PERFORMANCE REVIEW BOARD
of the Single European Sky

Performance Review Board

Monitoring Report

Croatia - 2024

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Contents

1 OVERVIEW

1.1 Contextual information

National performance plan adopted following Commission Decision (EU) 2022/764 of 13 April 2022

List of ACCs 1
Zagreb ACC

No of airports in the scope of the performance plan:
- **≥80'K** 0
- **<80'K** 0

Exchange rate (1 EUR=)
2017: 1 EUR
2024: 1 EUR

Share of Union-wide:
- **traffic (TSUs) 2024** 2.3%
- **en route costs 2024** 1.4%

Share en route / terminal costs 2024 100% / 0%

En route charging zone(s)
Croatia

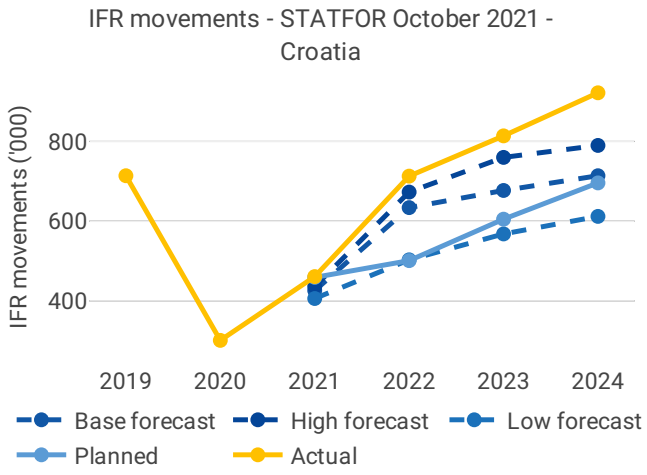
Terminal charging zone(s)
–

Main ANSP
- Croatia Control

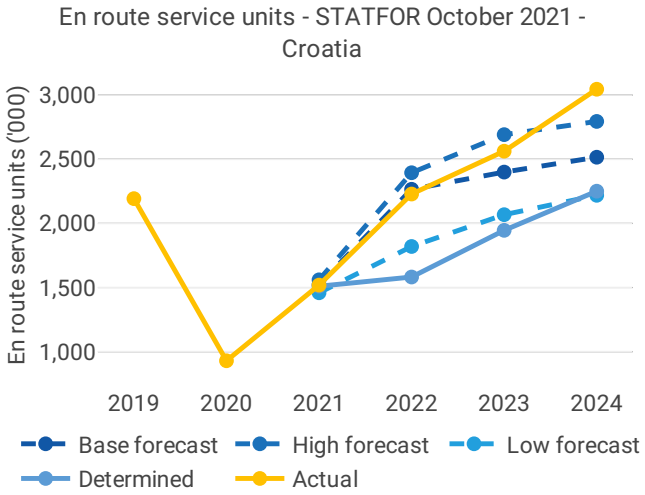
Other ANSPs
–

MET Providers
–

1.2 Traffic (En route traffic zone)

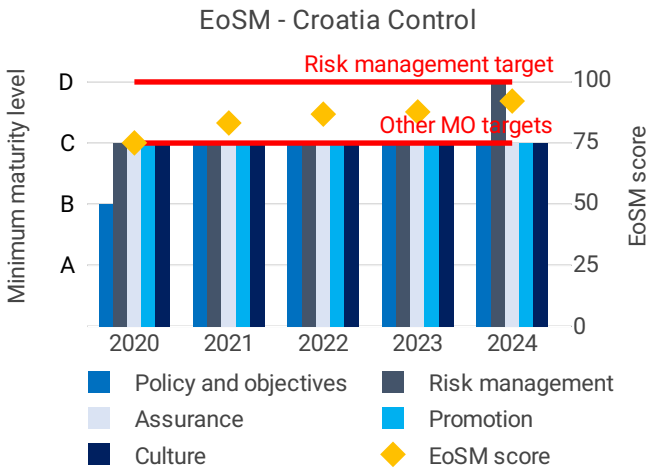


- Croatia recorded 922K actual IFR movements in 2024, +13.3% compared to 2023 (814K).
- Actual 2024 IFR movements were +32.5% above the plan (696K).
- Actual 2024 IFR movements are +29.1% above the actual 2019 level (714K).



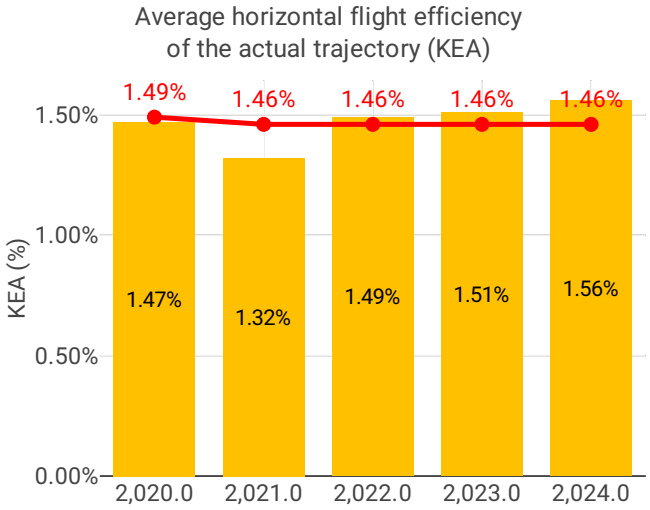
- Croatia recorded 3,046K actual service units in 2024, +18.8% compared to 2023 (2,563K).
- Actual 2024 service units were +35.3% above the plan (2,251K).
- Actual 2024 service units were +38.9% above the actual 2019 level (2,193K).

1.3 Safety (Main ANSP)



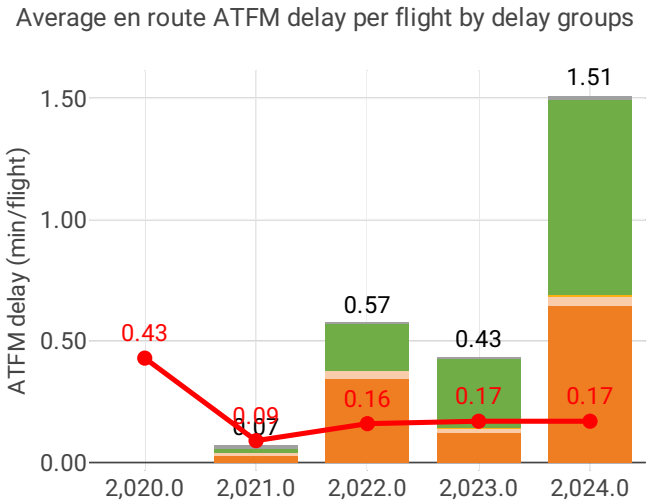
- In 2024, Croatia Control implemented the improvements needed in Safety Risk Management to achieve the RP3 target.
- Croatia recorded a lower level of runway incursions (RIs) compared to 2023. The rate of separation minima infringements (SMIs) increased compared to 2023.
- Croatia monitored safety performance using specific safety tools, including the automated safety data recording systems for the recording of SMIs and RIs at Zagreb Airport.

