Attributable delay causes is zero for both providers.
LEIB: ENAIRE: 0,24 min/flight . SKYWAY: 0,47 min/flight. Several causes of delay, highlighting W-Weather, A-Accident/Incident and G-Aerodrome Capacity, so more minutes are allocated to the TWR-AD environment than to the APP-TMA environment. Almost all the attributable delay causes corresponds to the APP-TMA environment, which is ENAIRE's responsibility.

Identification and analysis by the NSA of the underlying reasons or circumstances having led to the performance target not being achieved
All targets have been failed except at LEBL. At LEPA, LEBL and LEIB airports, W-Weather has been the first cause of delay, at LEMD W-Weather and C-ATC Capacity have been the main causes practically equal, LEMG has been very affected by the implementation of MIDAS in November causing P-Special Event to be the main cause of delay in 2023, while at GCLP the main cause of delay has been G-Aerodrome Capacity. The reduction of minutes compared to 2019 in causes C-ATC Capacity and G-Aerodrome Capacity is considered positive, highlighting that the minutes for C-ATC Capacity have been similar to those of 2022 but managing 9% more traffic.
The TAD ATT indicator of attributable causes of delay (CRSTMP) has also not met its target at national level but several airports have remained below their target. Only LEMD (due to its C-ATC Capacity delay minutes plus AMBAR implementation which contributed minutes per P-Special Event), LEMG (due to MIDAS implementation with P-Special Event minutes) and GCLP (due to C-ATC Capacity and T-ATC Equipment minutes due to calibrations) have failed to meet their attributable target.
As reported to the Commission in December 2023, the non-compliance of the indicator TAD was foreseen and communicated according to Regulation (EU) 2019/317 Article 37(1). In that report, the situation was analysed concluding that TAD compliance is highly conditioned by the presence of Weather, which is becoming increasingly frequent but this condition is not the same at all airports. The possibilities of finding projects that manage to reduce this type of delay is more difficult given the highly unpredictable nature of Weather. In general, some of the projects set out in ESPP3 to achieve the targets have been implemented or are being carried out as planned, although some of the projects have been rescheduled. The increase in the occurrence of bad weather and the consequent increase in delays, together with the postponement of some of the planned projects, may led to the failure to meet the targets set in ESPP3.*Recommendations to the ANSP to rectify the situation*
In the report to the Commission submitted in December 2023, some of the additional measures planned by ENAIRE were explained. Some of the planned projects are to impulse a TMA restructuring and a manual TWR update message handling implemented in some airports.
Endorse ENAIRE to continue implementing the capacity plan in order to achieve the objectives of delays and better air traffic management, focusing on projects that have an impact on the increase of available capacity, as well as on the implementation of projects that improve operations to manage traffic increases above pre-pandemic levels.
The Spanish monitoring report adds:
For 2024, no particular risk of non-compliance with the KPI is expected, but given the degree of seasonality that exists in some units, the various monitoring activities will continue, monthly and annual monitoring, as well as periodic monitoring of the assignment of delay causes in order to know the evolution of the KPIs and the specific characteristics of each unit. This results in a better knowledge of the behaviour of the indicators and a fluid communication and coordination with the ANSP. Additionally, AESA is monitoring

the cases reported by our ANSP through the Post-OPS performance adjustment process, collaborating with both ANSPs and other stakeholders with the aim of deepening the analysis of the cases.
As the year progresses and especially as the summer season unfolds, with the existing follow-up mechanisms thanks to various monitoring and alert system in force, if this risk of non-compliance materializes, it will be notified to the Commission as established in the Regulation (EU) 2019/317.

Spain's performance plan sets a national target on arrival ATFM delay for 2023 of 0.57 min/arr. This target was not met, with an actual performance of 0.70 min/arr. The incentive scheme uses modulated pivot values limited to CRSTMP delay causes. According to the Spanish monitoring report, this pivot value for CRSTMP is 0.168392 min/arr in 2023 and based on the attribution of the regulation reason, the actual CRSTMP value for 2023 was 0.207 min/arr.
The NSA calculates a penalty of € 29 042.40.

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



Airport level

	Avg arrival ATFM delay (KPI#2)				Slot adherence (PI#1)			
Airport name	2020	2021	2022	2023	2020	2021	2022	2023
Alicante	0.02	0.00	0.00	0.07	98.8%	99.7%	99.1%	99.3%
Barcelona	0.12	0.06	0.52	0.65	94.9%	98.7%	99.0%	99.2%
Ibiza	NA	0.09	0.40	0.71	99.0%	98.6%	99.1%	99.6%
Las Palmas	0.97	0.44	0.46	0.52	96.4%	95.5%	98.3%	96.8%
Madrid/Barajas	0.49	0.27	0.35	0.69	94.2%	96.6%	97.4%	97.1%
Malaga	0.01	0.02	0.11	0.49	93.4%	95.0%	95.2%	94.8%
Palma De Mallorca	0.05	0.29	1.13	1.32	97.3%	96.8%	97.9%	98.9%

	ATC pre departure delay (PI#2)				All causes pre departure delay (PI#3)			
Airport name	2020	2021	2022	2023	2020	2021	2022	2023
Alicante	0.23	0.23	0.51	0.67	9.0	8.1	17.4	19.4
Barcelona	0.00	0.04	0.09	NA	8.7	8.3	15.8	17.1
Ibiza	NA	NA	0.00	NA	6.3	9.1	19.7	21.1
Las Palmas	0.08	0.05	0.29	0.23	11.3	9.4	15.0	16.1
Madrid/Barajas	NA	NA	0.04	NA	9.5	9.7	13.1	14.9
Malaga	0.18	NA	0.52	0.48	11.3	10.9	19.1	20.8
Palma De Mallorca	NA	NA	0.30	0.35	5.4	8.2	20.0	20.6

Focus on performance indicators at airport level

ATFM slot adherence

All Spanish airports showed adherence around or above 95% and the national average was 98%. With regard to the 2% of flights that did not adhere, 1.5% was early and 0.5% was late.
The Spanish monitoring reports adds: *The result for 2023 (aggregate of the 7 airports subject to monitoring) improves by 0.6% the result of the previous year, being all results well above the value of 80% set*

in Regulation (EU) No. 255/2010 of the Commission . ANSPs does not believe it is necessary to establish specific improvement measures.
This PI is being monitored by AESA to evaluate the evolution of the indicators. If significant deviations are found, the possible causes will be analysed by contacting the relevant stakeholder.

