



Performance Review Body Monitoring Report

Romania - 2022

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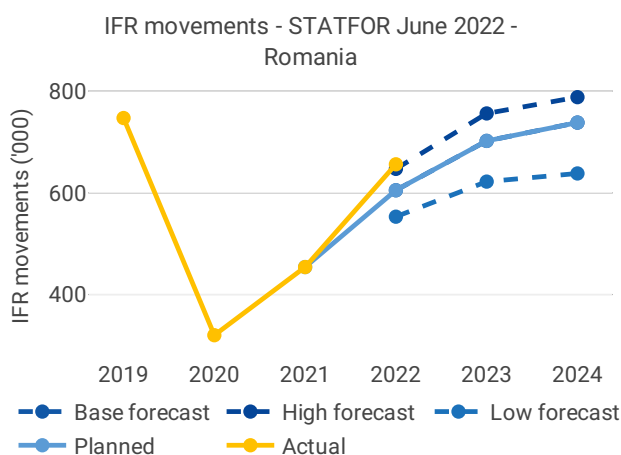
1 OVERVIEW

1.1 Contextual information

National performance plan adopted following Commission Decision (EU) 2022/2424 of 5 December 2022

List of ACCs	1	Exchange rate (1 EUR=)		Main ANSP	
Bucharest ACC		2017: 4.56629 RON		• ROMATSA	
		2022: 4.92795 RON			
No of airports in the scope of the performance plan:		Share of Union-wide:		Other ANSPs	
• ≥80'K	1	• traffic (TSUs) 2022	4.4%	–	
• <80'K	1	• en route costs 2022	3.0%	MET Providers	
		Share en route / terminal costs 2022	91% / 9%	–	
		En route charging zone(s)			
		Romania			
		Terminal charging zone(s)			
		Romania			

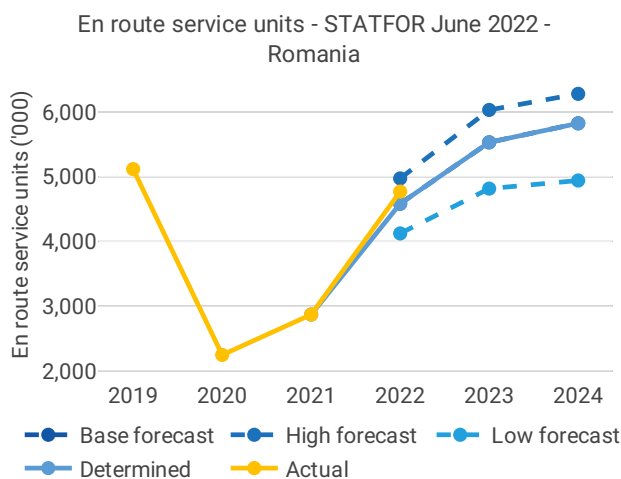
1.2 Traffic (En route traffic zone)



- Romania recorded 656K actual IFR movements in 2022, +45% compared to 2021 (454K).

- Actual 2022 IFR movements were +8.5% above the plan (605K).

- Actual 2022 IFR movements represent 88% of the actual 2019 level (747K).

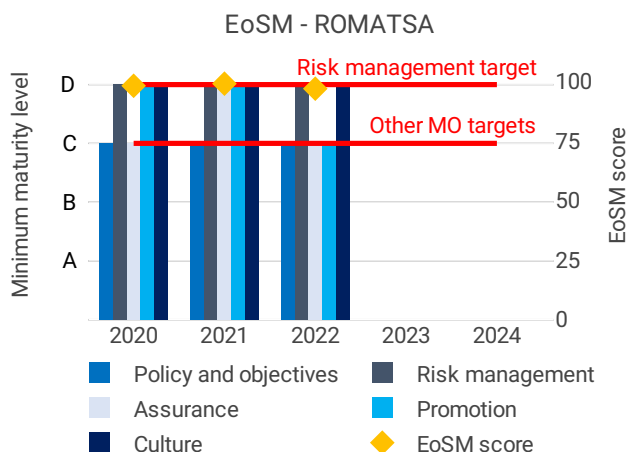


- Romania recorded 4,770K actual en route service units in 2022, +66% compared to 2021 (2,870K).

- Actual 2022 service units were +4.1% above the plan (4,583K).

- Actual 2022 service units represent 93% of the actual 2019 level (5,117K).

1.3 Safety (Main ANSP)

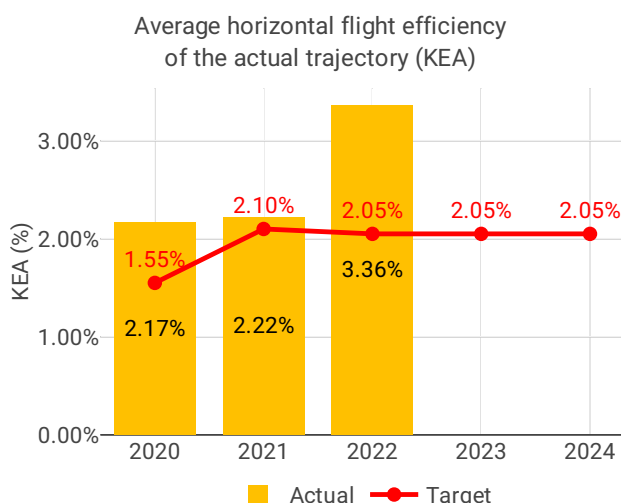


- ROMATSA has already exceeded the RP3 EoSM targets in 2020 and remained on or above the targets since then. ROMATSA, together with the NSA, developed a safety strategy including various measures to monitor the implementation and efficiency of safety action to ensure high safety performance.

- Romania recorded stable performance with respect to safety occurrences, with no runway incursions and a marginal increase in the rate of separation minima infringements relative to 2021. The NSA regularly monitors the safety occurrences and perform specialized analysis on daily, quarterly, and yearly basis.

- ROMATSA could improve its safety management by implementing automated safety data recording systems.

1.4 Environment (Member State)



- Romania achieved a KEA performance of 3.36% compared to its target of 2.05% and did not contribute positively towards achieving the Union-wide target. KEA worsened by 1.14 p.p. compared to 2021.

- The NSA states that despite the significant traffic reduction, previous geopolitical situations continue (Black Sea, Eastern Ukraine, and Crimea) and are further exacerbated by Russia's war of aggression against Ukraine, and related RAD restrictions in 2022.

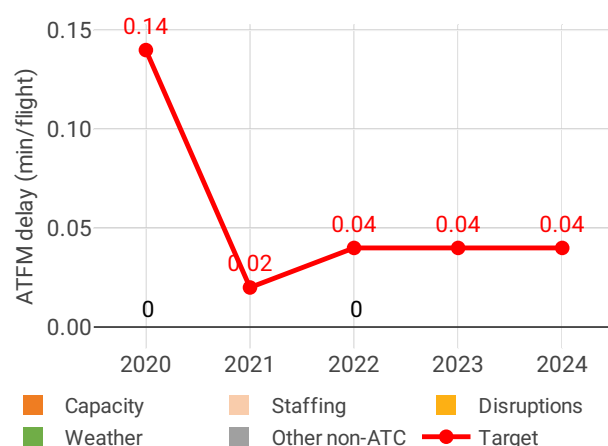
- KEP and SCR worsened by 0.97 and 1.66 p.p. respectively.

- The share of CDO flights decreased by 9.38% compared to 2021.

- During 2022, additional time in terminal airspace increased from 0.57 to 0.58 min/flight, while additional taxi out time increased from 1.66 to 2.08 min/flight.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



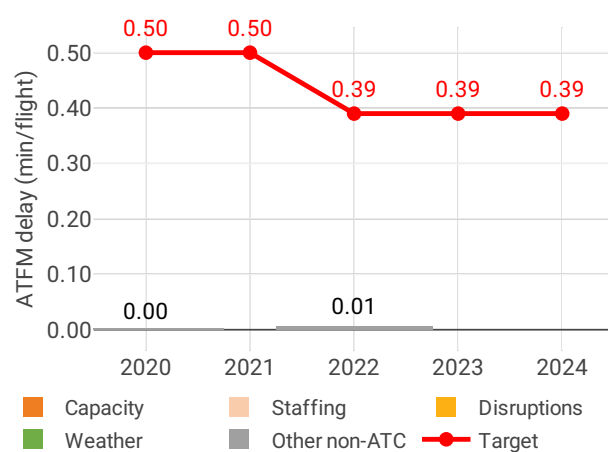
- Romania registered zero minutes of average en route ATFM delay per flight during 2022, thus achieving the local target value of 0.04.

- The average number of IFR movements was 12% below 2019 levels in Romania in 2022.

- A 12% increase in the number of ATCOs in OPS is expected by the end of RP3 with the actual value being in line with the 2022 plan in Bucharest ACC.

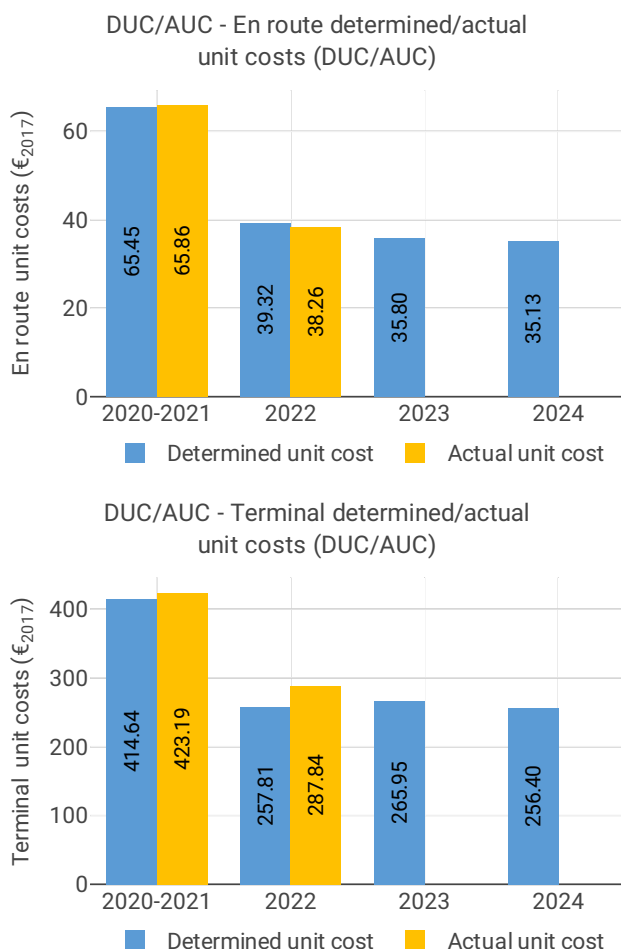
- The yearly total of sector opening hours in Bucharest ACC was 42,459 in 2022, showing a 24.5% increase compared to 2021. Sector opening hours are 0.9% below 2019 levels.