1.4 Environment (Member State)



- Croatia achieved a KEA performance of 1.56% compared to its target of 1.46% and did not contribute positively towards achieving the Union-wide target.
- The NSA states that airline route adjustment due to adverse weather conditions and restrictions within congested airspace influenced KEA.
- Both KEP and SCR remained stable in comparison to 2023.
- Croatia has no airports regulated under the performance and charging scheme.

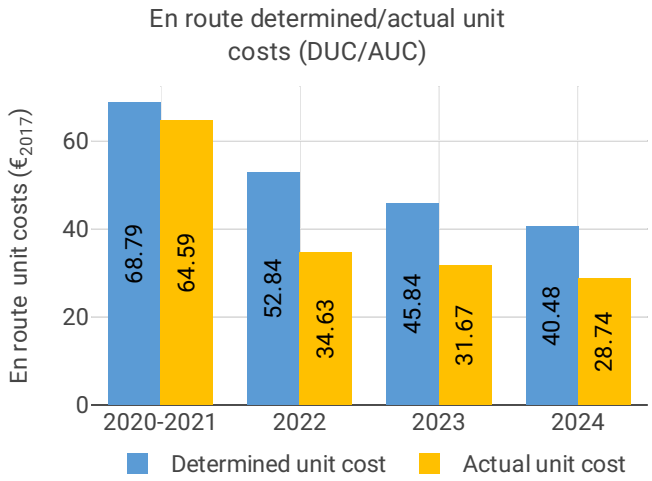
1.5 Capacity (Member State)



- Croatia registered 1.59 minutes of average en route ATFM delay per flight during 2024, which has been adjusted to 1.51 during the post-ops adjustment process, thus not achieving the local target value of 0.17. Delays in Croatia increased by 1.08 minutes per flight year-on-year.
- The majority of delays were generated between June and August, mainly driven by adverse weather conditions and the lack of ATC Capacity.
- The share of delayed flights with delays longer than 15 minutes in Croatia increased by 12 percentage points compared to 2023 and was higher than 2019 values.

- The average number of IFR movements was 30% above 2019 levels in Croatia in 2024.
- The number of ATCOs in OPS is 104, being below the 2024 plan in Zagreb by 17 FTEs.
- The yearly total of sector opening hours in Zagreb ACC was 38,148, showing a 0.8% increase compared to 2023. Sector opening hours are 4.3% above 2019 levels.
- Zagreb ACC registered 23.05 IFR movements per one sector opening hour in 2024, being 26.6% above 2019 levels.
- Capacity provision improved slightly in 2024. However, a capacity gap still exists. Croatia should expedite the recruitment and training of controllers and work closely with the Network Manager to mitigate the impact of adverse weather. Actual 2025 figures up to August show an improvement compared to 2024.

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



- The en route 2024 actual unit cost of Croatia was 28.74€2017, -29% lower than the determined unit cost (40.48€2017). Croatia does not have a terminal charging zone.
- The en route 2024 actual service units (3.0M) were +35% higher than the determined service units (2.3M).
- The en route 2024 actual total costs were -3.6M€2017 (-3.9%) lower than determined. This is mainly due to lower other operating costs (-3.3M€2017, or -20%), followed by lower depreciation and cost of capital for Croatia Control. The NSA attributed this to the deferral of investment projects, which resulted in lower maintenance costs, as well as to lower-than-expected expenditures.
- Croatia Control costs of investments were 13M€2017 in 2024, -4.9% less than determined (14M€2017). According to the NSA, this is mainly due to the postponement of investment projects.
- The en route actual unit cost incurred by users in 2024 was 36.58€ (-15% below the 2024 DUC), mainly affected by higher than planned service units.
- The en route regulatory result for Croatia Control amounted to +14M€, or 13% of the 2024 revenue.

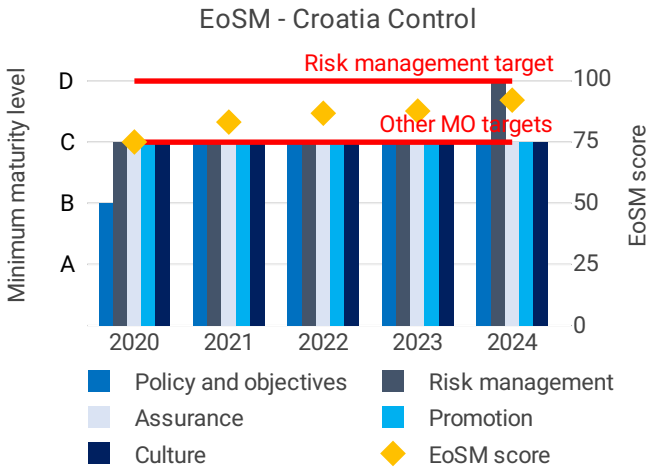
- Croatia should ensure that any excessive regulatory result, including excess funds received by the ANSP due to the inflation mechanism, is either reinvested to improve the quality of services delivered to airspace users or reimbursed to them.

2 SAFETY - CROATIA

2.1 PRB monitoring

- In 2024, Croatia Control implemented the improvements needed in Safety Risk Management to achieve the RP3 target.
- Croatia recorded a lower level of runway incursions (RIs) compared to 2023. The rate of separation minima infringements (SMIs) increased compared to 2023.
- Croatia monitored safety performance using specific safety tools, including the automated safety data recording systems for the recording of SMIs and RIs at Zagreb Airport.

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



Focus on EoSM

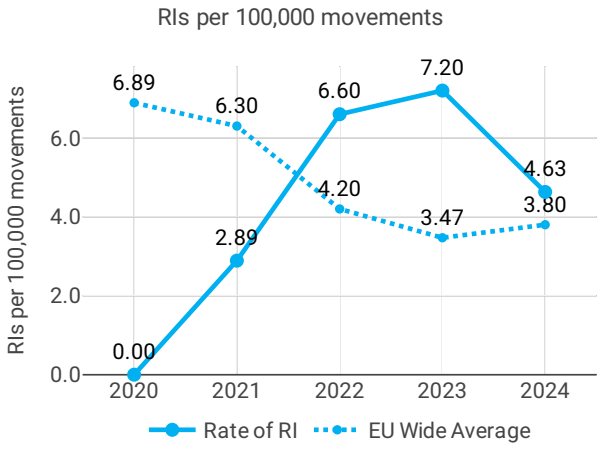
All five EoSM components of the ANSP meet the RP3 EoSM target level. In 2024, significant improvement was observed in “Safety Risk Management” component, enabling this area to reach the target level.