ATC pre-departure delay

The calculation of the ATC pre-departure delay is based on the data provided by the airport operators through the Airport Operator Data Flow (APDF) which is properly implemented at all 6 Spanish airports subject to monitoring of this indicator.
However, there are several quality checks before EUROCONTROL can produce the final value which is established as the average minutes of pre-departure delay (delay in the actual off block time) associated to the IATA delay code 89 (through the APDF, for each delayed flight, the reasons for that delay have to be transmitted and coded according to IATA delay codes.
However, sometimes the airport operator has no information concerning the reasons for the delay in the off block, or they cannot convert the reasons to the IATA delay codes. In those cases, the airport operator might:
- Not report any information about the reasons for the delay for that flight (unreported delay)
- Report a special code to indicate they do not have the information (code ZZZ)
- Report a special code to indicate they do not have the means to collect and/or translate the information (code 999)

To be able to calculate with a minimum of accuracy the PI for a given month, the minutes of delay that are not attributed to any IATA code reason should not exceed 40% of the total minutes of pre-departure delay observed at the airport.
Finally, to be able to produce the annual figure, at least 10 months of valid data is requested by EUROCONTROL.
The high share of unidentified delay reported by 5 out of the 6 Spanish airports under monitoring (all except Alicante) prevent the calculation of this indicator. At Alicante, the only airport where the indicator could be calculated, the ATC pre-departure delay increased in 2023 (LEAL; 2022: 0.51 min/dep.; 2023: 0.68 min/dep.)
According to the Spanish monitoring report, *although LEIB does not yet reach >80k movements, it is monitored together with these 6 airports since it is one of the airports considered in the Spanish performance plan (ESPP3) for RP3.*
The Spanish monitoring report adds: *This PI is being monitored by AESA to evaluate the evolution of the indicators. If significant deviations are found, the possible causes will be analysed by contacting the relevant stakeholder.*
No change from last year's figures. During 2022 AESA focused on investigating the origin of the lack of data. The delay represented in this indicator is related to IATA code 89 and AESA was able to confirm that the lack of data was due to the fact that these data did not meet the minimum quality required to be considered. PRU sets a minimum threshold on the quality of its data, so if codes ZZZ and 999 exceed 40% of the delay minutes, then the indicator is not published with a numerical value, as it exceeds that minimum threshold set by PRU. Sometimes it happens that the airport operator has no information on the reasons for the delay or it cannot be associated with an IATA code. After several communications with the airport manager, AESA has understood that codes ZZZ and 999 are generally assigned when no code has been given (and therefore the cause of the delay is not known) or when the actual delay does not match the declared delay. The indicator picks up the initial declared delay data but this is subject to change and so there are occasions when it does not match the actual delay. This is why there is so much indeterminacy represented by these ZZZ and 999 codes. There does not seem to be a simple resolution to this situation since the data needed to publish the indicator is collected around the middle of the following month and the process of defining the codes that are more in line with reality is done through a post-operational analysis that takes considerably longer.

All causes pre-departure delay

The total (all causes) delay in the actual off block time at Spanish airports in 2022 increased once again at all airports. The highest pre-departure delays were observed at Palma (LEPA: 2020: 5.44 min/arr; 8.20 min/arr; 2022: 19.98 min/dep; 2023: 20.62 min/dep) and Malaga (LEMG: 2020: 11.33 min/arr; 10.86 min/arr; 2022: 19.14 min/dep; 2023: 20.85 min/dep).

According to the Spanish monitoring report: *The 2023 values are higher than the 2020-2022 values. The evolution of the indicator throughout 2023 is upward in the first half of the year and then remains stable until the end of the year, this behaviour is given in almost every airport considered in ESPP3. The aggregated result for 2023 (of the 6 airports subject to monitoring) is 17,57 min/dep, which slightly worsens compared to 2022 (16,20 min/dep).*
This type of delay seems to increase when the number of movements grows. The historical series with only 4 years (2020-2023) is very small because 2020-2021 are special years and therefore the behaviour of 2022-2023, being only two years, might not be extrapolable for future years considering that ENAIRE has reached its maximum historical level of traffic in 2023.
This PI is being monitored by AESA to evaluate the evolution of the indicators. If significant deviations are found, the possible causes will be analysed by contacting the relevant stakeholder.

5 COST-EFFIENCY - SPAIN

5.1 PRB monitoring

• The en route 2023 actual unit cost of Spain Continental was 49.12 €2017, -5.0% lower than the determined unit cost (51.69 €2017). The en route 2023 actual unit cost of Spain Canarias was 49.61 €2017, -16% lower than the determined unit cost (58.97 €2017). The terminal 2023 actual unit cost of Spain was 101.63 €2017, -9.8% lower than the determined unit cost (112.71 €2017).

• The en route 2023 actual service units of Spain Continental (12.5M) were +7.0% higher than the determined service units (11.6M). The en route 2023 actual service units of Spain Canarias (2.0M) were +24% higher than the determined (1.6M).

• In 2023, Spain Continental increased en route total cost by +10 M€2017 (+1.7%) compared to determined. The primary factor behind this difference was a significant overspend in the cost of capital for ENAIRE (+9.3 M€2017, or +37%). This gap mainly stemmed from the average interest rates exceeding the planned levels (from 0.8% to 3.3%).

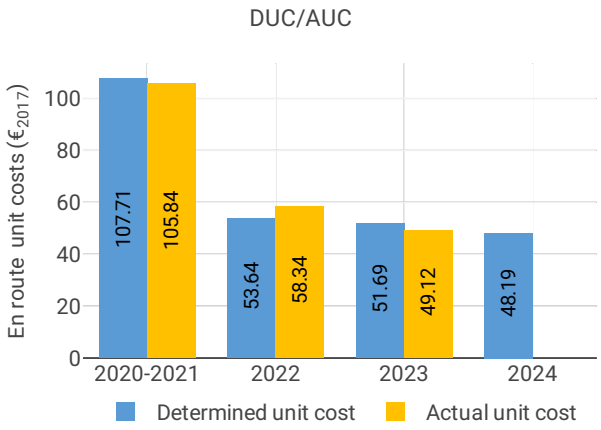
• In 2023, Spain Canarias increased en route total cost by +3.8 M€2017 (+4.0%) compared to determined. The main contributor to this difference was an overspend in other operating costs (+2.6 M€2017, or +17%), which is primarily due to energy costs that were significantly higher than planned.

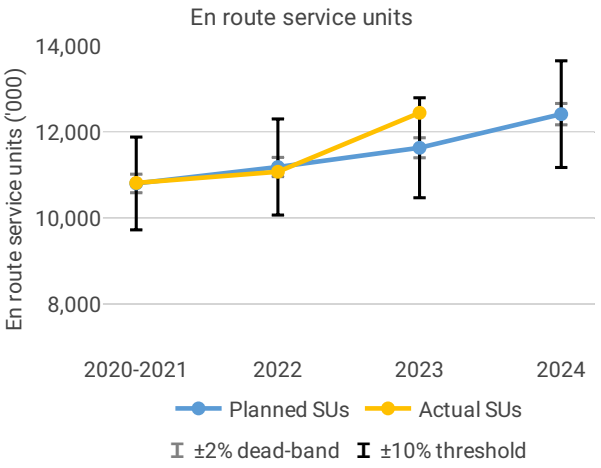
• ENAIRE spent 141 M€2017 in 2023 related to costs of investments for both en route and terminal charging zones, +6.4% more than determined (132 M€2017). The increase is attributed to the cost of capital, which was primarily driven by a significant rise in average interest rates, from 0.8% to 3.3%.