Average arrival ATFM delay per flight by delay groups



- Bucharest ACC registered 18.35 IFR movements per one sector opening hour in 2022, being 10.1% below 2019 levels.

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



- The en route 2022 actual unit cost of Romania was 38.10 €2017, -3.1% lower than the determined unit cost (39.32 €2017).⁵ The terminal 2022 actual unit cost was 287.04 €2017, +11% higher than the determined unit cost (257.81 €2017).

- The en route 2022 actual service units (4,770K) were +4.1% higher than the determined service units (4,583K).

- The en route 2022 actual total costs were 1.6 M€2017 (+0.9%) higher than determined. The increase in staff costs (+5.1 M€2017, or +3.8%) compared to determined was partially offset by decreases in other operating costs and cost of capital. Staff costs increased mainly due to an increase in pension cost and inflation compensation.

- ROMATSA spent 17.9 M€2017 in 2022 related to costs of investments, -1.7% less than planned (18.2 M€2017), due to delays of nine investments as result of delays in procurement procedures.

- The en route actual unit cost incurred by users in 2022 was 45.42€, while the terminal actual unit cost incurred by users was 316.41€.

2 SAFETY - ROMANIA

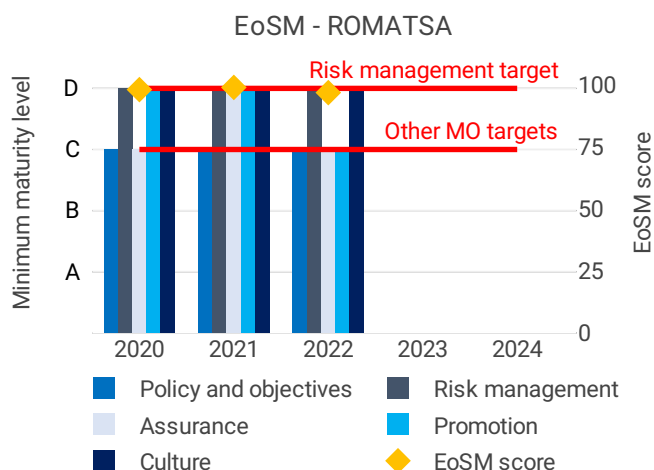
2.1 PRB monitoring

- ROMATSA has already exceeded the RP3 EoSM targets in 2020 and remained on or above the targets since then. ROMATSA, together with the NSA, developed a safety strategy including various measures to monitor the implementation and efficiency of safety action to ensure high safety performance.

- Romania recorded stable performance with respect to safety occurrences, with no runway incursions and a marginal increase in the rate of separation minima infringements relative to 2021. The NSA regularly monitors the safety occurrences and perform specialized analysis on daily, quarterly, and yearly basis.

- ROMATSA could improve its safety management by implementing automated safety data recording systems.

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



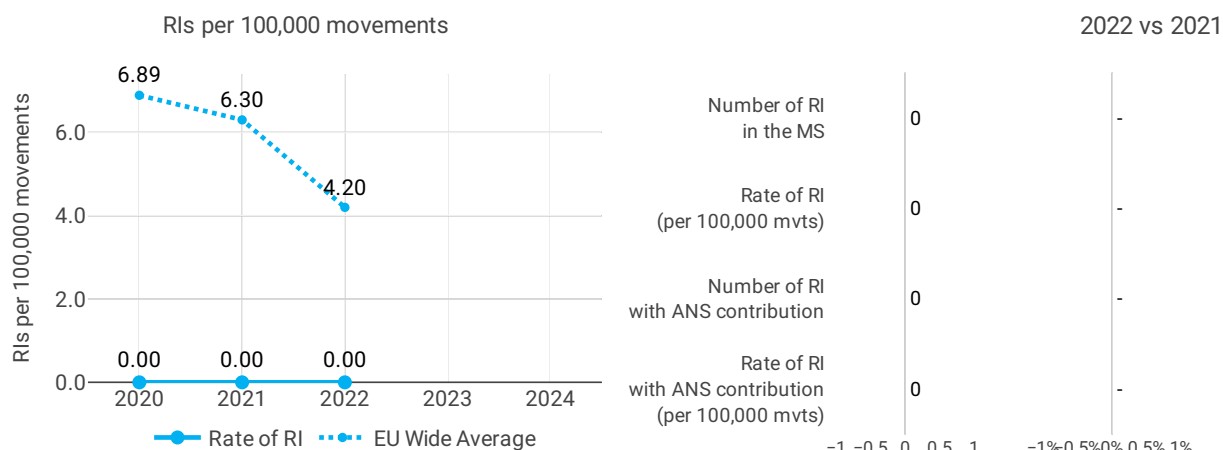
Focus on EoSM

All five EoSM components of the ANSP meet or exceed already the RP3 target level. Compared with 2021, in 2022 a decrease of maturity was observed for two questions in “Safety Assurance” and “Safety Promotion” components reducing the maturity from level D to the level C. The ANSP continues however to achieve the RP3 target level.

Detailed information on Safety performance monitoring for the year 2022 are included in Performance Review Body Monitoring Report 2022, Annex III – Safety report

2.3 Safety occurrences

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



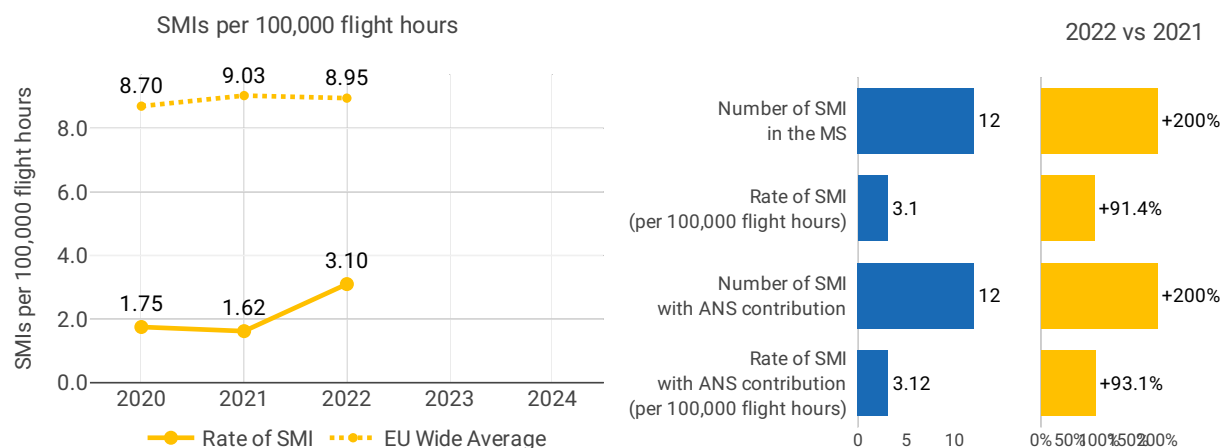
Rate of RIs per 100,000 airport movements - Romania

#	Airport name	APT movements	Number of RI	Rate RI per 100,000
1	Bucharest - Otopeni	102,208	0	0.00
2	Bucharest - Băneasa	24,598	0	0.00

Focus on runway incursions

Detailed information on Safety performance monitoring for the year 2022 are included in Performance Review Body Monitoring Report 2022, 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	ROMATSA	171,847	247,561	384,582	NA	NA	3	4	12	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	ROMATSA	1.7	1.6	3.1	NA	NA	NA	-7%	+93%	NA	NA

Focus on separation minima

Detailed information on Safety performance monitoring for the year 2022 are included in Performance Review Body Monitoring Report 2022, Annex III – Safety report

2.3.3 Quality of occurrences reporting

Detailed information on Safety performance monitoring for the year 2022 are included in Performance Review Body Monitoring Report 2022, Annex III – Safety report

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

2022	
For RIs	For SMIs
X	X

Detailed information on Safety performance monitoring for the year 2022 are included in Performance Review Body Monitoring Report 2022, Annex III – Safety report

3 ENVIRONMENT - ROMANIA

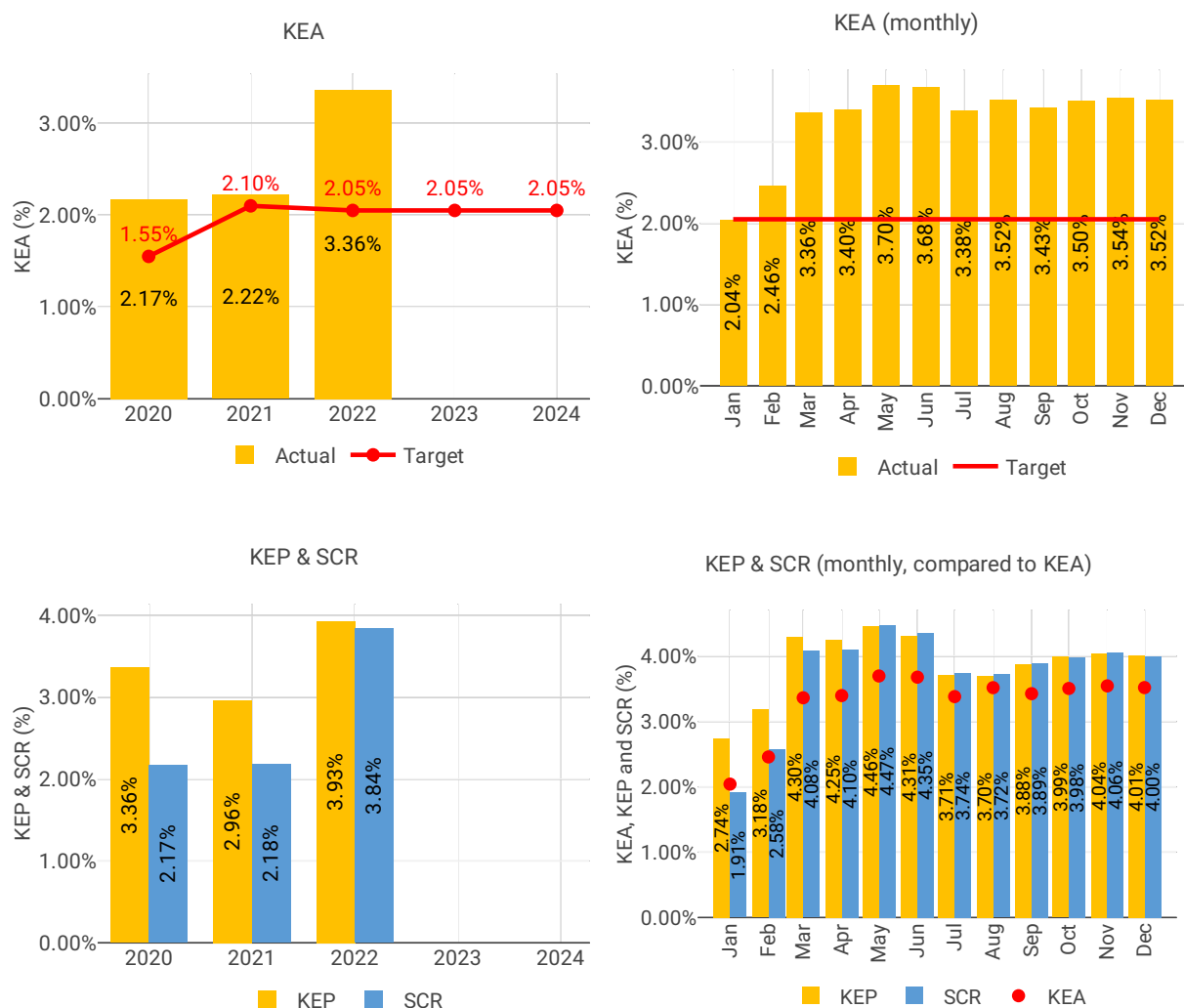
3.1 PRB monitoring

- Romania achieved a KEA performance of 3.36% compared to its target of 2.05% and did not contribute positively towards achieving the Union-wide target. KEA worsened by 1.14 p.p. compared to 2021.