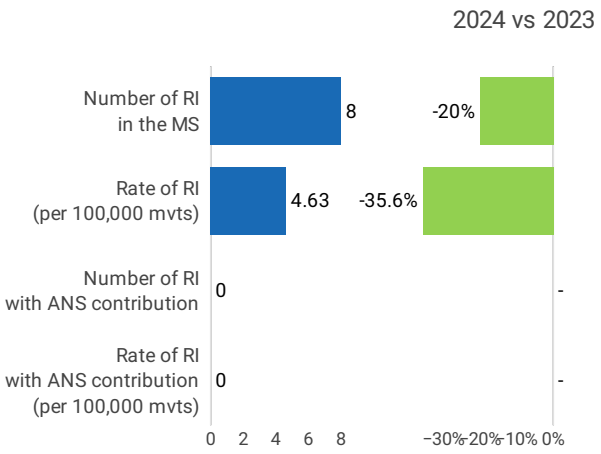
Croatia Control started the reference period on the RP3 targets for three of the five Management Objectives. Safety Policy and Objectives reached the RP3 target in 2021 and improvements implemented in 2024 in Safety Risk Management ensured that all RP3 EoSM targets were achieved.

The SMS is continuously monitored through both internal and external processes, as well as through ongoing oversight by the NSA, which requires Croatia Control to provide supporting evidence of compliance. Croatia Control regularly updates its compliance matrix, which serves as the basis for demonstrating conformity with regulatory requirements.

2.3 Safety occurrences

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





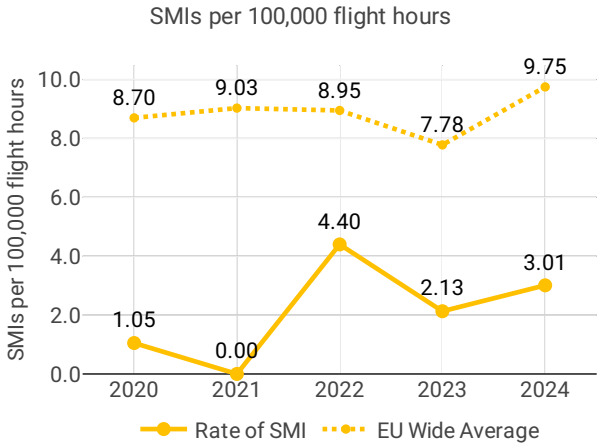
Rate of RIs per 100,000 airport movements - Croatia				
#	Airport name	APT movements	Number of RI	Rate RI per 100,000
1	Zagreb	0	0	NA

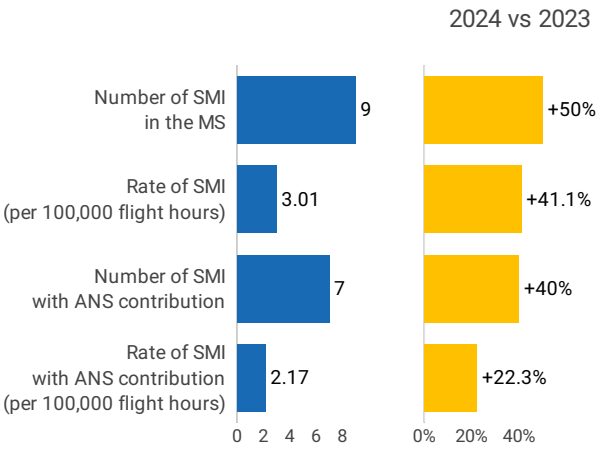
Focus on runway incursions

At the start of RP3, Croatia reported a low number of RIs, which increased in 2022 with the rate exceeding the Union-wide average. In 2024, Croatia recorded a small reduction in the number of occurrences. However, given the higher number of movements, the rate of RIs fell markedly being similar to the Union-wide average.

Croatia Control has adopted the European Action Plan for the Prevention of Runway Incursions.

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





Rate of SMI with ANS contribution per 100,000 flight hours											
		Flight hours					Number of SMIs				
#	ANSP	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	Croatia Control	106,693	155,957	249,018	281,231	321,926	0	0	3	5	7

		Rate of SMI per 100,000 flight hours					% variation in rate of SMIs				
#	ANSP	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	Croatia Control	0	0	1	2	2		0%	0%	+48%	+22%

Focus on separation minima

The SMIs followed the same evolution of the RIs. At the start of RP3, Croatia reported a low number of RIs which increased in 2022. In 2024, Croatia recorded a further increase in the number of SMIs, but with a higher number of flight hours, the rate of SMIs increased less and remained well below the Union-wide average.

2.3.3 Quality of occurences reporting

As reported in the Performance Plan as part of the ongoing oversight of compliance with the requirements of Regulation 376/2014 and the requirements related to SMS, the CCAA verifies whether the proposed corrective actions associated with occurrences have been implemented, whether their performance/efficiency is monitored, and whether feedback on the results is disseminated adequately. Reported occurrences are also subject to analysis by the CCAA, which is responsible at national level for receiving and analysing the occurrence reports. Alert levels are set for MAC (one of the precursors is SMI), monitored and, in case of identified deviations, mitigation measures are initiated.