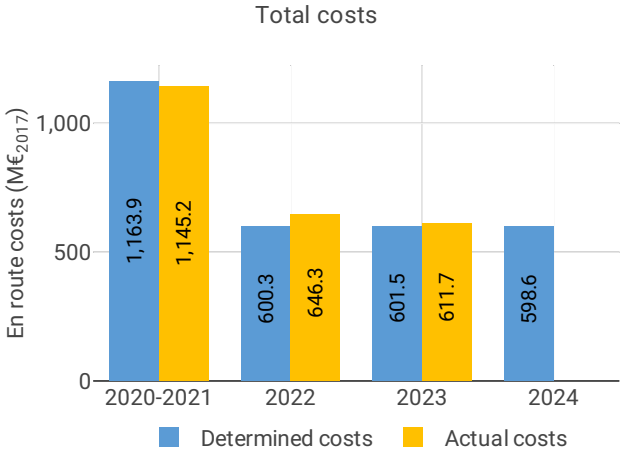
• The en route Spain Continental actual unit cost incurred by users in 2023 was 59.21€ (+9.4% above the 2023 DUC), while the en route Spain Canarias actual unit cost incurred by users was 38.20€ (-38% below the 2023 DUC). The terminal actual unit cost incurred by users was 34.16€ (-71% below the 2023 DUC). The difference between the AUCU and the DUC in en route charging zones is primarily attributed to the cross-financing adjustment that transferred 36 M€ from Spain Canarias to Spain Continental. In terminal charging zone, the difference between the AUCU and the DUC is primarily attributed to adjustment of other revenues (-80 M€).

5.2 En route charging zone - Spain Continental

5.2.1 Unit cost (KPI#1)

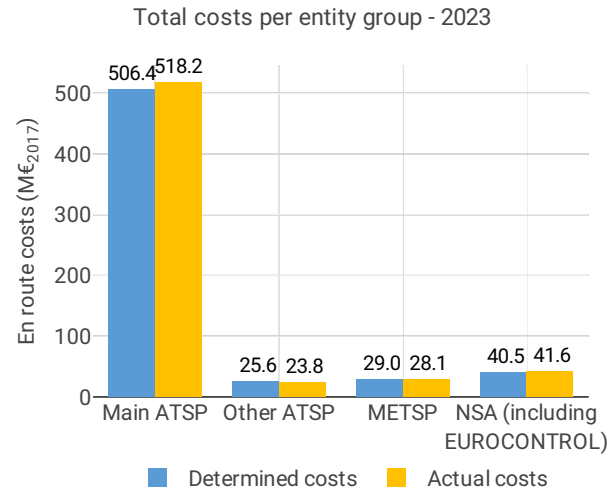


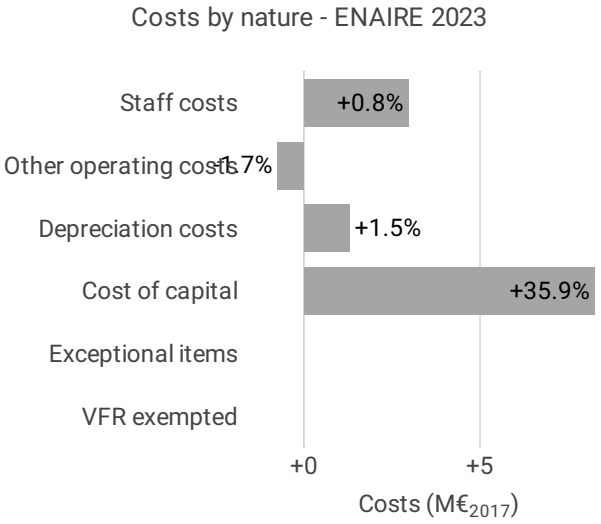




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	1,180	717	691	NA
Determined costs	1,191	622	630	634
Difference costs	-11	95	61	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	1.3%	1.5%	1.6%
Determined inflation index	NA	104.9	106.5	108.2
Actual inflation rate	NA	8.3%	3.4%	NA
Actual inflation index	NA	114.4	118.2	NA
Difference inflation index (p.p.)	NA	+9.5	+11.8	NA





Focus on unit cost

AUC vs. DUC

In 2023, the en route AUC was -5.0% (or -2.56 €2017) lower than the planned DUC. This results from the combination of significantly higher than planned TSUs (+7.0%) and higher than planned en route costs in

real terms (+1.7%, or +10.2 M€2017). It should be noted that actual inflation index in 2023 was +11.8 p.p. higher than planned.

En route service units

The difference between actual and planned TSUs (+7.0%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en route revenues is therefore shared between the ANSPs and the airspace users .

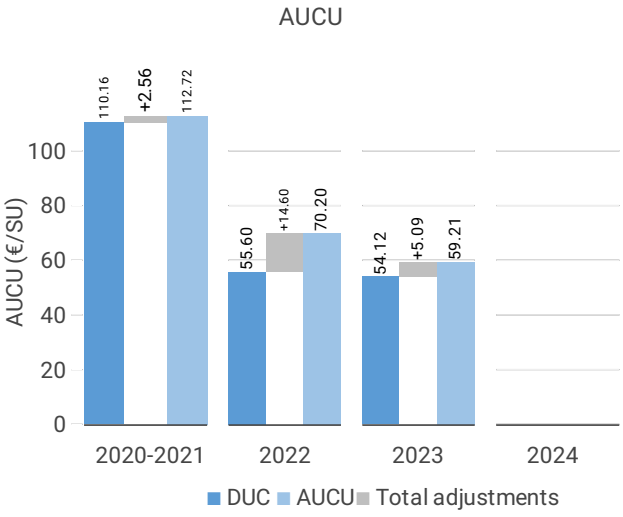
En route costs by entity

Actual real en route costs are +1.7% (+10.2 M€2017) higher than planned. This is the result of higher costs, in real terms, for the main ANSP, ENAIRE (+2.3%, or +11.8 M€2017) and the NSA/EUROCONTROL (+2.7%, or +1.1 M€2017) and lower costs for the MET service provider (-3.1%, or -0.9 M€2017) and the other ANSP (EA, -7.0%, or -1.8 M€2017).

En route costs for the main ANSP at charging zone level

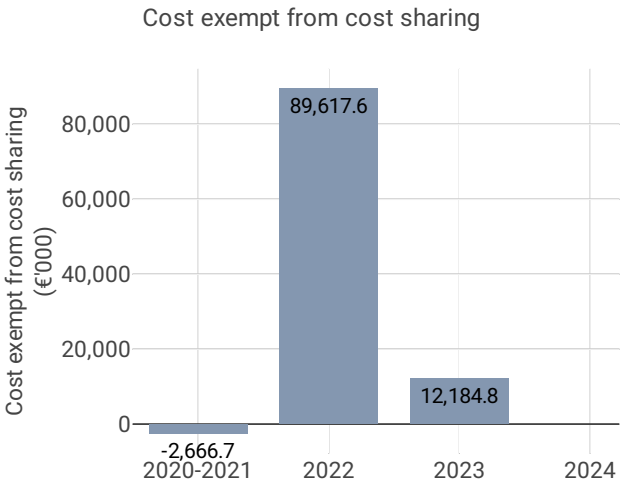
Higher than planned en route costs in real terms for ENAIRE in 2023 (+2.3%, or +11.8 M€2017) result from:
- Slightly higher staff costs (+0.8%), which reflects a combination of increases driven by changes in national laws on Public Employees salary and on Social Security Scheme National Law as well as the introduction of Special Active Reserve (through Law 26/2022 of 19 December), which, among others, solves the problem of forced retirement of ATCOs at the age of 65.
- Lower other operating costs (-1.7%) in real terms reflecting the impact of inflation index (+11.8 p.p.) since, in nominal terms, other operating costs were above planned (+9.2%) reflecting higher energy costs.
- Higher depreciation costs (+1.5%), and
- Significantly higher cost of capital (+35.9%), primarily reflecting the use of much higher average interest rate on debts to calculate WACC (3.3% vs 0.8% planned).