- The NSA states that despite the significant traffic reduction, previous geopolitical situations continue (Black Sea, Eastern Ukraine, and Crimea) and are further exacerbated by Russia's war of aggression against Ukraine, and related RAD restrictions in 2022.
- KEP and SCR worsened by 0.97 and 1.66 p.p. respectively.
- The share of CDO flights decreased by 9.38% compared to 2021.
- During 2022, additional time in terminal airspace increased from 0.57 to 0.58 min/flight, while additional taxi out time increased from 1.66 to 2.08 min/flight.

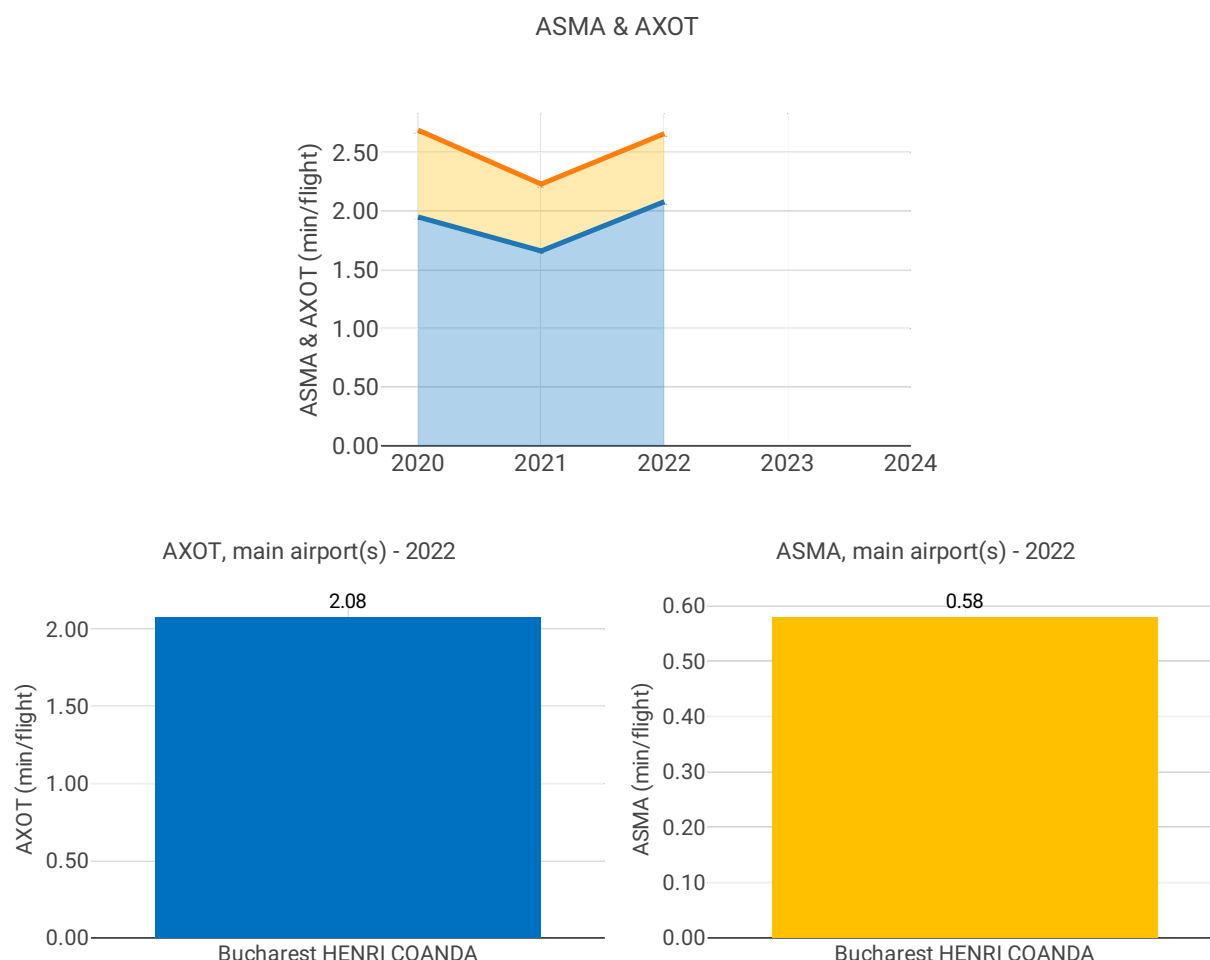
3.2 En route performance

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

Additional taxi-out times at Bucharest/Otopeni (LROP; 2019: 2.67 min/dep.; 2020: 1.95 min/dep.; 2021: 1.66 min/dep.; 2022: 2.08 min/dep.) increased in 2022. In the Romanian monitoring report, ROMATSA mentions the same measures or initiatives as last year, although no dates are provided:

a) Implemented:

- clearance delivery position;
 - A-SMGCS Level 1 at Otopeni TWR - advance surface management ground control system;
 - Common procedure between Bucharest Airports National Company and TWR Otopeni for repairing works periods on the manoeuvring area, i.e. pre-established alternative standard taxi routes;
 - Common procedure regarding ATFM (according to EU Reg 255/2010) regarding the regulation of traffic in situations that may influence the airport's capacity.
- b) Planned: - Modernisation ASMGCS - Implementation of Advanced Tower Messaging (ongoing); - AMAN at Bucuresti TMA - Arrival Manager. The NSA reports that they do specific monitoring of data on EUROCONTROL portal and oversight activities.

ASMA

Additional ASMA times at Bucharest/Otopeni (LROP; 2019: 0.75 min/arr.; 2020: 0.74 min/arr.; 2021: 0.57 min/arr.; 2022: 0.58 min/arr.) showed in 2022 the same level as the year before with low additional times. In the Romanian monitoring report, ROMATSA mentions the same measures or initiatives as last year, although no dates are provided:

a) Implemented:

- SID / STAR RNAV 1;

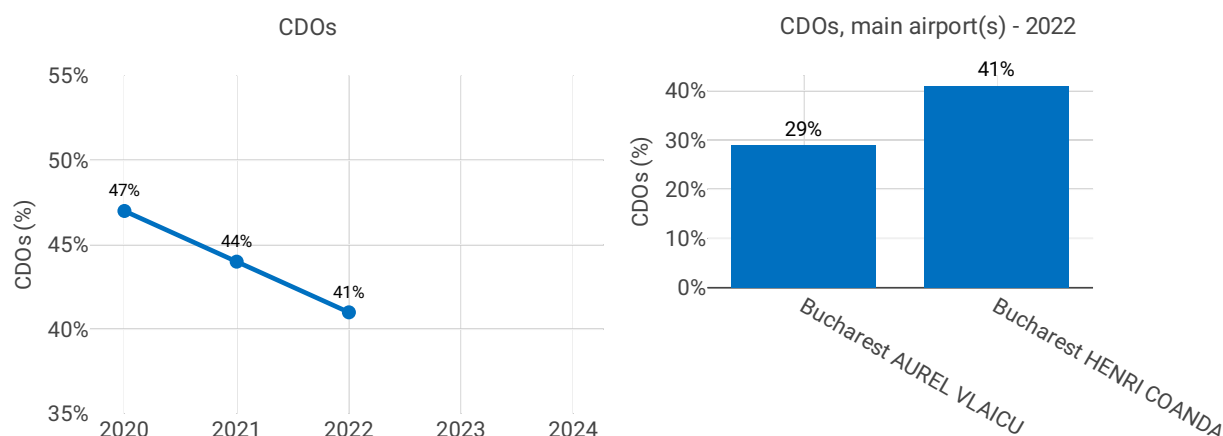
- as current practice, vectorizations for shortening the trajectories when the traffic is of low complexity (DIRECT TO);
- Bucharest TMA resectorisation - implementation of new sector: DIRECTOR.

b) Planned:

- implementation of AMAN - Arrival Manager;
- implementation of RNP (required navigation performance) approach procedures.

The NSA reports that they do specific monitoring of data on EUROCONTROL portal and oversight activities.

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



Focus CDOs

Bucharest/Otopeni (LROP), being the major airport in Romania, has the highest share of CDO flights: 41.1% which is well above the overall RP3 value in 2022 (29.0%) despite a decrease from 45.5% in 2021. The share of CDO flights at Bucharest/Băneasa (LRBS) decreased to slightly below the overall RP3 value to 28.8%. The monthly values are significantly lower from April to September.