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

Use of automated safety data recording system - 2024	
For RIs	For SMIs
✓	✓

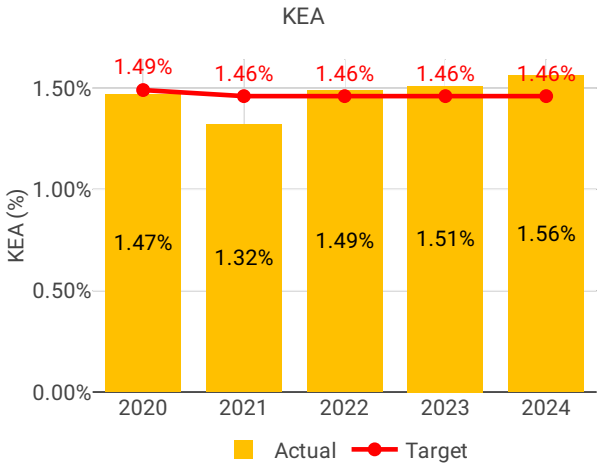
3 ENVIRONMENT - CROATIA

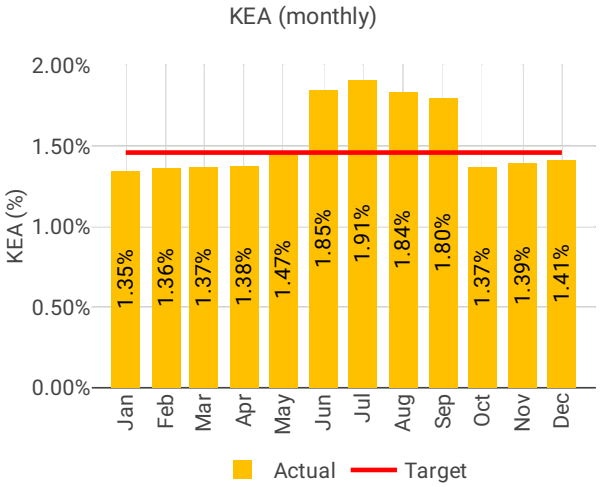
3.1 PRB monitoring

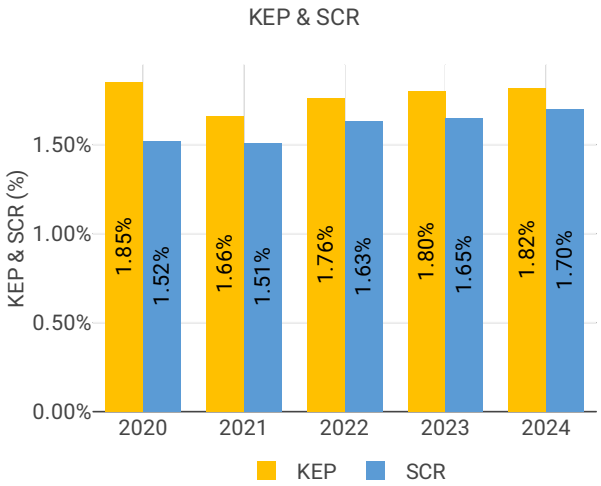
- Croatia achieved a KEA performance of 1.56% compared to its target of 1.46% and did not contribute positively towards achieving the Union-wide target.
- The NSA states that airline route adjustment due to adverse weather conditions and restrictions within congested airspace influenced KEA.
- Both KEP and SCR remained stable in comparison to 2023.
- Croatia has no airports regulated under the performance and charging scheme.

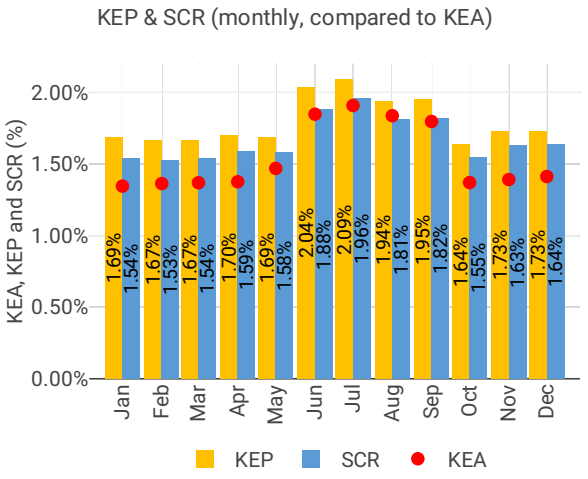
3.2 En route performance

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)

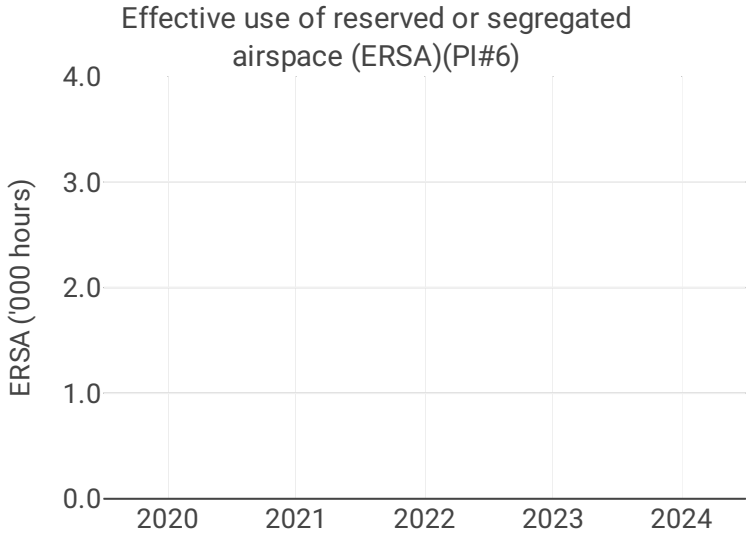


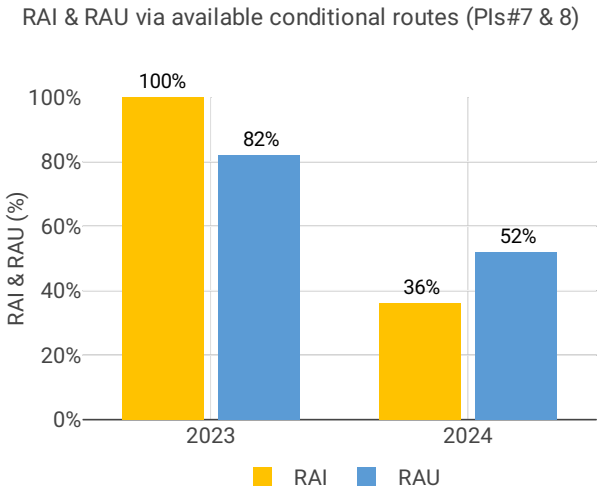


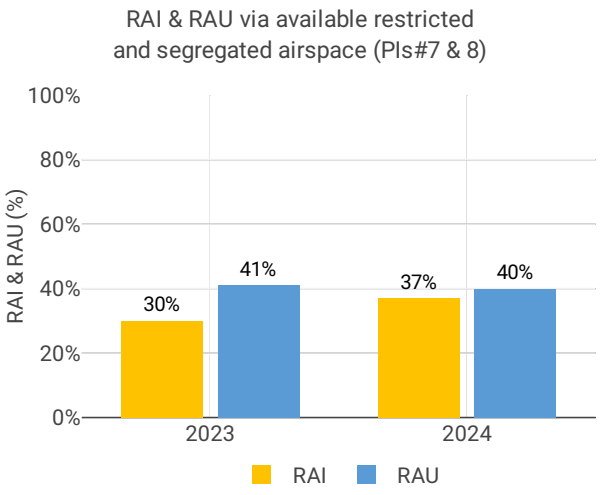




3.3 Civil-Military dimension







Focus on Civil-Military dimension

Update on Military dimension of the plan

The analysis can not be provided due to reason that all required data for ENV PI #6, PI #7 and PI #8 are not yet available on the NM/PRU dashboards nor delivered by NM upon request.

Military - related measures implemented or planned to improve capacity

FUA restrictions and CDRs have been implemented which are managed by AMC on ASM Level 2 and notified to NM but were sparsely used or required.

Initiatives implemented or planned to improve PI#6

The Network Manager shall provide on a monthly basis the data required for the monitoring of this indicator for monitoring referred to Regulation (EU) 2019/317 point 6 of Annex VI. Data regarding ratio has been received from NM upon request but the data regarding hours allocated and used have not been delivered by NM nor are available on the NM/PRU dashboards.