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



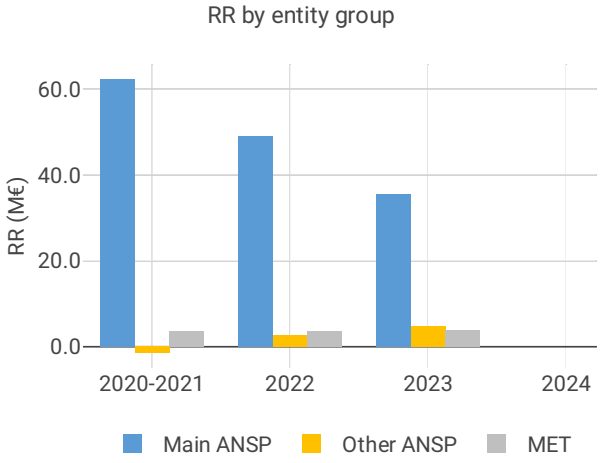
AUCU components (€/SU) – 2023

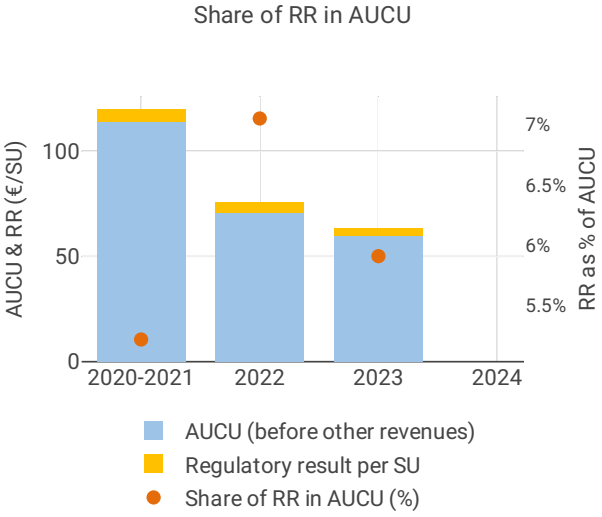
Components of the AUCU in 2023	€/SU
DUC	**54.12**
Inflation adjustment	4.12
Cost exempt from cost-sharing	0.98
Traffic risk sharing adjustment	-1.50
Traffic adj. (costs not TRS)	-0.55
Finantial incentives	-0.21
Modulation of charges	0.00
Cross-financing	2.91
Other revenues	-0.67
Application of lower unit rate	0.00
Total adjustments	5.09
AUCU	**59.21**
AUCU vs. DUC	**+9.4%**

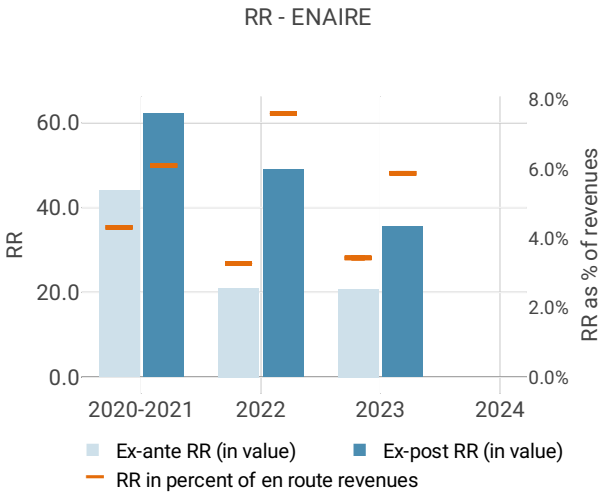


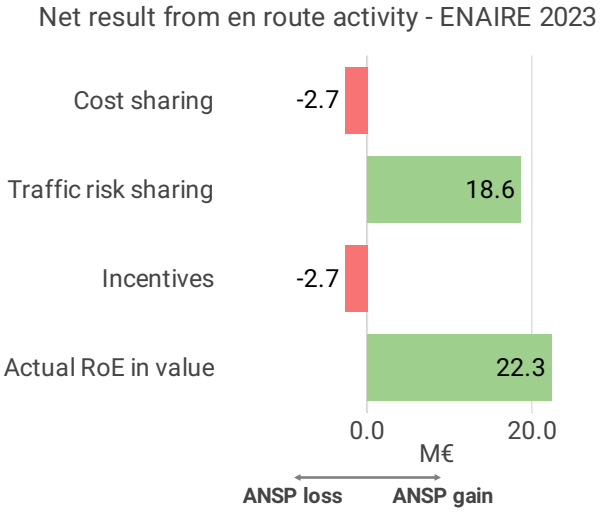
Cost exempt from cost sharing by item - 2023	€'000	€/SU
New and existing investments	11,091.7	0.89
Competent authorities and qualified entities costs	-290.7	-0.02
Eurocontrol costs	1,383.8	0.11
Pension costs	0.0	0.00
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**12,184.8**	**0.98**

5.2.3 Regulatory result (RR)









Focus on regulatory result

ENAIRE net gain on activity in the Spain Continental en route charging zone in the year 2023

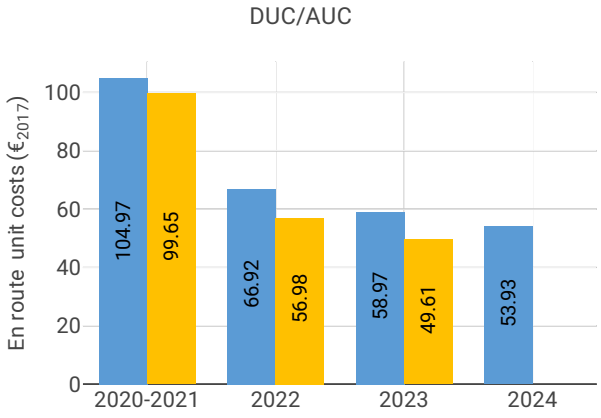
ENAIRE reported a net gain of +13.2 M€, as a combination of a loss of -2.7 M€ arising from the cost sharing mechanism, with a gain of +18.6 M€ arising from the traffic risk sharing mechanism and a loss of -2.7 M€ relating to financial incentives.