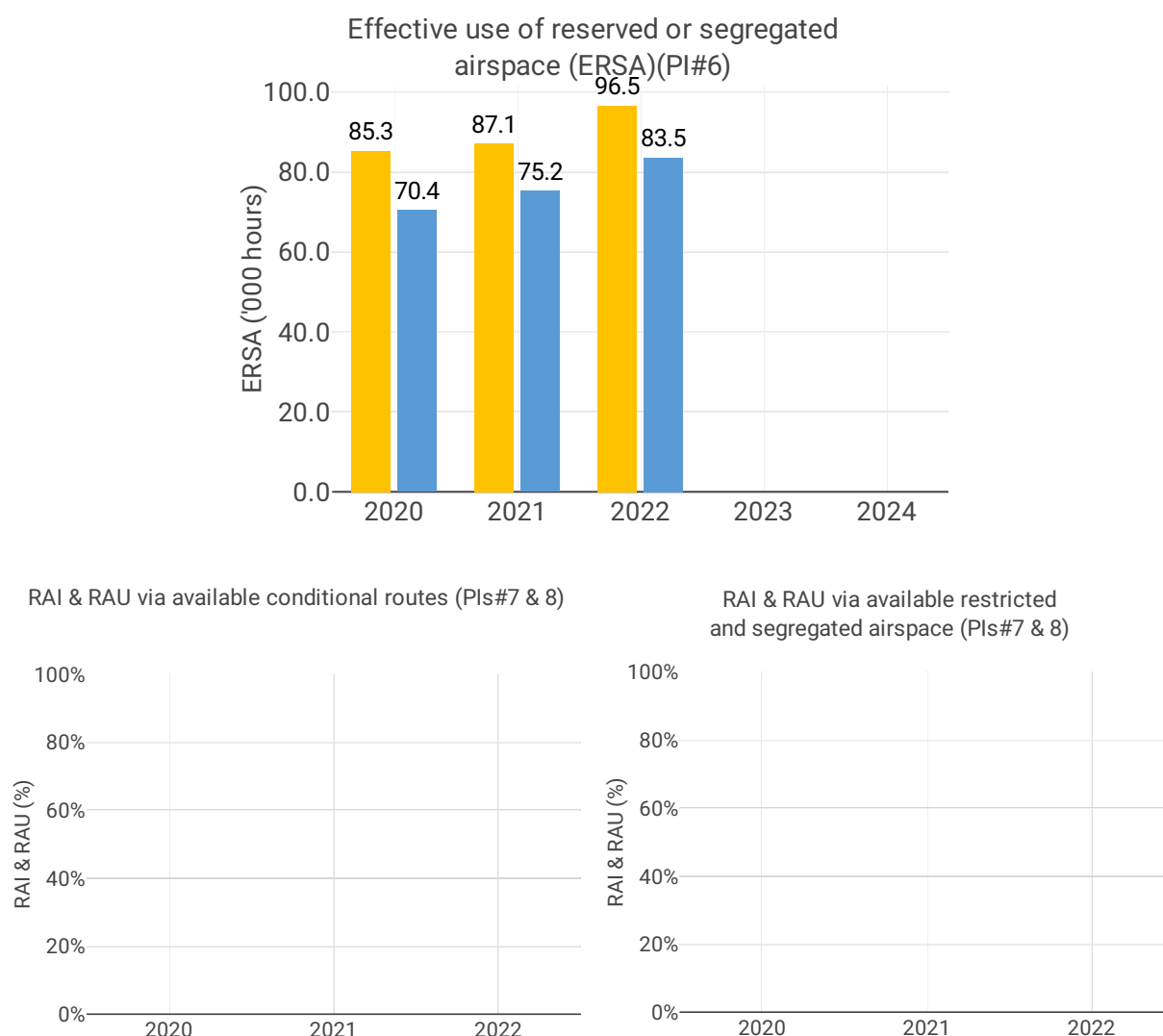
According to the Romanian monitoring report: ROMATSA: *Resumption of AIP Romania amendment process, chap. 2.21 Noise abatement procedures with the following specific provisions for aircraft operating at Otopeni Airport: "In order to reduce aircraft noise and emissions, ATC gives clearances allowing continuous descent (CD) traffic situation permitting. Continuous descent can be planned based on track distance information of the STAR or, when vectored, on estimated track distance provided by ATC.*

NSA: NSA is monitoring this indicator through LSSIP

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
Bucharest HENRI COANDA	1.95	1.66	2.08	NA	NA	0.74	0.57	0.58	NA	NA	48%	45%	41%	NA	NA
Bucharest AUREL VLAICU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31%	31%	29%	NA	NA

3.4 Civil-Military dimension



Focus on Civil-Military dimension

Update on Military dimension of the plan

The FUA Concept is fully implemented in Romania at all specific levels, as follows: at Level 1 through National Air Space Management Council, at Level 2 through AMC, as civil-military body and at Level 3 through civil-military coordination offices collocated. At FAB level, an Air Space Policy Body is defined for strategic coordination between Romania and Bulgaria. Furthermore, Romanian operational procedures allow the crossing of most military training zones by civil aircraft with a prior coordination.

There has been an increase in military activity with ad-hoc MIL Areas and TSAs, leading to increased complexity in Bucuresti FIR. The geopolitical situation at Romania's borders and NATO's 2022 Strategic Concept adopted at the Madrid Summit that identifies the Russian Federation as "the most significant and direct threat to Allies' security and to peace and stability in the Euro-Atlantic area" lead to an increased military activity, on a permanent basis.

Military - related measures implemented or planned to improve capacity

Initiatives implemented or planned to improve PI#6

ROMATSA: The FUA Concept is fully implemented in Romania at all specific levels, as follows: at Level 1 through National Air Space Management Council, at Level 2 through AMC, as civil-military body and at Level 3 through civil-military coordination offices collocated. At FAB level, an Air Space Policy Body is defined for strategic coordination between Romania and Bulgaria. Furthermore, Romanian operational procedures allow the crossing of most military training zones by civil aircraft with a prior coordination.

NSA: continuous oversight.

Initiatives implemented or planned to improve PI#7

No data available.

Initiatives implemented or planned to improve PI#8

No data available.

4 CAPACITY - ROMANIA

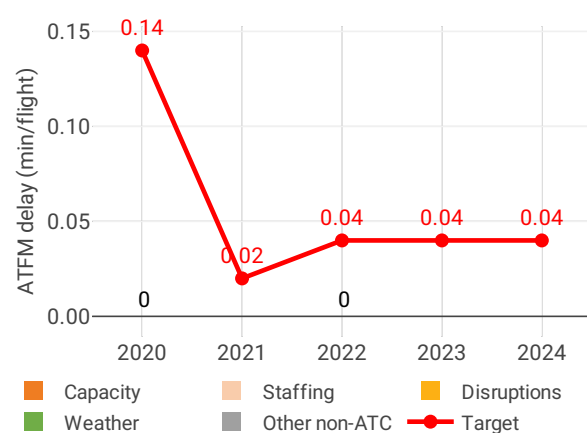
4.1 PRB monitoring

- Romania registered zero minutes of average en route ATFM delay per flight during 2022, thus achieving the local target value of 0.04.
- The average number of IFR movements was 12% below 2019 levels in Romania in 2022.
- A 12% increase in the number of ATCOs in OPS is expected by the end of RP3 with the actual value being in line with the 2022 plan in Bucharest ACC.
- The yearly total of sector opening hours in Bucharest ACC was 42,459 in 2022, showing a 24.5% increase compared to 2021. Sector opening hours are 0.9% below 2019 levels.
- Bucharest ACC registered 18.35 IFR movements per one sector opening hour in 2022, being 10.1% below 2019 levels.

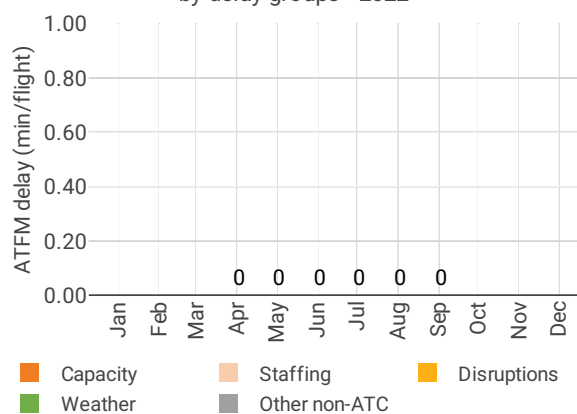
4.2 En route performance

4.2.1 En route ATFM delay (KPI#1)

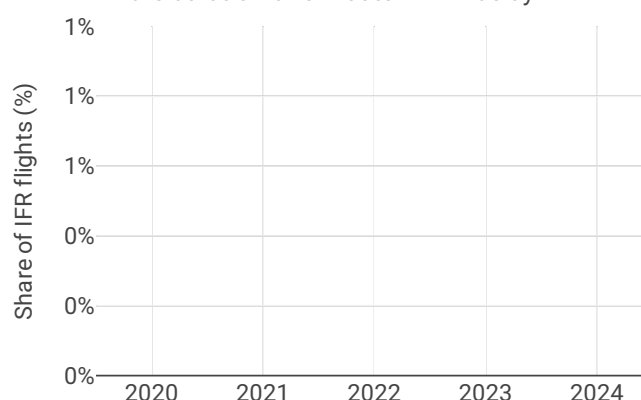
Average en route ATFM delay per flight by delay groups



Monthly distribution of en route ATFM delay by delay groups - 2022



Distribution of IFR flights per the duration of en route ATFM delay



Focus on en route ATFM delay

Summary of capacity performance

Romania experienced an increase in traffic from 454k flights in 2021, to 656k flights in 2022, again with zero ATFM delay. Annual traffic levels were still below the 747k flights in 2019.

NSA's assessment of capacity performance

The year 2022 has been deeply impacted, both economically and operationally, by the war in Ukraine. The Russian invasion and the subsequent restrictions and sanctions imposed have determined traffic flows that were already circumnavigating the conflict area following the events in 2014 to be pushed further to Romania's south-western part.

Furthermore, new traffic flows prefer to cross atypically the Romanian airspace in this geopolitical context. Average distance/flight has increased compared to 2019 and this is visible also in the service units evolution that has outpaced the IFR movements trend in comparison with 2019. These, combined with the increased military activity, including ad-hoc activity focused not only in the NE part of Romania, but in the entirety of the airspace, have generated an increase in complexity.

Romania/ANSP ROMATSA has achieved the Capacity targets in 2022. Although traffic has rebounded swiftly in Romanian airspace, coming close to pre-pandemic levels (88% of 2019 IFR movements with average around 95% for August-December 2022) and complexity has increased due to re-routings and higher military activity due to the war in Ukraine, ROMATSA has achieved 0 delay due to ATC.

Monitoring process for capacity performance

ROMATSA provided regularly inputs on capacity availability in the context of NOP Rolling Seasonal Plan implemented by the Network manager at European network level.

The expected en-route performance was and is regularly evaluated by the NM for each ACC, including Bucuresti ACC, in terms of planned/maximum sector openings in relation with the estimated traffic demand.

Capacity planning

The capacity as previously planned and published within an annual NOP (Network Operations Plan) has been adapted accordingly by adoption of capacity plans under a NOP Rolling Seasonal Plan format, including periods of 6 weeks, based on the expected traffic demand regularly provided by the Network Manager. These plans refer to:

- sector openings;
- maximum possible sector openings;
- availability of support of operational staff;
- special events and projects, etc.

Bucuresti ACC ensured a stable sector opening plan with no sector capacity reduction, with the possibility to increase the number of sectors when traffic increased.

Traffic values have increased in the aftermath of the COVID-19 pandemic and due to the re-routings caused by the war in Ukraine and the restrictions imposed. Traffic flows that were already circumnavigating the conflict area following the events in 2014 have been pushed further to Romania's south-western part.