Initiatives implemented or planned to improve PI#7

The Network Manager shall provide on a monthly basis the data required for the monitoring of this indicator for monitoring referred to Regulation (EU) 2019/317 point 6 of Annex VI. The data regarding ratio of planning via available airspace structures has been received from NM upon request but the data regarding number of aircraft filing flight plans via reserved or segregated airspace and CDRs and number of aircraft that could have planned through those airspace structures have not been delivered by NM nor are available on the NM/PRU dashboards.

Initiatives implemented or planned to improve PI#8

The Network Manager shall provide on a monthly basis the data required for the monitoring of this indicator for monitoring referred to Regulation (EU) 2019/317 point 6 of Annex VI. The data regarding ratio of using available airspace structures has been received from NM upon request but the data regarding number of aircraft flying via reserved or segregated airspace and CDRs and number of aircraft that could have planned through those airspace structures have not been delivered by NM upon request nor such data are available on the NM/PRU dashboards.

4 CAPACITY - CROATIA

4.1 PRB monitoring

- Croatia registered 1.59 minutes of average en route ATFM delay per flight during 2024, which has been adjusted to 1.51 during the post-ops adjustment process, thus not achieving the local target value of 0.17. Delays in Croatia increased by 1.08 minutes per flight year-on-year.
- The majority of delays were generated between June and August, mainly driven by adverse weather conditions and the lack of ATC Capacity.
- The share of delayed flights with delays longer than 15 minutes in Croatia increased by 12 percentage points compared to 2023 and was higher than 2019 values.
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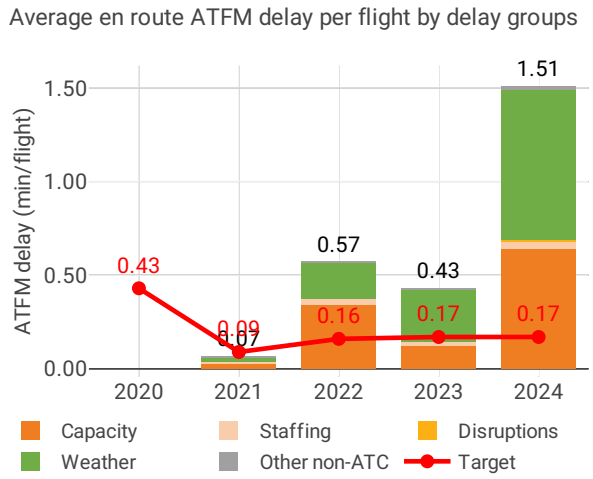
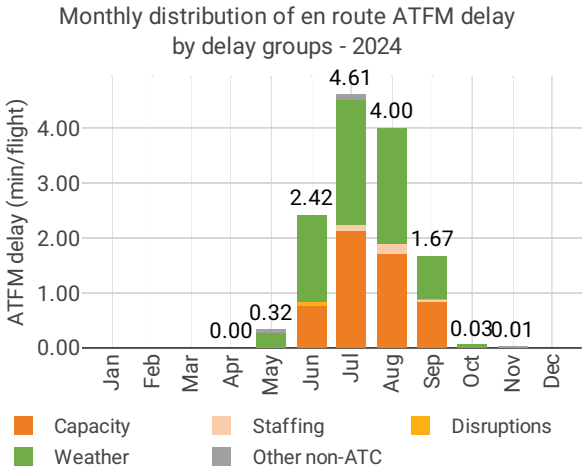
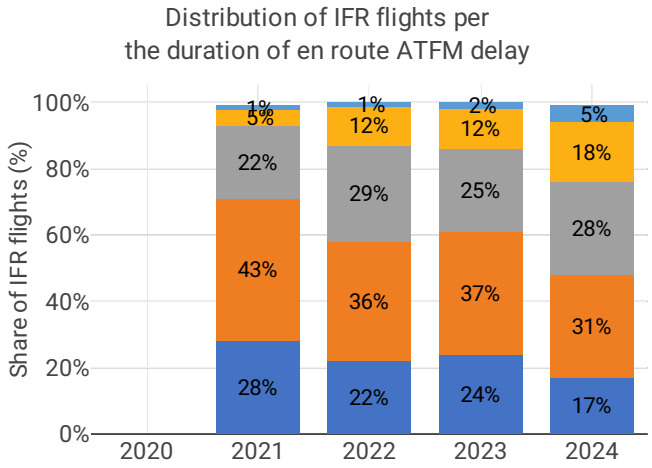
- The number of ATCOs in OPS is 104, being below the 2024 plan in Zagreb by 17 FTEs.
- The yearly total of sector opening hours in Zagreb ACC was 38,148, showing a 0.8% increase compared to 2023. Sector opening hours are 4.3% above 2019 levels.
- Zagreb ACC registered 23.05 IFR movements per one sector opening hour in 2024, being 26.6% above 2019 levels.
- Capacity provision improved slightly in 2024. However, a capacity gap still exists. Croatia should expedite the recruitment and training of controllers and work closely with the Network Manager to mitigate the impact of adverse weather. Actual 2025 figures up to August show an improvement compared to 2024.

4.2 En route performance

4.2.1 En route ATFM delay (KPI#1)







Focus on en route ATFM delay

Summary of capacity performance

Croatia experienced an increase in traffic, from 814k flights in 2023, to 922k flights in 2024. In 2024, Croatia had 1 390k minutes of delay, significantly higher than in 2023 (347k minutes of delay). There were an additional 70k minutes of delay originating in Croatia that were re-attributed to DFS via the NM post operations delay attribution process, according to the NMB agreement for eNM/S24 measures, to ameliorate capacity shortfalls in Karlsruhe UAC.

NSA's assessment of capacity performance

In the year 2024 there were significant challenges for LDZO ACC capacity KPI as the actual traffic was around 33% higher than planned in the RP3 Performance plan while summer season traffic was 10% above historical highest year (2023). As a consequence, limitations occurred during summer season due to unplanned high increase of traffic demand in peak hours. The capacity performance target was not achieved due to a combination of interrelated factors:

Traffic Forecast Deviation: The initial traffic forecast for 2024 projected approximately 696,000 flights; however, actual traffic through Croatian airspace reached 919,500 flights. This figure exceeded even the revised forecast made in February 2024, significantly increasing demand on air traffic management resources.

Low Flight Plan Adherence: Flight plan adherence by airspace users remained below 40% in Croatian airspace. This low level of predictability severely constrained effective capacity planning and hindered the ANSP's ability to manage resources and sector configurations efficiently.

National Social Policy Impact: The introduction of new demographic measures at the state level granted new parents two months of leave to spend with their families. The uptake of this leave was particularly high during peak traffic months, leading to reduced staffing availability at critical times.

These combined circumstances contributed to the shortfall in meeting the established capacity target, despite mitigation efforts undertaken by the ANSP.

Monitoring process for capacity performance

The Single European Sky Data Portal is the primary information source and is used to monitor all available KPIs and PIs.

The LDZO ACC capacity KPI faced major difficulties in 2024 since summer traffic was significantly higher than in previous years and actual traffic exceeded the RP3 Performance plan's projections by far.