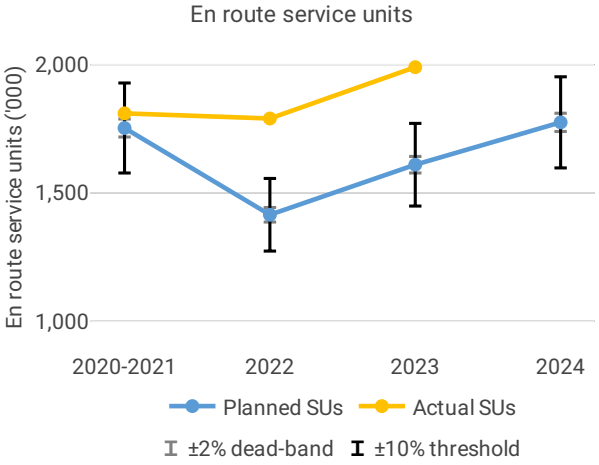
ENAIRE overall regulatory results (RR) for the en route activity

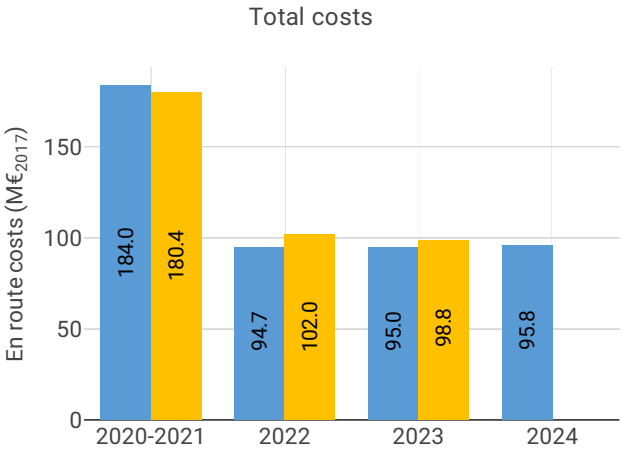
Ex-post, the overall RR taking into account the net gain from the en route activity mentioned above (+13.2 M€) and the actual RoE (+22.3 M€) amounts to +35.5 M€ (5.9% of the en route revenues). The resulting ex-post rate of return on equity is 13.1%, which is higher than the 8.2% planned in the PP.

5.3 En route charging zone - Spain Canarias

5.3.1 Unit cost (KPI#1)

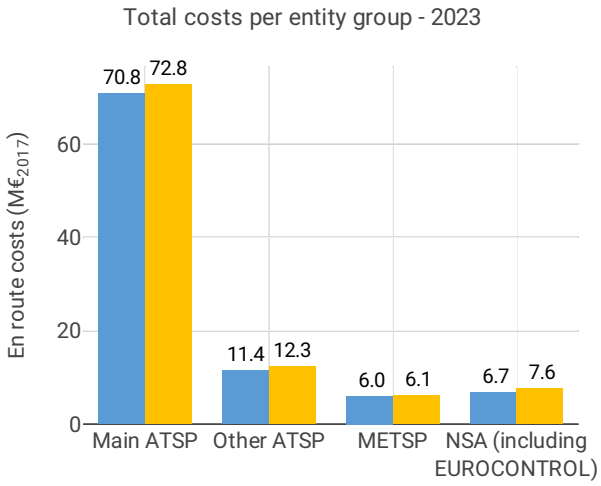


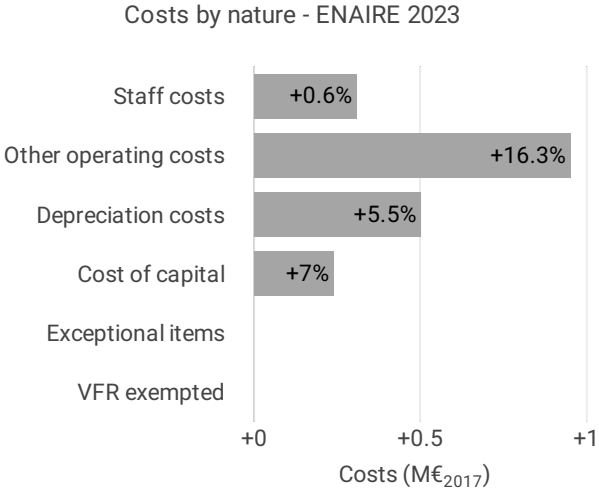




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	186	113	112	NA
Determined costs	188	98	100	102
Difference costs	-2	15	13	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	1.3%	1.5%	1.6%
Determined inflation index	NA	104.9	106.5	108.2
Actual inflation rate	NA	8.3%	3.4%	NA
Actual inflation index	NA	114.4	118.2	NA
Difference inflation index (p.p.)	NA	+9.5	+11.8	NA





Focus on unit cost

AUC vs. DUC

In 2023, the en route AUC was -15.9% (or -9.36 €2017) lower than the planned DUC. This results from the combination of significantly higher than planned TSUs (+23.6%) and higher than planned en route costs in real terms (+4.0%, or +3.8 M€2017). It should be noted that actual inflation index in 2023 was +11.8 p.p. higher than planned.

En route service units

The difference between actual and planned TSUs (+23.6%) falls outside the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en route revenues is therefore shared between the ANSPs and the airspace users .

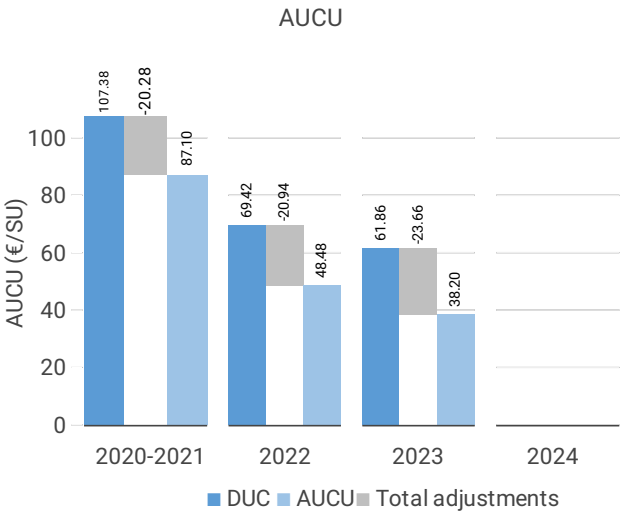
En route costs by entity

Actual real en route costs are +4.0% (+3.8 M€2017) higher than planned. This is the result of higher costs for the main ANSP, ENAIRE (+2.8%, or +2.0 M€2017), the other ANSP (EA), +7.4%, or +0.8 M€2017), the NSA/EUROCONTROL (+12.8%, or +0.9 M€2017) and the MET service provider (+1.3%, or +0.1 M€2017).

En route costs for the main ANSP at charging zone level

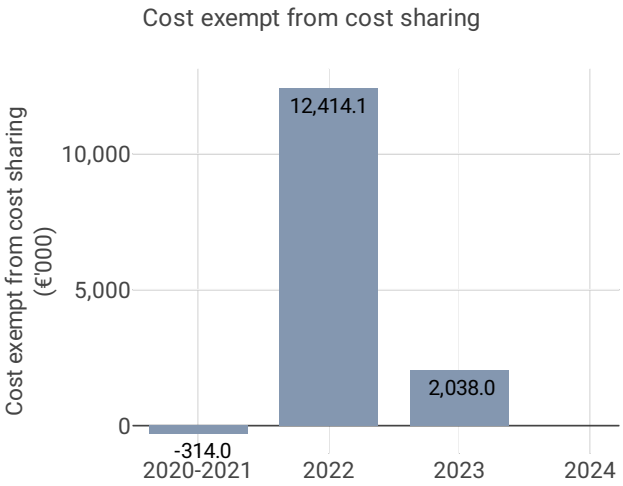
Higher than planned en route costs in real terms for ENAIRE in 2023 (+2.8%, or +2.0 M€2017) result from:
- Slightly higher staff costs (+0.6%), which reflects a combination of increases driven by changes in national laws on Public Employees salary and on Social Security Scheme National Law as well introduction of Special Active Reserve (through Law 26/2022 of 19 December), which, among others, solves the problem of forced retirement of ATCOs at the age of 65.
- Significantly higher other operating costs (+16.3%), primarily reflecting much higher than planned energy costs.
- Significantly higher depreciation costs (+5.5%),
- Significantly higher cost of capital (+7.0%), primarily reflecting the use of much higher average interest rate on debts to calculate WACC (3.3% vs 0.8% planned).