Furthermore, new traffic flows prefer to cross atypically the Romanian airspace in this geopolitical context. Average distance/flight has increased compared to 2019 and this is visible also in the service units evolution. From April 2023, the number of daily IFR movements in Romanian airspace has surpassed 2019 levels. These, combined with the increased military activity have generated an increase in complexity.

Another risk is generated by ROMATSA's ageing ATCO personnel, especially in ACC Bucharest, where more than 1/3 of ATCOs are over 50 years old and will be over age 55 at the end of RP3. It takes between 3 to 5 years to fully train and authorize an ATCO for ACC, therefore a recruitment process was started in 2017 to guarantee proper staffing levels to ensure safety and capacity.

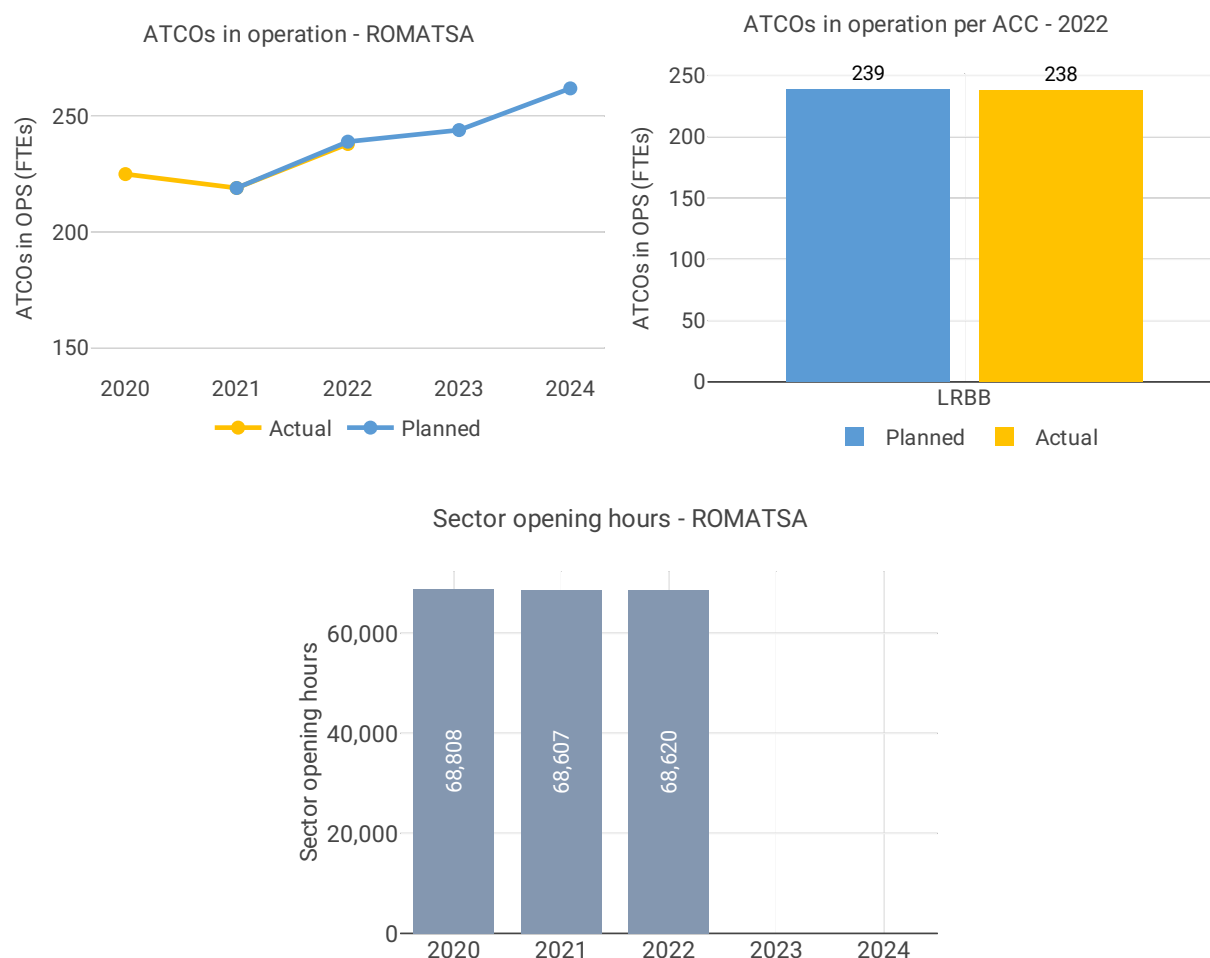
Application of Corrective Measures for Capacity (if applicable)

Additional Information Related to Russia's War of Aggression Against Ukraine Traffic flows that were already circumnavigating the conflict area following the events in 2014 have been pushed further to Romania's south-western part (Examples of traffic flows: Russian Federation – Turkey, Turkey - Sweden, Poland - Israel, Lithuania - Turkey, Romania - Poland, Turkey - Finland, Russian Federation - Egypt, Poland - Qatar, United Kingdom - Romania; Turkey - Norway).

Furthermore, new traffic flows prefer to cross atypically the Romanian airspace in this geopolitical context (Examples of the most affected flows : Russia-Turkey, United Kingdom – India, Republic of Korea – Germany, Australia - United Kingdom, Kazakhstan – Hungary, Qatar – Sweden, Pakistan - United Kingdom). These, combined with the increased military activity, scheduled or ad-hoc, focused not only in the NE part of Romania, but in the entirety of the airspace, have generated an increase in complexity.

In 2022, as traffic values were still below the pre-pandemic level, ROMATSA managed to maintain a high-level of performance for en route capacity. However, the 2023 summer season, with traffic values forecasted well above the 2019 level and the reduction of available airspace due to military activity can prove more challenging for accommodating civilian air traffic at the required performance. Through application of FUA principles, civil-military coordination helped mitigate any possible impacts on en-route capacity performance.

4.2.2 Other indicators

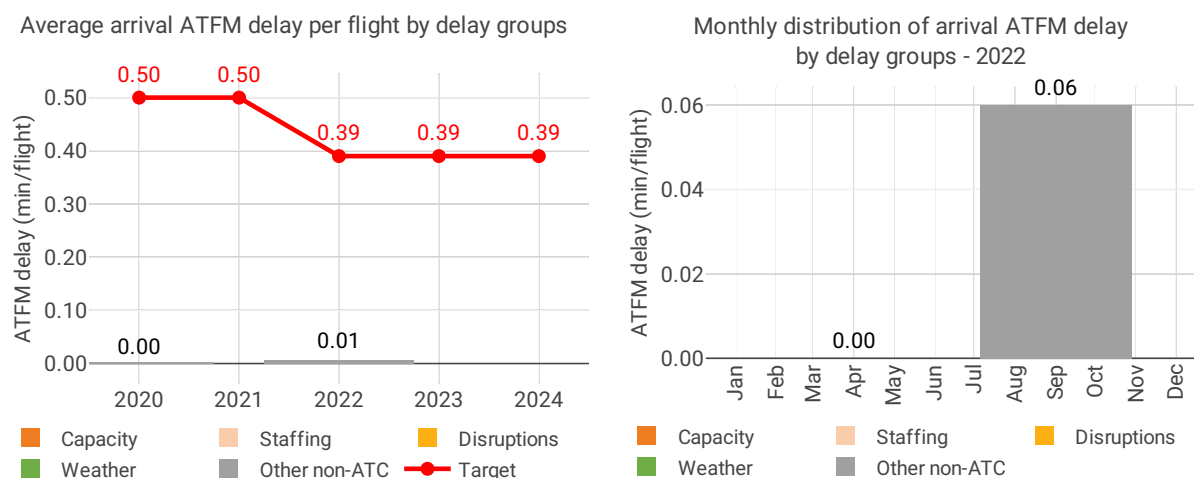


Focus on ATCOs in operations

ROMATSA has continued its recruitment process as planned to replace ageing ATCOs from ACC Bucharest. 24 ATCOs entered the OPS room, initially recruited in 2019 and who completed their training and authorization process during 2022. Another ATCO who had previously taken a management position, returned to the OPS room at a normal shift program. In the same time there were 6 ATCOs leaving the OPS room, of which 3 retired and 3 lost their licence due to medical conditions.

4.3 Terminal performance

4.3.1 Arrival ATFM delay (KPI#2)



Focus on arrival ATFM delay

Romania includes 2 airports under RP3 monitoring. However, in accordance with IR (EU) 2019/317 and the traffic figures, only Bucharest/Otopeni (LROP) must be monitored for the pre-departure delay indicators. The Airport Operator Data Flow, necessary for the monitoring of these delays, is correctly implemented where required and the monitoring of all capacity indicators can be performed. Nevertheless, the quality of the reporting from Bucharest 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 2 airports in 2022 was still 16% lower than in 2019, regardless of a 39% increase with respect to 2021. Average arrival ATFM delay in 2022 was 0.01 min/arr, compared to 0 min/arr in 2021. ATFM slot adherence has improved (2022: 99.4%; 2021: 98.2%).

ROMATSA did not observe any airport ATFM delays at any of the Romanian airports under monitoring in 2020 and 2021. In 2022, 294 min of delay in total were observed at Bucharest Otopeni (LROP: 2019: 0.01 min/arr; 2020: 0 min/arr; 2021: 0 min/arr; 2022: 0.01 min/arr.) related to Aerodrome Capacity. According to the Romanian monitoring report: *ROMATSA and Bucharest Airports National Company continue to work together to ensure optimum capacity level at terminal level as this impacts the entire network. On one hand ROMATSA has implemented at Otopeni TWR a different ATM system with A-SMGCS Level 1 component, composed of a surveillance subsystem (operational for over three years) and an electronic flight strips subsystem (transferred into operations on April 8th 2019), interfaced via OLDI with the System covering the rest of the ATS units. There is in place also a common procedure between Bucharest Airports National Company and TWR Otopeni for repairing works periods on the manoeuvring area, i.e. pre-established alternative standard taxi routes.*

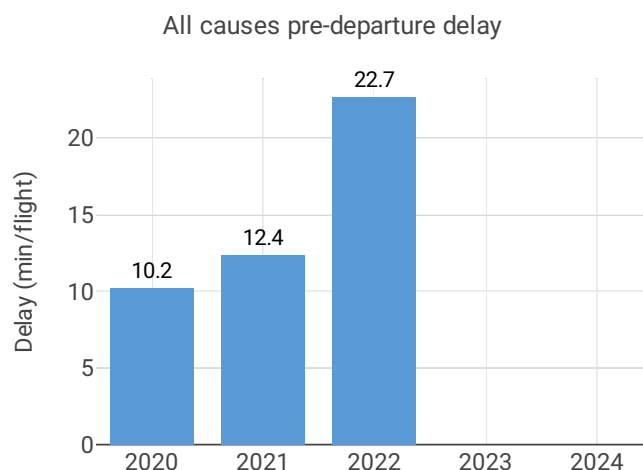
According to EU Reg 255/2010, a common procedure regarding ATFM for the regulation of traffic in situations that may influence the airport's capacity is in place. Implementation of AMAN at Bucharest TMA is foreseen also during RP3 and also the upgrade of A-SMGCS Level 1 to include Advance Tower Messaging is ongoing.