As a result, during the summer, there were restrictions due to an unforeseen surge in traffic demand during peak hours.

Capacity planning

Capacity planning is done using the Network Cooperative Decision-Making processes through the specialized organizations CAPLAN, NETOPS, and NDOP. Capacity planning is carried out in accordance with NM's initiative to create a rolling NOP document that describes short-term capacity and demand at the network level.

Capacity is adjusted to traffic demand and reported to NM, which evaluates the efficiency for the planned period. The expected traffic outlook is provided for the next eight weeks and is updated every week.During the local planning process, a number of departments contribute to the strategic and tactical development of the plan.

Application of Corrective Measures for Capacity (if applicable)

Recommendations to the ANSP to rectify the situation:

Enhance Traffic Forecasting and Scenario Planning

Strengthen collaboration with the Network Manager and neighbouring ANSPs to improve short- and medium-term traffic forecasting and develop alternative planning for high-traffic scenarios, taking into account possible forecast deviations.

Engage with Airspace Users on Flight Plan Adherence

Initiate targeted dialogues with airspace users, supported by data, to encourage improved flight plan adherence and raise awareness of its operational impact. Consider coordinating with the Network Manager to escalate this issue at network level.

Measures that have been put in place include:

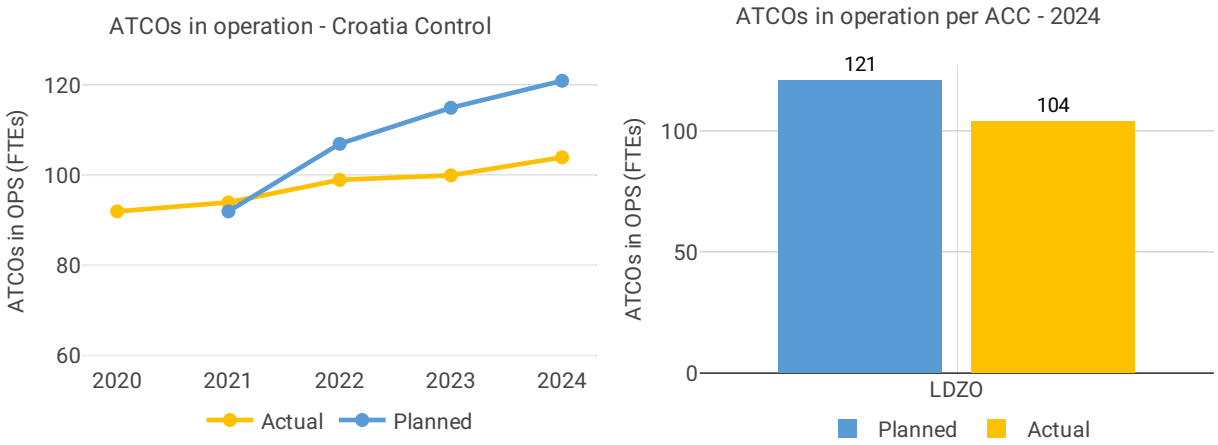
- Network Weather Mitigation Measures - implementation of new scenarios enabling improved weather and sector management;
- Conitnued effort to increase staffing levels and/or availability - Training Organisation is working at full capacity ensuring maximum student inflow;
- Continued alignment of traffic demand and sector opening times - Implementation of improved sector rostering and sector configuration options;
- Re-evluation of ATC sector capacities - Definition and implementation of improved sector capacities/ monitoring values based on the operational and technological developments;
- Central/South East Europe airspace restructuring - Improved sector volumes (i.e. sector boundaries) and merge of FRAs.

En route Capacity Incentive Scheme

Croatia Control: The NSA reports that, Croatia Control is liable for a financial penalty of €997 452.69

In accordance with Article 3(3)(a) of Implementing Regulation (EU) 2020/1627: The incentive scheme shall cover only the calendar years 2022 to 2024.

4.2.2 Other indicators



Focus on ATCOs in operations

During 2024 there was an increase in the ATCO in OPS FTE compared to 2023 as 9 new ATCO students gain licences and started working in OPS. At the same time the number of ATCOs in OPS who have stopped working in the OPS room is slightly higher than planned due to unforseen retirements.

5 COST-EFFICIENCY - CROATIA

5.1 PRB monitoring

- The en route 2024 actual unit cost of Croatia was 28.74€2017, -29% lower than the determined unit cost (40.48€2017). Croatia does not have a terminal charging zone.
- The en route 2024 actual service units (3.0M) were +35% higher than the determined service units (2.3M).
- The en route 2024 actual total costs were -3.6M€2017 (-3.9%) lower than determined. This is mainly due to lower other operating costs (-3.3M€2017, or -20%), followed by lower depreciation and cost of capital for Croatia Control. The NSA attributed this to the deferral of investment projects, which resulted in lower maintenance costs, as well as to lower-than-expected expenditures.
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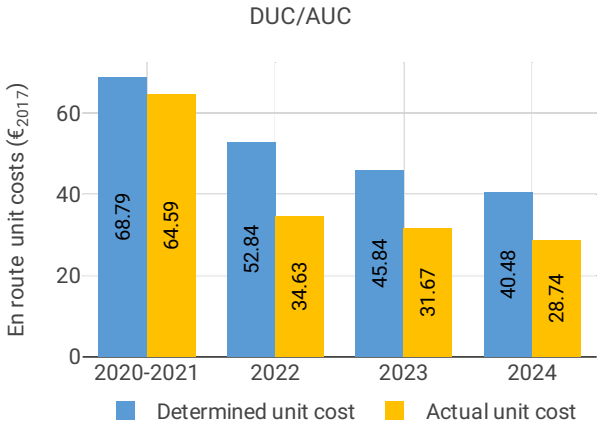
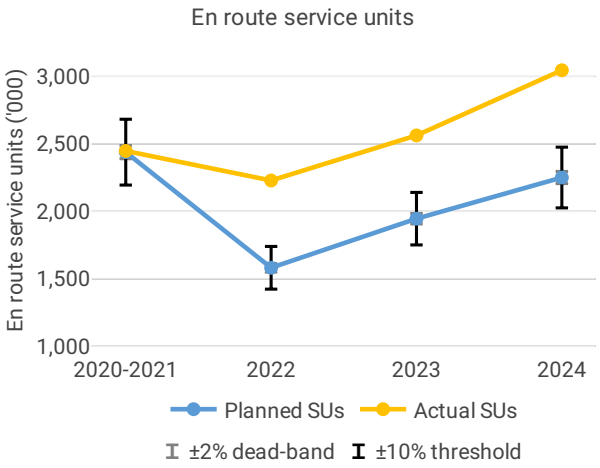
- The en route regulatory result for Croatia Control amounted to +14M€, or 13% of the 2024 revenue.
- Croatia should ensure that any excessive regulatory result, including excess funds received by the ANSP due to the inflation mechanism, is either reinvested to improve the quality of services delivered to airspace users or reimbursed to them.