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



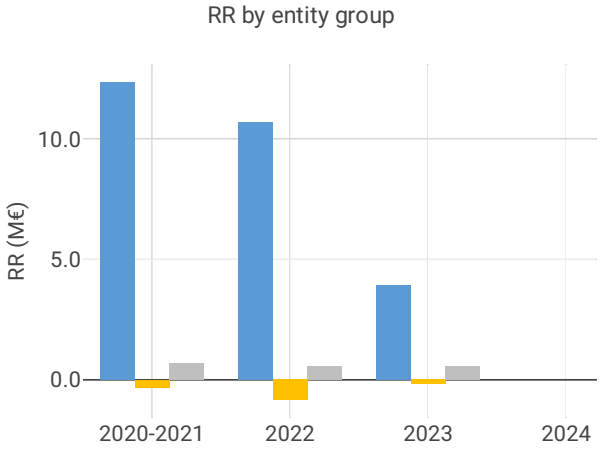
AUCU components (€/SU) – 2023

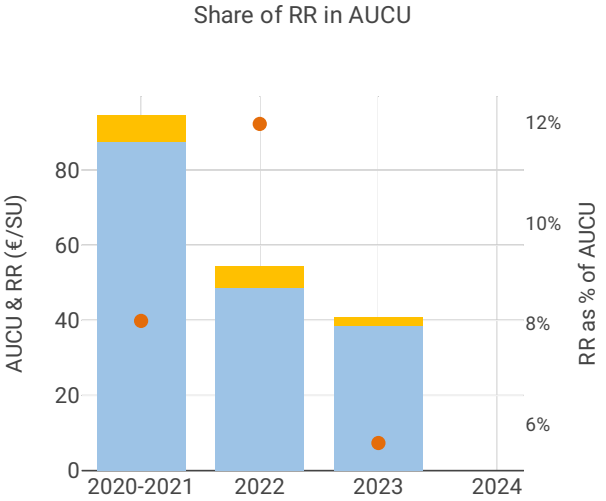
Components of the AUCU in 2023	€/SU
DUC	**61.86**
Inflation adjustment	4.23
Cost exempt from cost-sharing	1.02
Traffic risk sharing adjustment	-7.20
Traffic adj. (costs not TRS)	-2.97
Finantial incentives	-0.19
Modulation of charges	0.00
Cross-financing	-18.23
Other revenues	-0.32
Application of lower unit rate	0.00
Total adjustments	-23.66
AUCU	**38.20**
AUCU vs. DUC	**-38.2%**

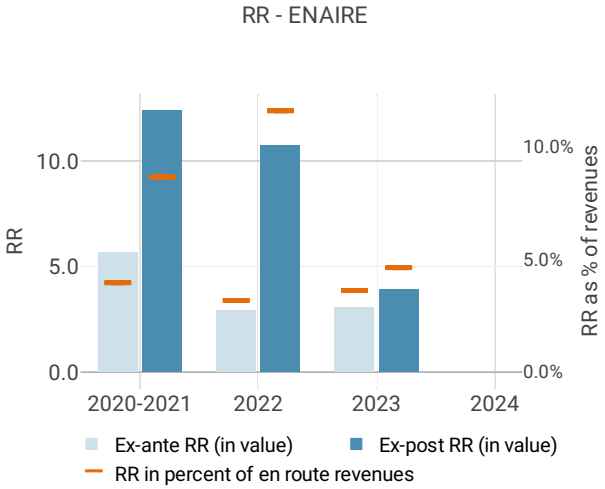


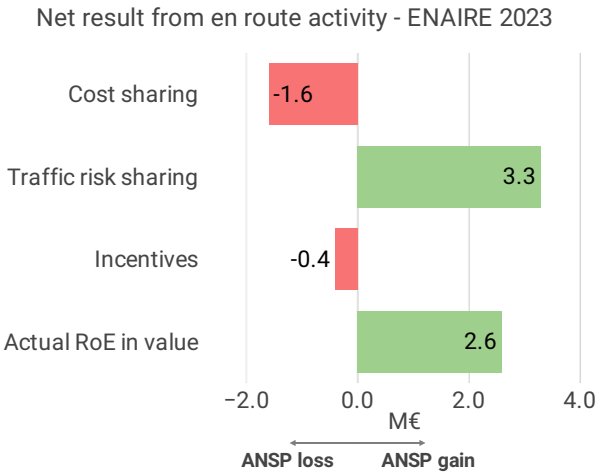
Cost exempt from cost sharing by item - 2023	€'000	€/SU
New and existing investments	1,174.7	0.59
Competent authorities and qualified entities costs	25.5	0.01
Eurocontrol costs	837.8	0.42
Pension costs	0.0	0.00
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**2,038.0**	**1.02**

5.3.3 Regulatory result (RR)









Focus on regulatory result

ENAIRE net gain on activity in the Spain Canarias en route charging zone in the year 2023

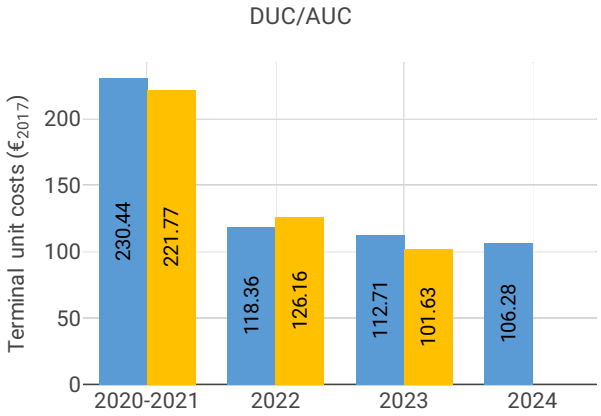
ENAIRE reported a net gain of +1.3 M€, as a combination of a loss of -1.6 M€ arising from the cost sharing mechanism, with a gain of +3.3 M€ arising from the traffic risk sharing mechanism and a loss of -0.4 M€ relating to financial incentives.