Regarding the impact of the war in Ukraine, the monitoring report mentions: *In the first weeks of Russia's war of aggression against Ukraine, there were a large number of repatriation flights to/from Romanian Airports.*3. Arrival ATFM Delay – National TargetThe national target on arrival ATFM delay in 2022 was met.

The national average, driven by Bucharest/Otopeni, was 99.4%, an improvement with respect to 2021's performance (98.2%). With regard to the 0.6% of flights that did not adhere, 0.4% was early and 0.1% was late.

The Romanian NSA reports: *Performance improved compared to 2021. According to EU Reg 255/2010 a common procedure regarding ATFM for the regulation of traffic in situations that may influence the airport's capacity is in place between Bucharest Airports National Company and ROMATSA.*

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
Bucharest AUREL VLAICU	NA	NA	NA	NA	NA	100.0%	100.0%	99.2%	NA%	NA%
Bucharest HENRI COANDA	0.00	NA	0.01	NA	NA	96.6%	98.1%	99.4%	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
Bucharest AUREL VLAICU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bucharest HENRI COANDA	0.10	0.21	0.16	NA	NA	10.2	12.4	22.7	NA	NA

Focus on performance indicators at airport level

ATFM slot adherence

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 Bucharest/Otopeni (the only Romanian airport 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.

Bucharest/Otopeni (LROP) had proper reporting before March 2020, but the share of unidentified delay rose well above 40% since the pandemic (preventing the calculation of this indicator) due to the special traffic composition. In 2022 the share of unidentified delay was above the 40% threshold for 5 months in the year.

ATC pre-departure delay

The total (all causes) delay in the actual off block time at Bucharest/Otopeni increased in 2022 (LROP: 2020: 10.22 min/dep.; 2021: 12.45 min/dep.; 2022: 22.67 min/dep.), with the highest delays observed in Summer.

According to the Romanian monitoring report: *In 2022 departure delays at LROP were due to aerodrome capacity. ROMATSA and Bucharest Airports National Company continue to work together to ensure optimum capacity level at terminal level as this impacts the entire network. On one hand ROMATSA has implemented at Otopeni TWR a different ATM system with ASMGCS component, composed of a surveillance subsystem (operational for over three years) and an electronic flight strips subsystem (transferred into operations on April 8th 2019), interfaced via OLDI with the System covering the rest of the ATS units. An upgrade to the system will be finalised in 2023 to include Advance Tower Messaging. There is in place also a common procedure between Bucharest Airports National Company and TWR Otopeni for repairing works periods on the manoeuvring area, i.e. pre-established alternative standard taxi routes. According to EU Reg 255/2010, a common procedure regarding ATFM for the regulation of traffic in situations that may influence the airport's capacity is in place. Implementation of AMAN at Bucuresti TMA is foreseen also during RP3.*

All causes pre-departure delay

No data available: airport operator data flow not established, or more than two months of missing / non-validated data

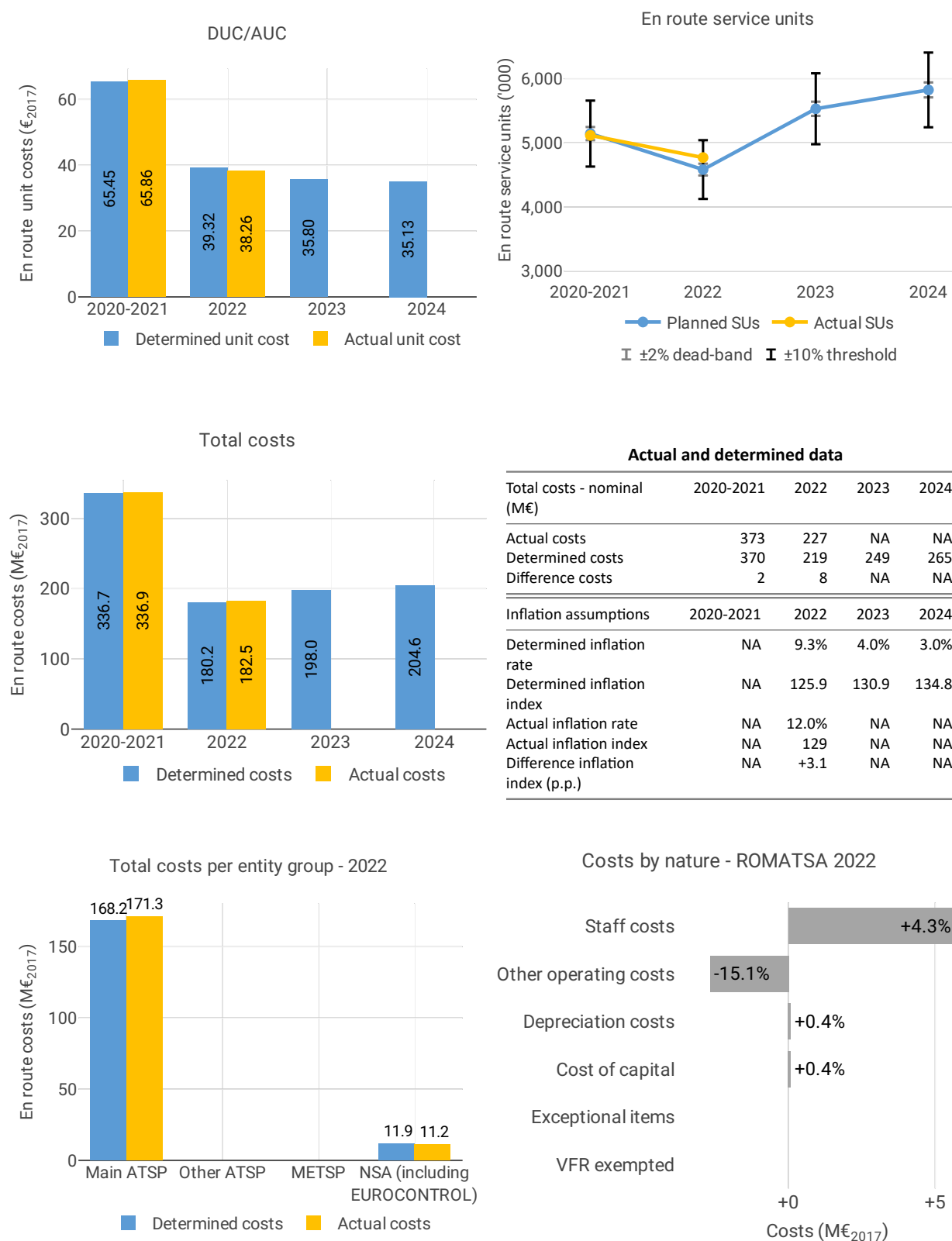
5 COST-EFFICIENCY - ROMANIA

5.1 PRB monitoring

- The en route 2022 actual unit cost of Romania was 38.10 €2017, -3.1% lower than the determined unit cost (39.32 €2017).⁵ The terminal 2022 actual unit cost was 287.04 €2017, +11% higher than the determined unit cost (257.81 €2017).
- The en route 2022 actual service units (4,770K) were +4.1% higher than the determined service units (4,583K).
- The en route 2022 actual total costs were 1.6 M€2017 (+0.9%) higher than determined. The increase in staff costs (+5.1 M€2017, or +3.8%) compared to determined was partially offset by decreases in other operating costs and cost of capital. Staff costs increased mainly due to an increase in pension cost and inflation compensation.
- ROMATSA spent 17.9 M€2017 in 2022 related to costs of investments, -1.7% less than planned (18.2 M€2017), due to delays of nine investments as result of delays in procurement procedures.
- The en route actual unit cost incurred by users in 2022 was 45.42€, while the terminal actual unit cost incurred by users was 316.41€.

5.2 En route charging zone

5.2.1 Unit cost (KPI#1)



Focus on unit cost

AUC vs. DUC

In 2022, the en route AUC was -3.1% (or -5.54 RON2017, -1.21 €2017) lower than the planned DUC. This results from the combination of higher than planned TSUs (+4.1%) and slightly higher than planned en

route costs in real terms (+0.9%, or +7.2 MRON2017, +1.6 M€2017). It should be noted that the actual inflation index in 2022 was +3.1 p.p. higher than planned.

En route service units

The difference between actual and planned TSUs (+4.1%) falls outside the $\pm 2\%$ dead band, but does not exceed the $\pm 10\%$ threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en route revenues is therefore shared between the ANSP and the airspace users, with the ANSP (ROMATSA) retaining an amount of +4.0 M€2017.

En route costs by entity

The 2022 actual real en route costs are +0.9% (+1.6 M€2017) higher than planned. This is the result of higher than planned costs for the main ANSP, ROMATSA (+1.5%, or +2.5 M€2017) and lower than planned costs for the NSA/EUROCONTROL (-7.3%, or -0.9 M€2017).

