



# Performance Review Body Monitoring Report

Croatia - 2022

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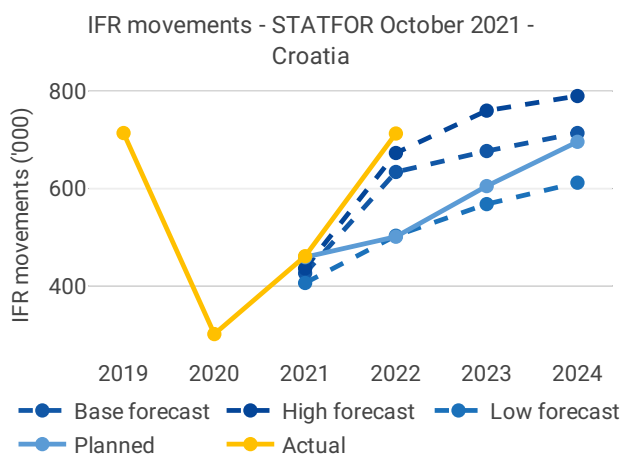
## 1 OVERVIEW

### 1.1 Contextual information

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

|                                                                                       |                                                                                         |                                       |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------|
| <b>List of ACCs</b> 1<br>Zagreb ACC                                                   | <b>Exchange rate (1 EUR=)</b><br>2017: 1 EUR<br>2022: 1 EUR                             | <b>Main ANSP</b><br>• Croatia Control |
| <b>No of airports in the scope of the performance plan:</b><br>• ≥80'K 0<br>• <80'K 0 | <b>Share of Union-wide:</b><br>• traffic (TSUs) 2022 2.1%<br>• en route costs 2022 1.3% | <b>Other ANSPs</b><br>—               |
|                                                                                       | <b>Share en route / terminal costs 2022</b> 100% / 0%                                   | <b>MET Providers</b><br>—             |
|                                                                                       | <b>En route charging zone(s)</b><br>Croatia                                             |                                       |
|                                                                                       | <b>Terminal charging zone(s)</b><br>—                                                   |                                       |

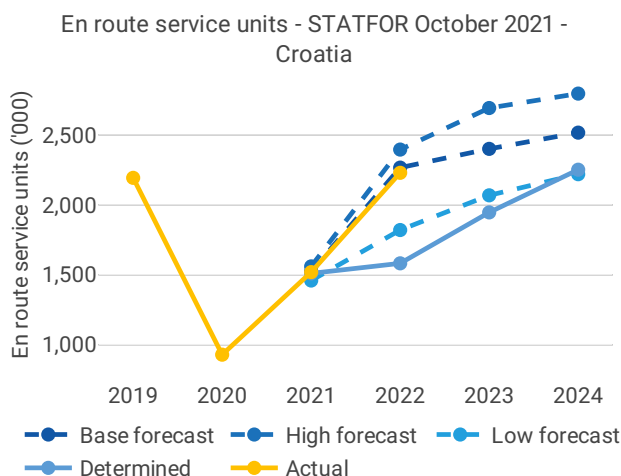
### 1.2 Traffic (En route traffic zone)



- Croatia recorded 713K actual IFR movements in 2022, +55% compared to 2021 (461K).

- Actual 2022 IFR movements were +42% above the plan (501K).

- Actual 2022 IFR movements are in line with the 2019 level (714K).



- Croatia recorded 2,229K actual en route service units in 2022, +47% compared to 2021 (1,519K).

- Actual 2022 service units were +41% above the plan (1,582K).

- Actual 2022 service units are +1.6% above the actual 2019 level (2,193K).

### 1.3 Safety (Main ANSP)

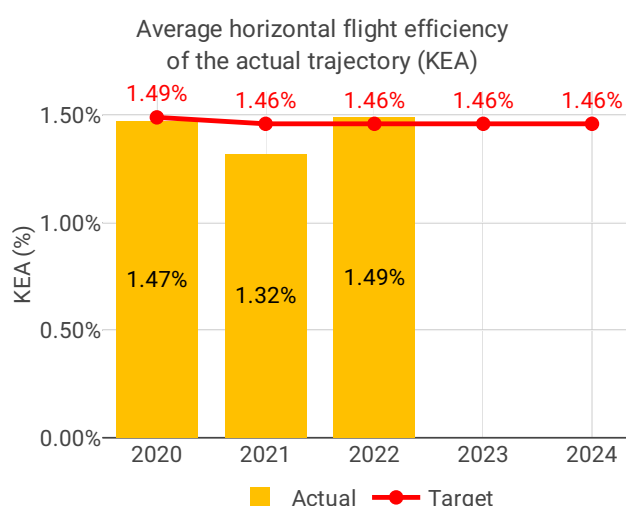


- Croatia Control improved its performance in safety risk management but not sufficiently to achieve the RP3 target. Croatia Control exceeded the planned maturity levels for safety policy and objectives. The establishment of a proactive safety management system at CCL gave confidence that the ANSP can achieve the RP3 targets before the end of RP3.