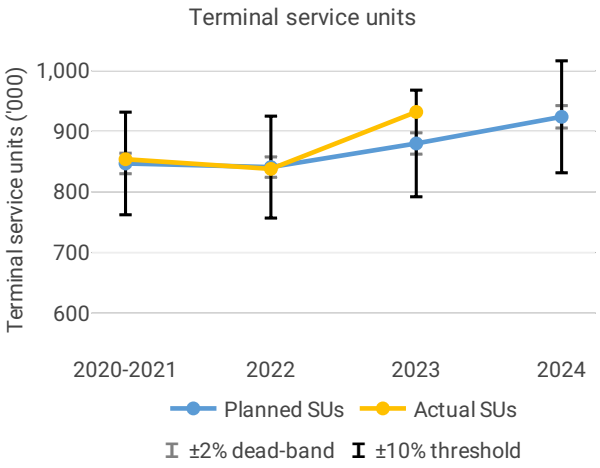
ENAIRE overall regulatory results (RR) for the en route activity in Spain Canarias en route charging zone

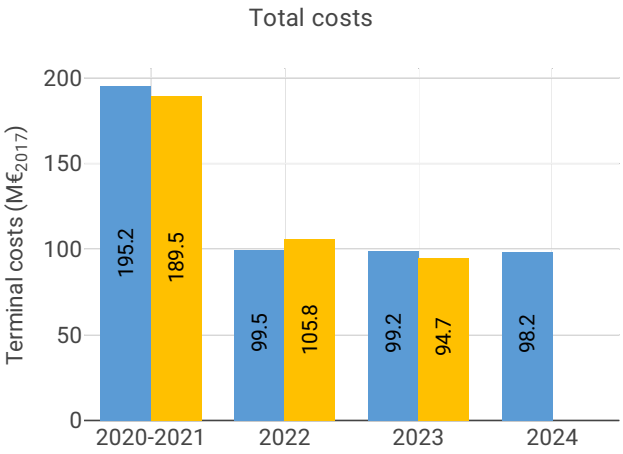
Ex-post, the overall RR taking into account the net gain from the en route activity mentioned above (+1.3 M€) and the actual RoE (+2.6 M€) amounts to +3.9 M€ (4.6% of the en route revenues). The resulting ex-post rate of return on equity is 12.4%, which is higher than the 8.2% planned in the PP.

5.4 Terminal charging zone

5.4.1 Unit cost (KPI#1)

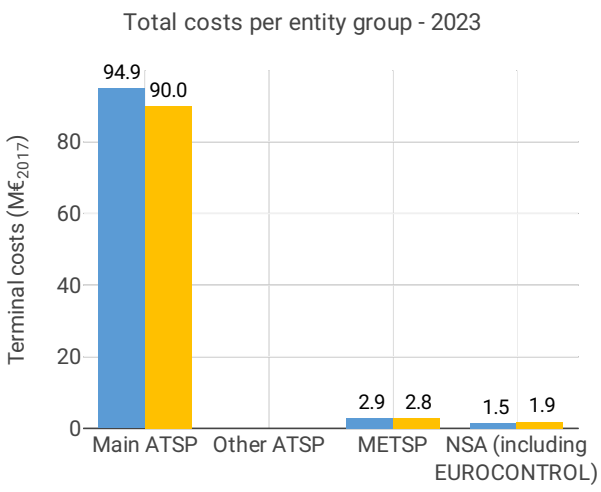


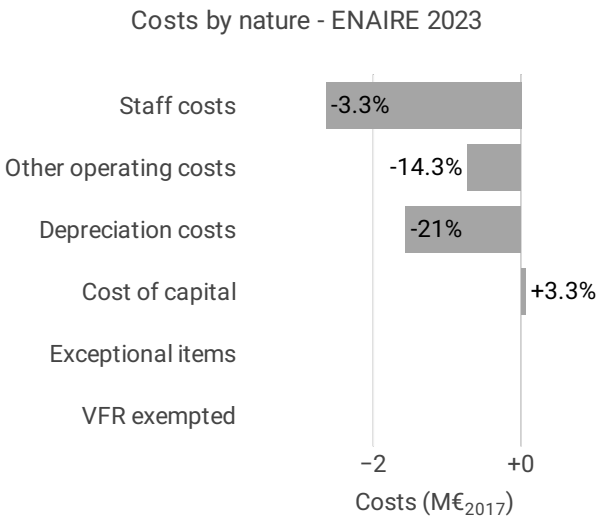




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	196	119	110	NA
Determined costs	201	104	105	105
Difference costs	-4	16	5	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	1.3%	1.5%	1.6%
Determined inflation index	NA	104.9	106.5	108.2
Actual inflation rate	NA	8.3%	3.4%	NA
Actual inflation index	NA	114.4	118.2	NA
Difference inflation index (p.p.)	NA	+9.5	+11.8	NA





Focus on unit cost

AUC vs. DUC

In 2023, the terminal AUC was -9.8% (or -11.08 €2017) lower than the planned DUC. This results from the combination of significantly higher than planned TNSUs (+5.9%) and lower than planned terminal costs in real terms (-4.5%, or -4.5 M€2017). It should be noted that, in nominal terms, terminal costs were +4.9% (+5.1 M€) above the plan since the inflation index in 2023 was +11.8 p.p. higher than planned.

Terminal service units

The difference between actual and planned TNSUs (+5.9%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ANSP and the airspace users .

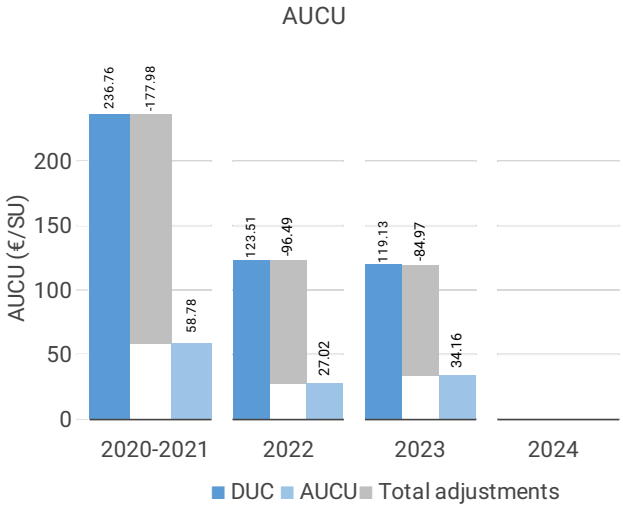
Terminal costs by entity

Actual real terminal costs are -4.5% (-4.5 M€2017) lower than planned. This is the result of lower costs, in real terms, for the main ANSP, ENAIRE (-5.1%, or -4.9 M€2017) and the MET service provider (-0.5%) and higher costs for the NSA (+26.6%, or +0.4 M€2017).