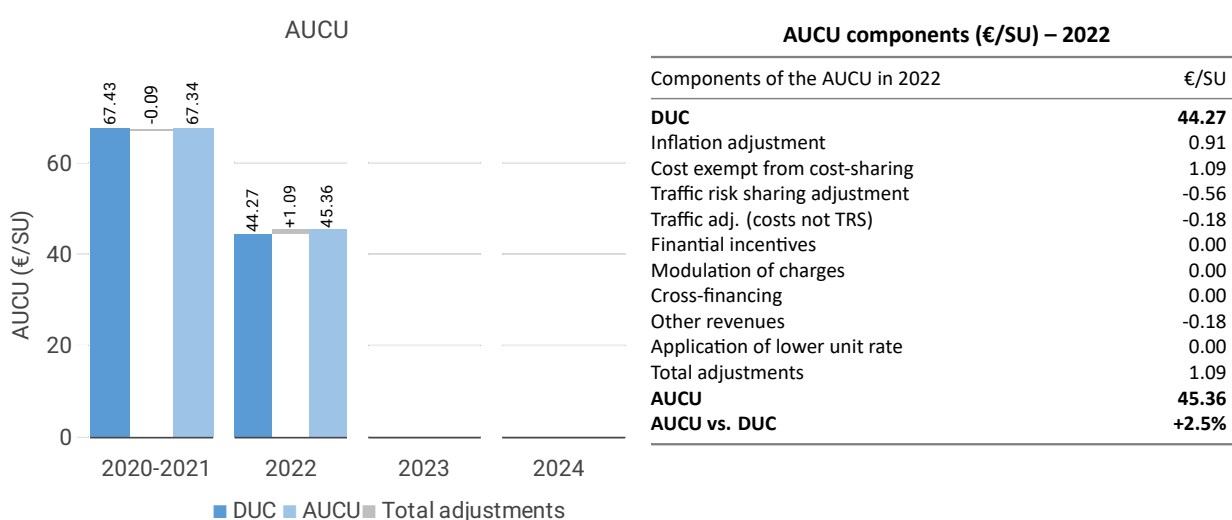
En route costs for the main ANSP at charging zone level

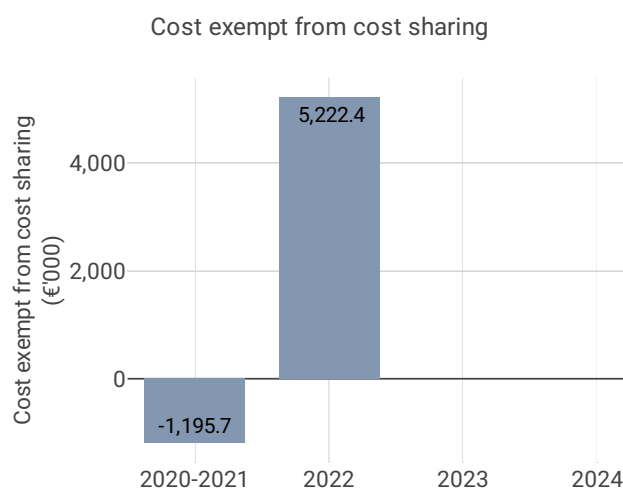
Higher than planned en route costs in real terms for ROMATSA in 2022 (+1.5%, or +2.5 M€2017) result from:

- Higher than planned staff costs (+4.3%, or +5.7 M€2017)), mainly due to higher than planned pension costs (+38.6% in nominal terms), compensation for inflation, 24 additional ATCOs in OPS to anticipate forthcoming retirements and “non-recurring amounts for the higher than planned traffic” ;
- Significantly lower than planned other operating costs (-14.3%, or -2.5 M€2017) reported to be mainly due to delays in procurement procedures;
- Slightly higher than planned depreciation costs (+0.4%) reported to be due to investment put into operation earlier than planned;
- Significantly lower than planned cost of capital (-8.7%, or -0.7 M€2017)) reported to be due to delayed investments and procurement procedures and partially offset by increasing interest rate. The total asset base is also lower than planned (-11.3% in nominal terms).

Note: It is understood that the relevant figures for 2022 will be slightly updated in the Monitoring Report 2023 following the correction of 2022 actual costs in the November 2023 reporting tables.

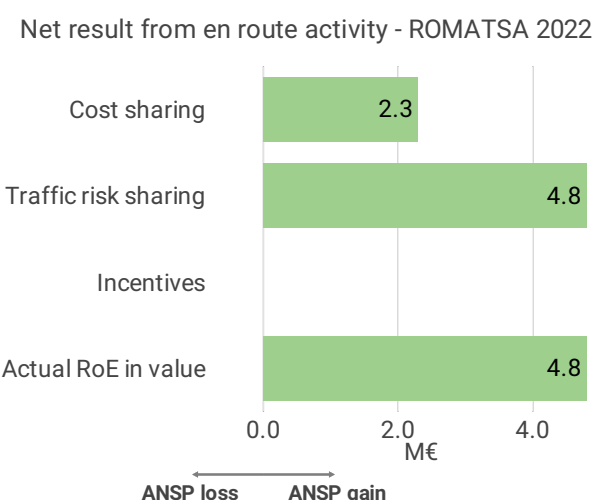
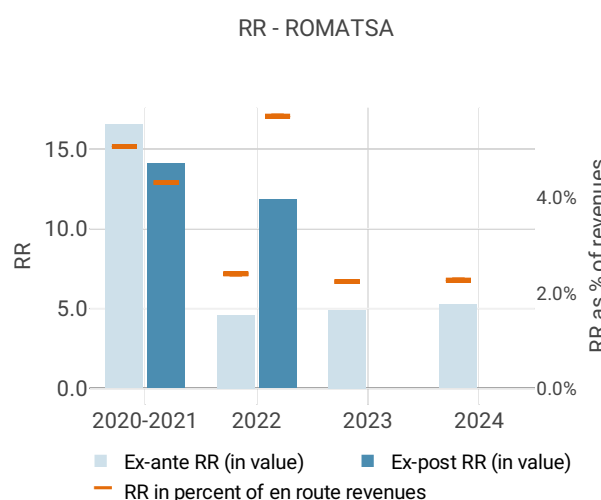
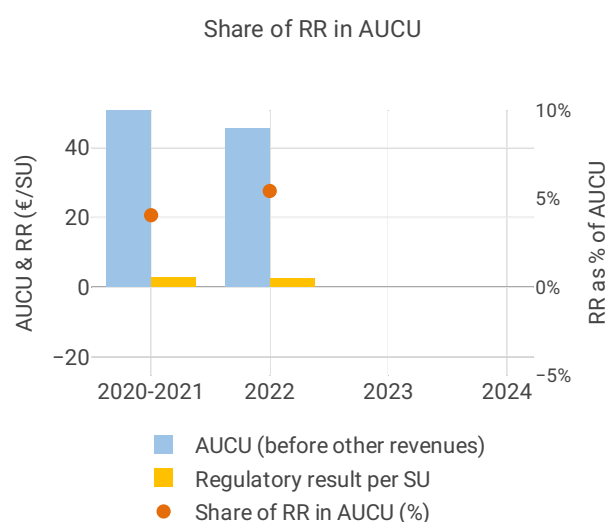
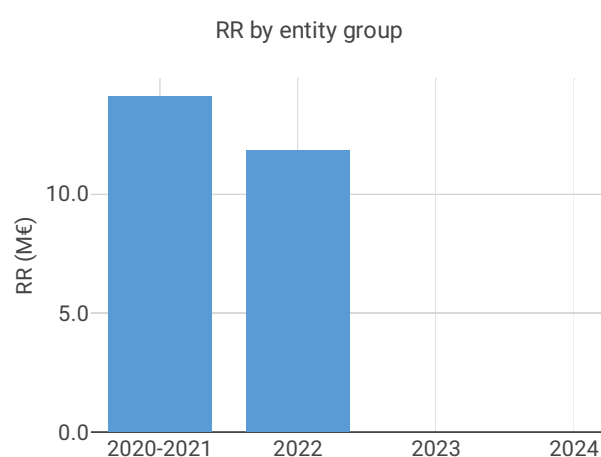
5.2.2 Actual unit cost incurred by the users (AUCU) (PI#1)





Cost exempt from cost sharing by item - 2022	€'000	€/SU
New and existing investments	-209.6	-0.04
Competent authorities and qualified entities costs	-616.1	-0.13
Eurocontrol costs	-81.0	-0.02
Pension costs	6,101.9	1.28
Interest on loans	27.2	0.01
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	5,222.4	1.09

5.2.3 Regulatory result (RR)



Focus on regulatory result

ROMATSA net gain on activity in the Romania en route charging zone in the year 2022

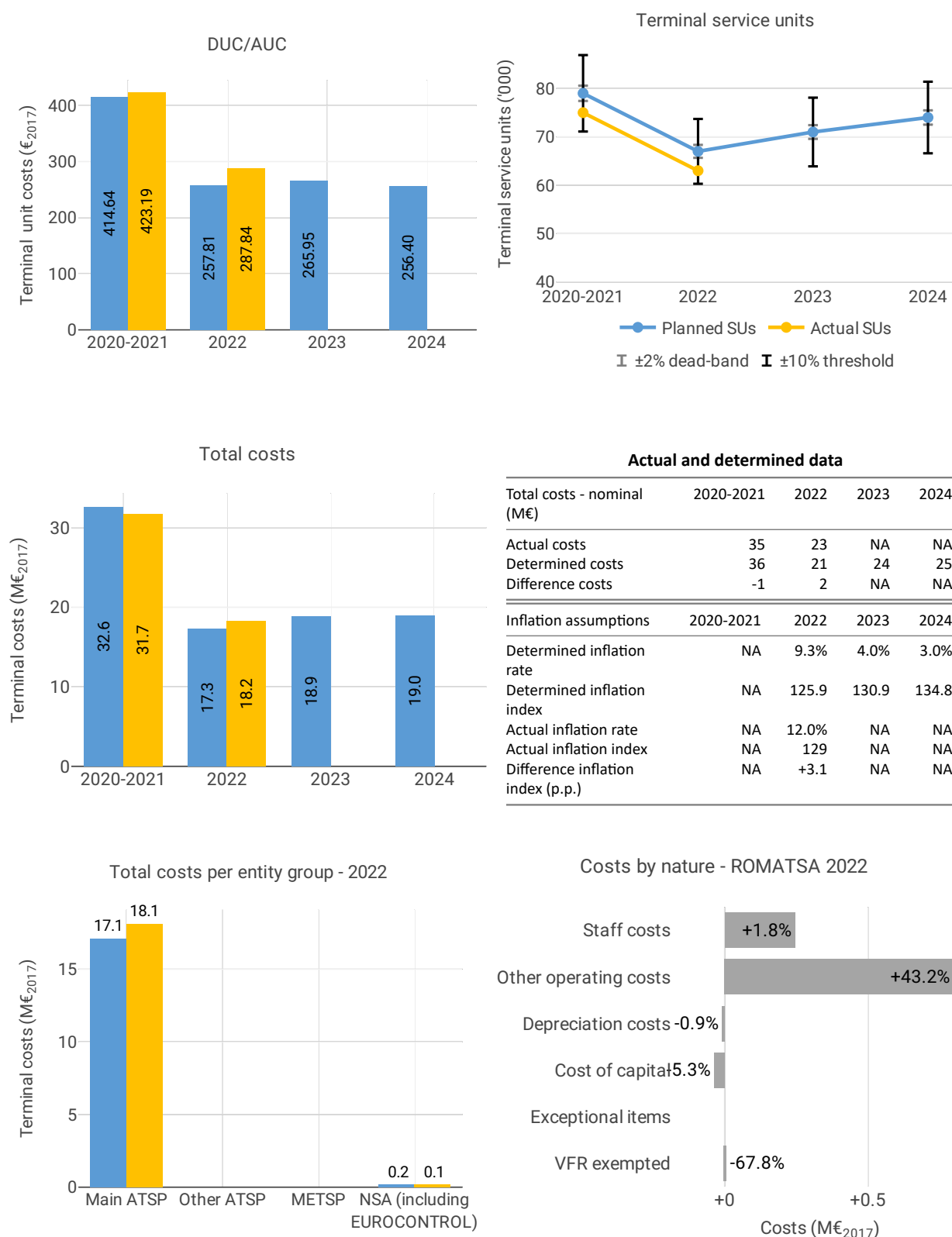
ROMATSA reported a net gain of +39.4 MRON, as a combination of a gain of +15.8 MRON arising from the cost sharing mechanism, with a gain of +23.6 MRON arising from the traffic risk sharing mechanism.