- Croatia recorded an increase in the rate of runway incursions (RIs) and separation minima infringements (SMIs) in 2022. Croatia Control adopted the European Action Plan for the Prevention of Runway Incursions.

- Croatia monitored safety performance using specific safety tools, including the automated safety data recording systems for the recording of SMIs and RIs.

### 1.4 Environment (Member State)



- Croatia achieved a KEA performance of 1.49% compared to its target of 1.46% and did not contribute positively towards achieving the Union-wide target. For the first time in five years, Croatia slightly missed the target in 2022.

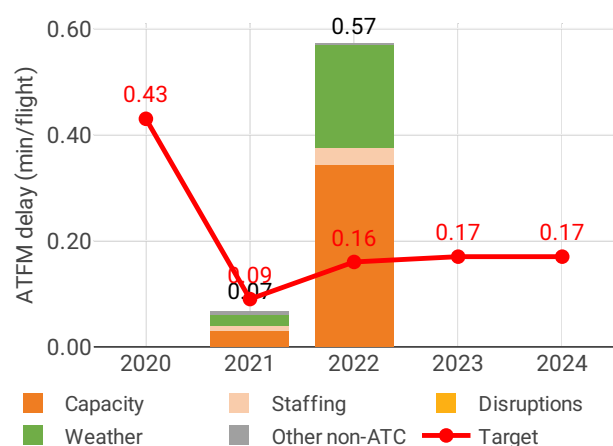
- The NSA states that there were no specific reasons why the performance target was not achieved.

- Both KEP and SCR deteriorated in comparison to 2021.

- Croatia has no airports that are regulated under the RP3 performance and charging scheme.

### 1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



- Croatia registered 0.57 minutes of average en route ATFM delay per flight during 2022, thus not achieving the local target value of 0.16.

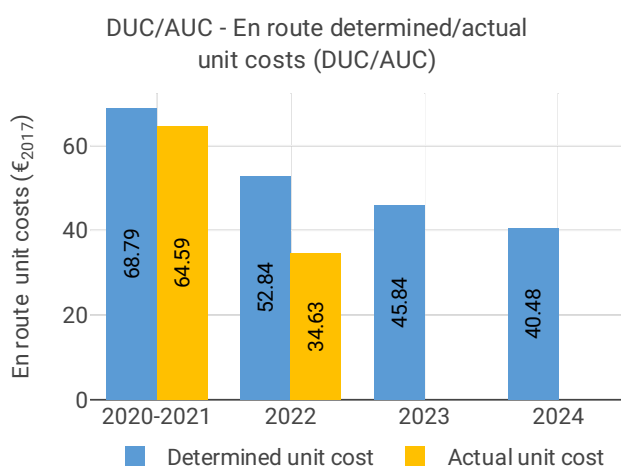
- The average number of IFR movements was slightly below 2019 levels in Croatia in 2022.

- Traffic is expected to grow dynamically. The number of ATCOs in OPS is planned to increase by 32% in Zagreb ACC by the end of RP3. The Actual value remains slightly below the 2022 plan due to the higher-than-planned number of ATCOs leaving and a lower-than-planned number of ATCOs being trained by 2022.

- Delays were highest between July and September, mostly driven by ATC Capacity reasons and adverse weather.

- The share of delayed flights with delays longer than 15 minutes in Croatia increased by 13.94 p.p. compared to 2021 and was higher than 2019 values.
- The yearly total of sector opening hours in Zagreb ACC was 33,839 in 2022, showing a 36.7% increase compared to 2021. Sector opening hours are 7.5% below 2019 levels.
- Zagreb ACC registered 20.08 IFR movements per one sector opening hour in 2022, being 10.3% above 2019 levels.

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



- The en route 2022 actual unit cost of Croatia was 34.32 €2017, -36% lower than the determined unit cost (53.35 €2017). Croatia does not have a terminal charging zone.

- The en route 2022 actual service units (2,229K) were +41% higher than the determined service units (1,582K).

- The en route 2022 actual total costs were 7.9 M€2017 (-9.4%) lower than determined, as all cost categories decreased. It was mainly attributable to lower staff costs (-5.6 M€2017, or -11%). The NSA explained that it is mainly due to not fully realised

recruitment plan. The decreases in real terms were also a result of significantly higher-than-expected inflation.

- Croatia Control spent 10.5 M€2017 in 2022 related to costs of investments, -3.4% less than determined (10.9 M€2017), mainly due to the postponement of investments.
- As for the previous monitoring year, the discrepancies regarding total costs were significant. As mentioned last year, the PRB invites the NSA to analyse the discrepancies, identify their reasons, and the Member State to take immediate, adequate, and proportionate actions.
- The en route actual unit cost incurred by users in 2022 was 41.73€.