5.2 En route charging zone

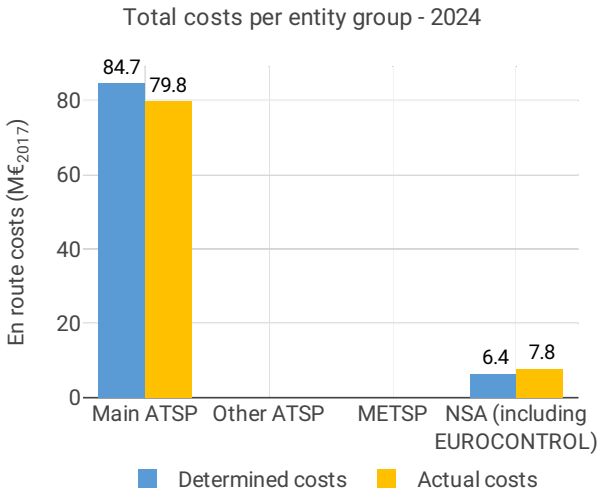
5.2.1 Unit cost (KPI#1)

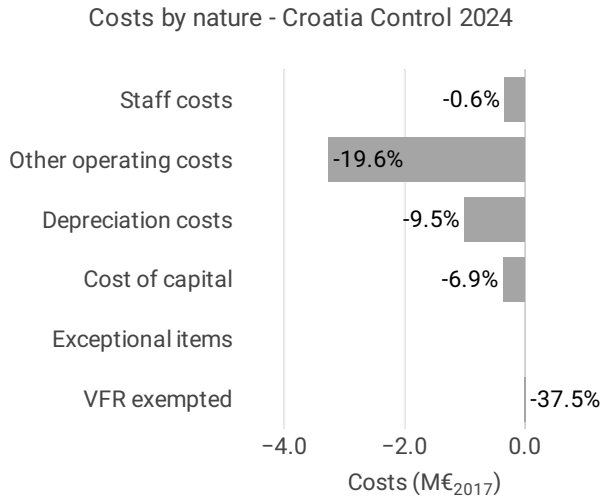




Actual and determined data				
Total costs - nominal (M€)	**2020-2021**	**2022**	**2023**	**2024**
Actual costs	162	87	97	108
Determined costs	171	86	94	97
Difference costs	-9	0	4	11

Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	1.1%	1.9%	2.2%
Determined inflation index	NA	104.3	106.3	108.7
Actual inflation rate	NA	10.7%	8.4%	4.0%
Actual inflation index	NA	116.4	126.2	131.3
Difference inflation index (p.p.)	NA	+12.1	+19.9	+22.6





Focus on unit cost

AUC vs. DUC

In 2024, the en route AUC was -29.0% (or -11.74 €2017) lower than the planned DUC. This results from the combination of significantly higher than planned TSUs (+35.3%) and lower than planned en route costs in real terms (-3.9%, or -3.6 M€2017). It should be noted that the actual inflation index in 2024 was +22.6 p.p. higher than planned.

En route service units

The difference between actual and planned TSUs (+35.3%) 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 ANSP and airspace users (see the main ANSP gain in Box 11).

En route costs by entity

Actual real en route costs are -3.9% (-3.6 M€2017) lower than planned. This is the result of lower costs for the main ANSP, Croatia Control (-5.9%, or -5.0 M€2017) and higher costs for the NSA/EUROCONTROL (+21.6%, or +1.4 M€2017).

En route costs for the main ANSP at charging zone level

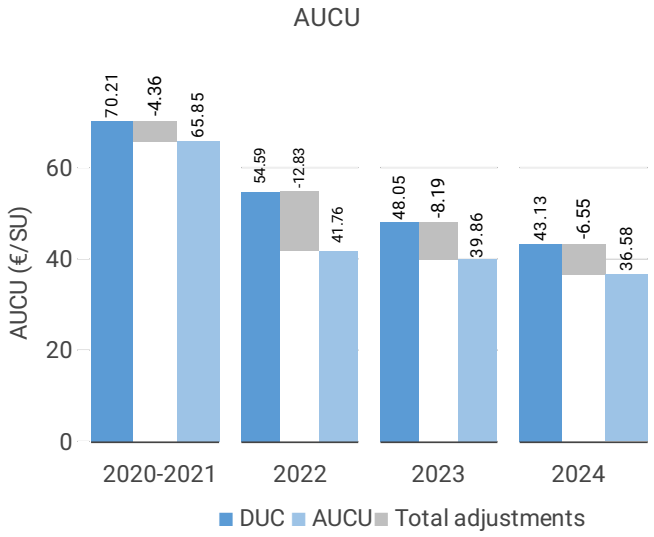
Significantly lower than planned en route costs in real terms for Croatia Control in 2024 (-5.9%, or -5.0 M€2017) result from:

- Slightly lower staff costs (-0.6%), due to the impact of inflation index (+22.6 p.p.) since in nominal terms, staff costs, were above planned by +20.0% "p*redominantly driven by an addition to the CCL collective agreement (signed at the end of 2023, with the first full-year impact in 2024) and the adjustment of labour expenses to partially align with inflation trends (…) and traffic growth coupled with higher than planned pension costs*".
- Significantly lower other operating costs (-19.6%), due to lower-than-planned expenses related to capital expenditure, maintenance, and other items, which offset inflationary pressures on raw materials and energy.
- Significantly lower depreciation (-9.5%), due to postponed CAPEX from previous years and ongoing efforts to address technical staffing constraints.
- Significantly lower cost of capital (-6.9%), driven by reduced average fixed assets from delayed investment projects and a decrease in non-current assets due to higher-than-planned interest-bearing assets.
- Significantly lower deduction for VFR exempted flights (-37.5%).

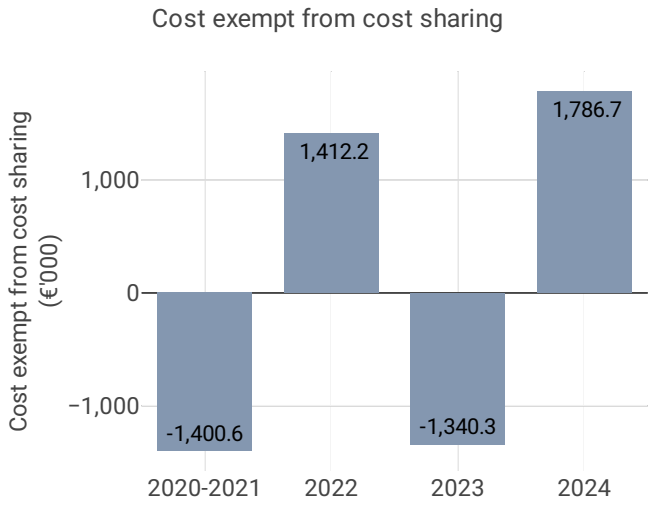
RP3 summary

When considering the whole of RP3 (2020-2024) for Croatia en route charging zone, actual TSUs are +25.1% higher than planned, while actual costs in real terms are -6.4% lower than the determined costs (some -27.7 M€2017). As a result, the weighted average actual unit cost over RP3 (39.28 €2017) is -25.2% lower than planned in the PP (52.53 €2017).