ROMATSA 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 (+39.4 MRON) and the actual RoE (+21.4 MRON) amounts to +60.7 MRON (5.9% of the en route revenues). The resulting ex-post rate of return on equity is 22.1%, which is higher than the 7.8% planned in the PP.

5.3 Terminal charging zone

5.3.1 Unit cost (KPI#1)



Focus on unit cost

AUC vs. DUC

In 2022, the terminal AUC was +11.3% (or +133.48 RON2017, +29.23 €2017) higher than the planned DUC. This results from the combination of significantly lower than planned TNSUs (-5.5%) and significantly higher than planned terminal costs in real terms (+5.2%, or +4.1 MRON2017, +0.9 M€2017). It should be noted that the actual inflation index in 2022 was +3.1 p.p. higher than planned.

Terminal service units

The difference between the 2022 actual and planned TNSUs (-5.5%) falls outside the $\pm 2\%$ dead band, but does not exceed the $\pm 10\%$ threshold foreseen in the traffic risk sharing mechanism. The resulting loss of terminal revenues is therefore shared between the ANSP and the airspace users, with the ANSP (ROMATSA) bearing a loss of -0.5 M€2017.

Terminal costs by entity

The 2022 actual real terminal costs are +5.2% (or +0.9 M€2017) higher than planned. This is results from higher than planned costs for the main ANSP, ROMATSA (+5.6%, or +1.0 M€2017) and lower than planned costs for the NSA (-33.1%, or -0.1 M€2017).

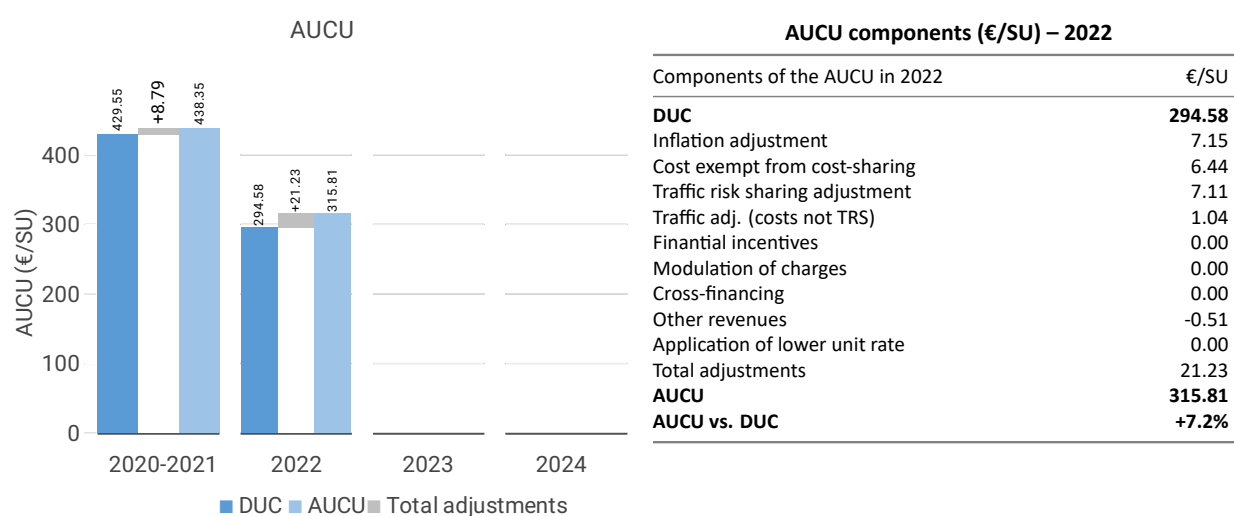
Terminal costs for the main ANSP at charging zone level

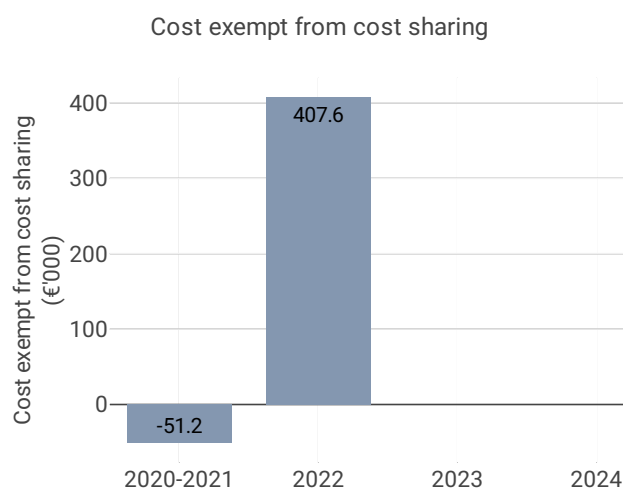
The 2022 actual real terminal costs for ROMATSA in 2022 are higher than planned (+5.6%, or +1.0 M€2017) ; this results from:

- Slightly higher than planned staff costs (+1.8%, or +0.2 M€2017) due to higher than planned pension costs and staff compensation for inflation,
- Significantly higher than planned other operating costs (+44.1%, or +1.0 M€2017) due to a provision for risk of customers insolvency;
- Slightly lower than planned depreciation (-0.9%), due to one investment slightly delayed,
- Significantly lower than planned cost of capital (-15.1%, or -0.1 M€2017) reported to be mainly due to delayed investment;
- Significantly lower than planned deduction for VFR exempted flights (-67.8%) but the impact in value is limited.

Note: It is understood that the relevant figures for 2022 will be slightly updated in the Monitoring Report 2023 following the correction of 2022 actual costs in the November 2023 reporting tables.

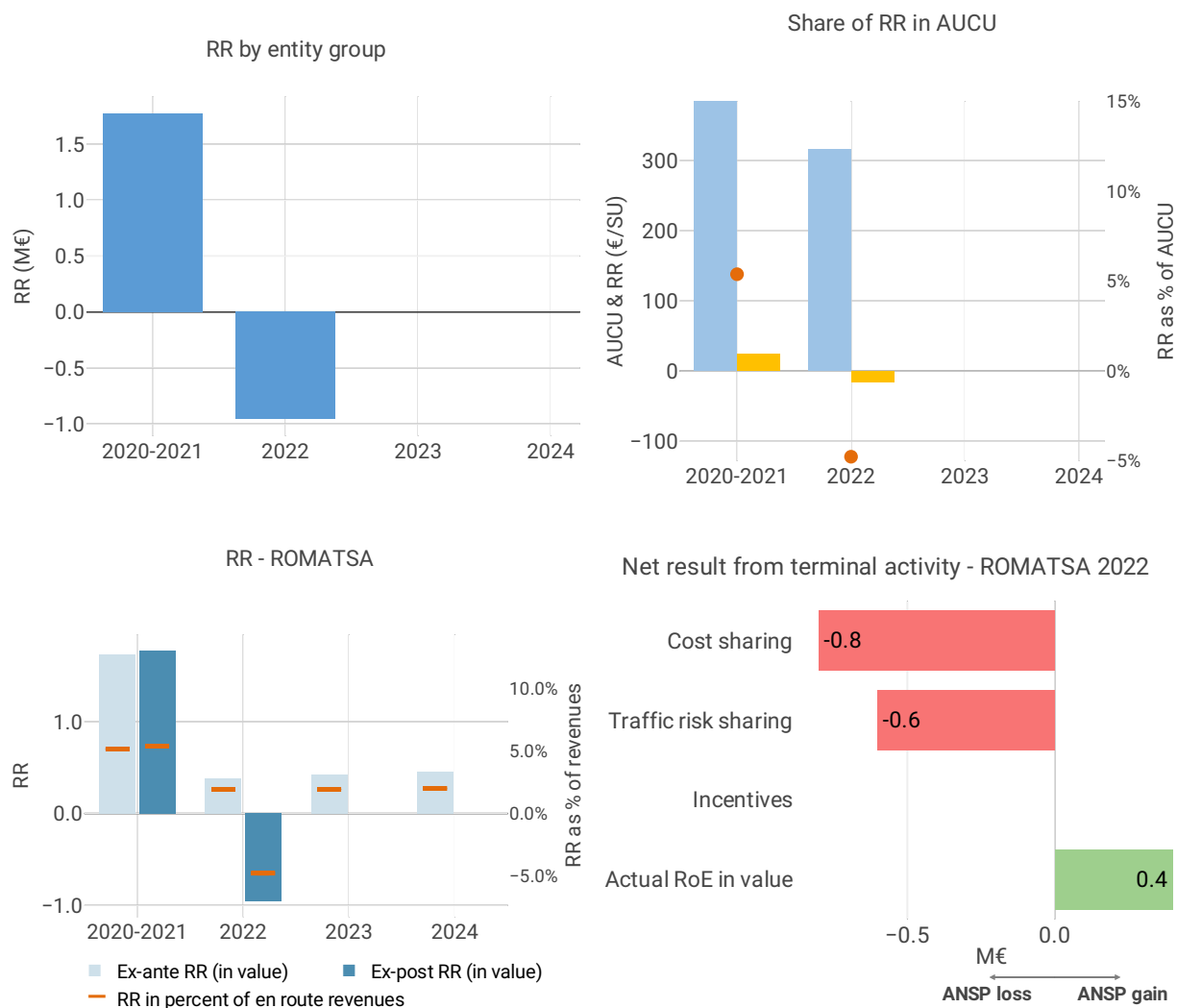
5.3.2 Actual unit cost incurred by the users (AUCU) (PI#1)





Cost exempt from cost sharing by item - 2022	€'000	€/SU
New and existing investments	-78.2	-1.24
Competent authorities and qualified entities costs	-47.8	-0.76
Eurocontrol costs	0.0	0.00
Pension costs	531.5	8.39
Interest on loans	2.2	0.03
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	407.6	6.44

5.3.3 Regulatory result (RR)



Focus on regulatory result

ROMATSA net gain on activity in the Romania terminal charging zone in the year 2022

ROMATSA reported a net loss of -6.1 MRON, as a combination of a loss of -3.4 MRON arising from the cost sharing mechanism, with a loss of -2.8 MRON arising from the traffic risk sharing mechanism.

ROMATSA overall regulatory results (RR) for the terminal activity

Ex-post, the overall RR taking into account the net loss from the terminal activity mentioned above (-6.1 MRON) and the actual RoE (+1.6 MRON) amounts to -4.5 MRON (4.6% of the terminal revenues).