Terminal costs for the main ANSP at charging zone level

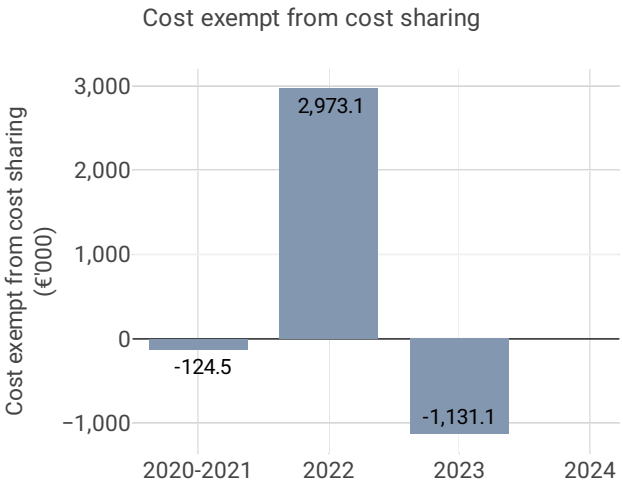
Significantly lower than planned terminal costs in real terms for ENAIRE in 2023 (-5.1%, or -4.9 M€2017) result from:
- Lower staff costs (-3.3%) in real terms. It is noted that in nominal terms the costs were above the plan (+7.4%), reflecting a combination of increases driven by changes in national laws on Public Employees salary and on Social Security Scheme National Law as well as the introduction of Special Active Reserve (through Law 26/2022 of 19 December), which, among others, solves the problem of forced retirement of ATCOs at the age of 65.
- Significantly lower other operating costs (-14.3%),
- Significantly lower depreciation costs (-21.0%) reflecting "a *lower percentage of asset base cost allocation in the TNC charging zone"*, and
- Higher cost of capital (+3.3%), primarily reflecting the use of much higher average interest rate on debts to calculate WACC (3.3% vs 0.8% planned).

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



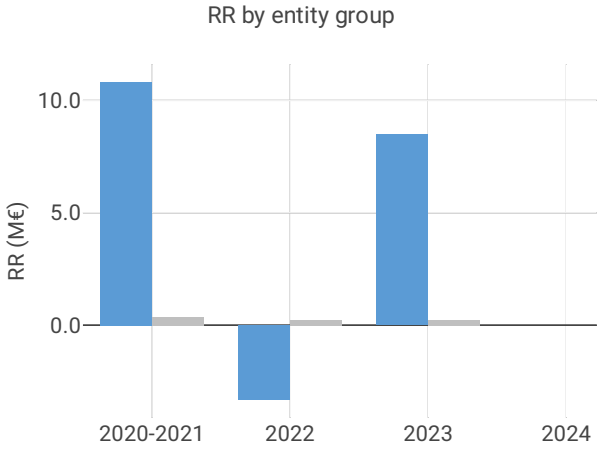
AUCU components (€/SU) – 2023

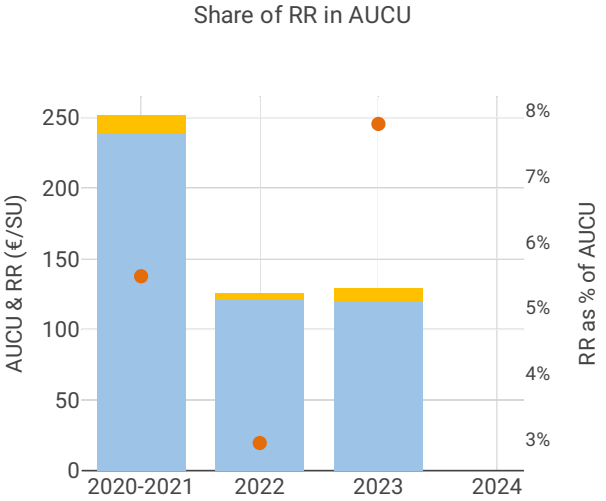
Components of the AUCU in 2023	€/SU
DUC	**119.13**
Inflation adjustment	11.00
Cost exempt from cost-sharing	-1.21
Traffic risk sharing adjustment	-2.93
Traffic adj. (costs not TRS)	-0.28
Finantial incentives	-0.03
Modulation of charges	0.00
Cross-financing	0.00
Other revenues	-85.76
Application of lower unit rate	-5.74
Total adjustments	-84.97
AUCU	**34.16**
AUCU vs. DUC	**-71.3%**

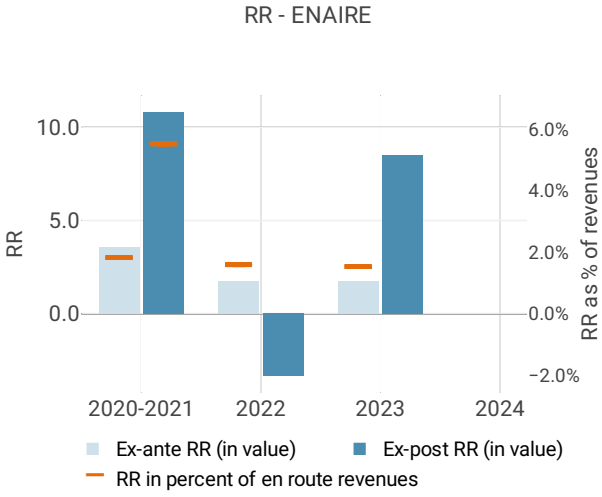


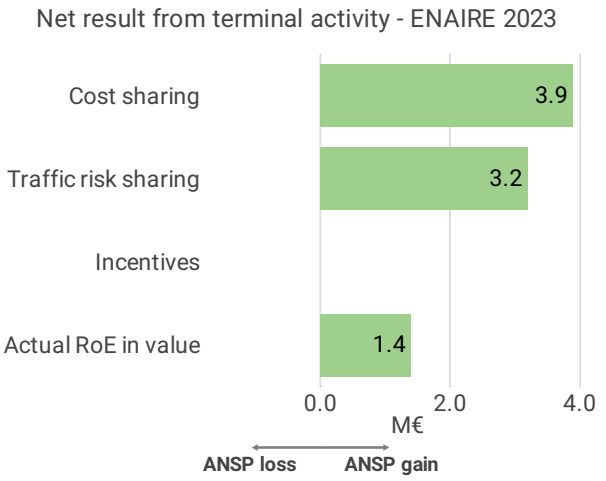
Cost exempt from cost sharing by item - 2023	€'000	€/SU
New and existing investments	-1,528.3	-1.64
Competent authorities and qualified entities costs	397.2	0.43
Eurocontrol costs	0.0	0.00
Pension costs	0.0	0.00
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**-1,131.1**	**-1.21**

5.4.3 Regulatory result (RR)









Focus on regulatory result

ENAIRE net gain on activity in the Spain terminal charging zone in the year 2023

ENAIRE reported a net gain of +7.1 M€, as a combination of a gain of +3.9 M€ arising from the cost sharing mechanism, with a gain of +3.2 M€ arising from the traffic risk sharing mechanism; however, as mentioned in Box 9, it is recalled that only the part related to final approach will be recovered from airspace users.

ENAIRE overall regulatory results (RR) for the terminal activity

Ex-post, the overall RR taking into account the net gain from the terminal activity mentioned above (+7.1 M€) and the actual RoE (+1.4 M€) amounts to +8.5 M€ (7.6% of the terminal revenues). The resulting ex-post rate of return on equity is 49.8%, which is higher than the 8.2% planned in the PP.

Note 1: It is noted that only a smaller portion of terminal determined costs (≈22% in 2023) is charged to airspace users through terminal charges, while the rest is financed through the income relating to the service agreement with the airport operator (see also box 9), which is "for somewhat fixed amount independent from the traffic levels". This should be taken into consideration when interpreting the regulatory result for Spain TCZ.Note 2: Ex-post RR does not take into account the application of the lower unit rate as per Art. 29.6 (loss in revenues corresponds to -5.3 M€ for 2023).