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

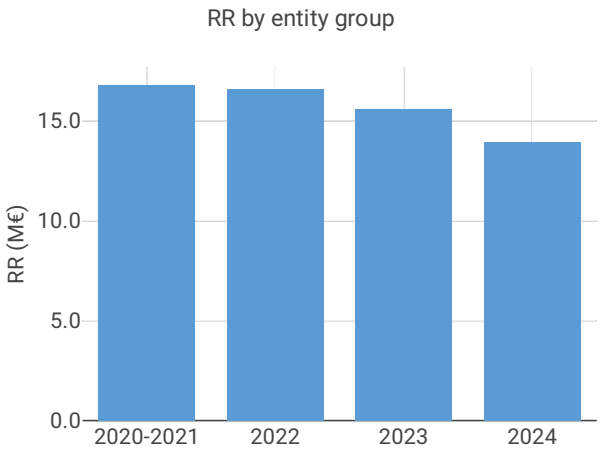


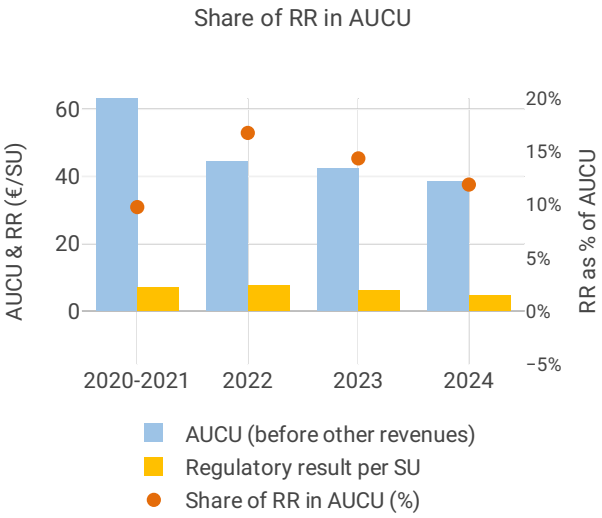
AUCU components (€/SU) – 2024	
Components of the AUCU in 2024	**€/SU**
DUC	**43.13**
Inflation adjustment	5.11
Cost exempt from cost-sharing	0.59
Traffic risk sharing adjustment	-8.55
Traffic adj. (costs not TRS)	-1.49
Finantial incentives	-0.33
Modulation of charges	0.00
Cross-financing	0.00
Other revenues	-1.88
Application of lower unit rate	0.00
Total adjustments	-6.55
AUCU	**36.58**
AUCU vs. DUC	**-15.2%**

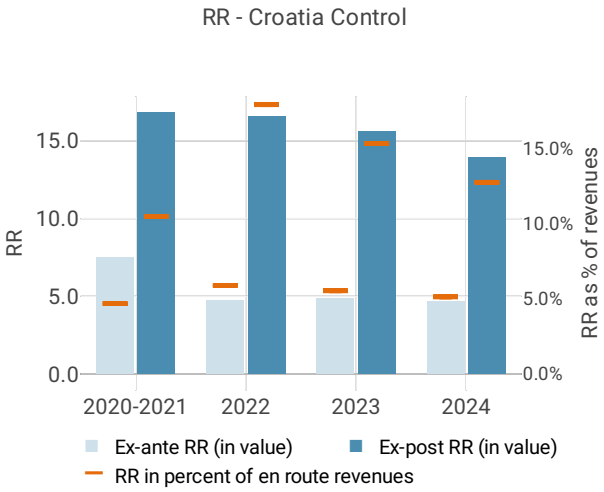


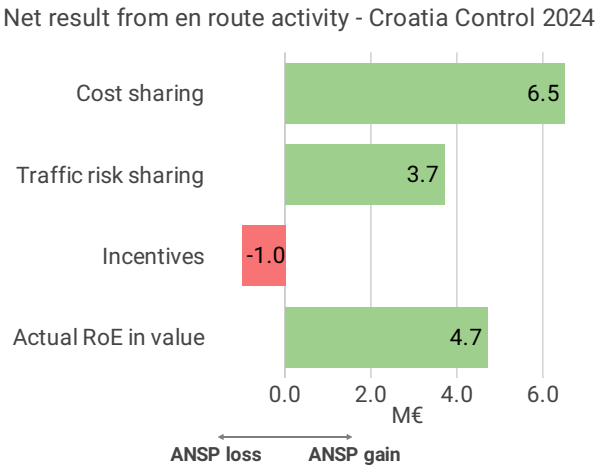
Cost exempt from cost sharing – 2024		
Cost exempt from cost sharing by item - 2024	**€'000**	**€/SU**
New and existing investments	-666.8	-0.22
Competent authorities and qualified entities costs	1,445.2	0.47
Eurocontrol costs	-64.5	-0.02
Pension costs	1,077.1	0.35
Interest on loans	-4.2	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**1,786.7**	**0.59**

5.2.3 Regulatory result (RR)









Focus on regulatory result

Croatia Control net gain/loss on activity in the Croatia en route charging zone in the year 2024

Croatia Control reported a net gain of +9.2 M€, as a combination of a gain of +6.5 M€ arising from the cost sharing mechanism, with a gain of +3.7 M€ arising from the traffic risk sharing mechanism and a loss of -1.0 M€ relating to financial incentives.

Croatia Control overall regulatory result (RR) for the en route activity

Ex-post, the overall RR taking into account the net gain from the en route activity mentioned above (+9.2 M€) and the actual RoE (+4.7 M€) amounts to +14.0 M€ (12.8% of the en route revenues). The resulting ex-post rate of return on equity is 22.0%, which is higher than the 7.5% planned in the PP.

RP3 summary

When considering the whole of RP3 (2020-2024), Croatia Control generated a cumulative gain in respect of cost sharing of +32.5 M€, as actual total costs for RP3 were lower than

planned. The traffic risk sharing mechanism generated a gain of +11.1 M€. Adding the loss of -2.0 M€ to be retained by the ATSP in respect of financial incentives and the actual RoE (+21.3 M€ over RP3) leads to an overall regulatory result of +62.9 M€, which corresponds to an average ex-post rate of return on equity of 19.5% (compared to 6.6% initially planned in the PP).

Note: Croatia joined the euro area on 1 January 2023. On that date the euro replaced the Croatian kuna at the fixed exchange rate of €1 = HRK 7.53450. This may result in slight differences in determined and actual costs comparing to previous monitoring reports.