## 2 SAFETY - CROATIA

### 2.1 PRB monitoring

- Croatia Control improved its performance in safety risk management but not sufficiently to achieve the RP3 target. Croatia Control exceeded the planned maturity levels for safety policy and objectives. The establishment of a proactive safety management system at CCL gave confidence that the ANSP can achieve the RP3 targets before the end of RP3.
- Croatia recorded an increase in the rate of runway incursions (RIs) and separation minima infringements (SMIs) in 2022. Croatia Control adopted the European Action Plan for the Prevention of Runway Incursions.
- Croatia monitored safety performance using specific safety tools, including the automated safety data recording systems for the recording of SMIs and RIs.

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



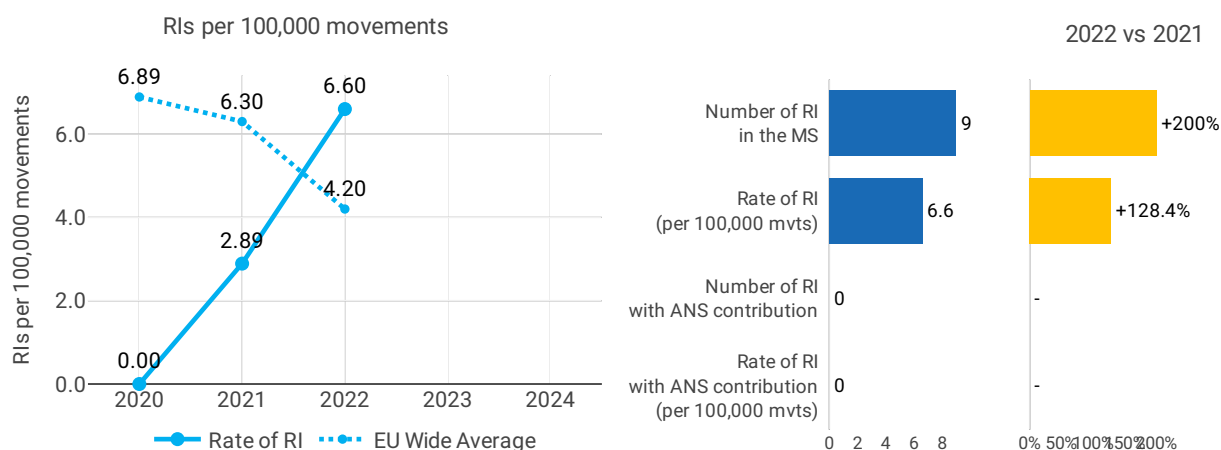
### Focus on EoSM

Four out of five EoSM components of the ANSP meet the RP3 EoSM target level. Only “Safety Risk Management” is below 2024 target level. Over 2022, one question was improved for this component, but two remaining questions are still below the RP3 target.

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)



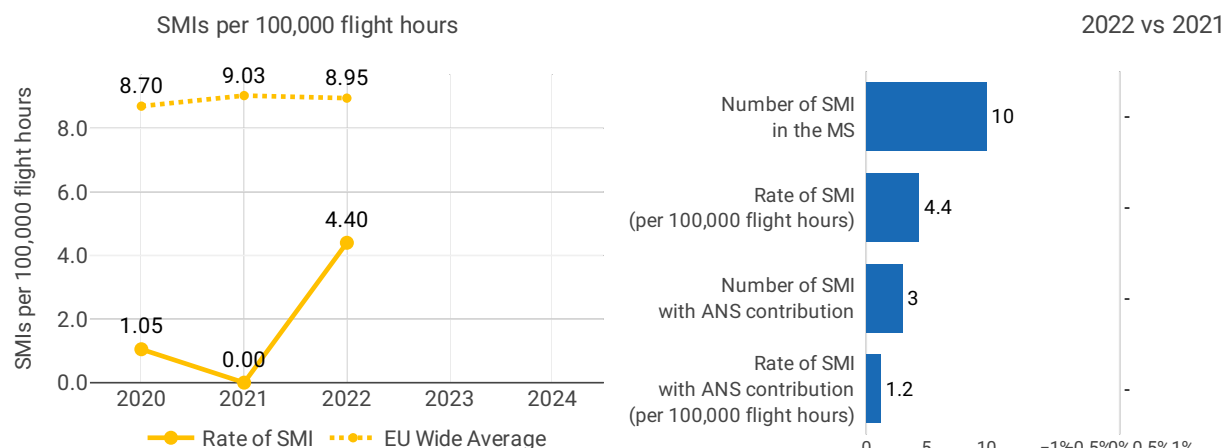
**Rate of RIs per 100,000 airport movements - Croatia**

| # | Airport name | APT movements | Number of RI | Rate RI per 100,000 |
|---|--------------|---------------|--------------|---------------------|
| 1 | Zagreb       | NA            | NA           | NA                  |

### 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 | Croatia Control | 106,693      | 155,957 | 249,018 | NA   | NA   | 0              | 0    | 3    | 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 | Croatia Control | 0.0                                  | 0.0  | 1.2  | NA   | NA   | NA                          | 0%   | 0%   | 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 |
| ✓       | ✓        |

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 - CROATIA

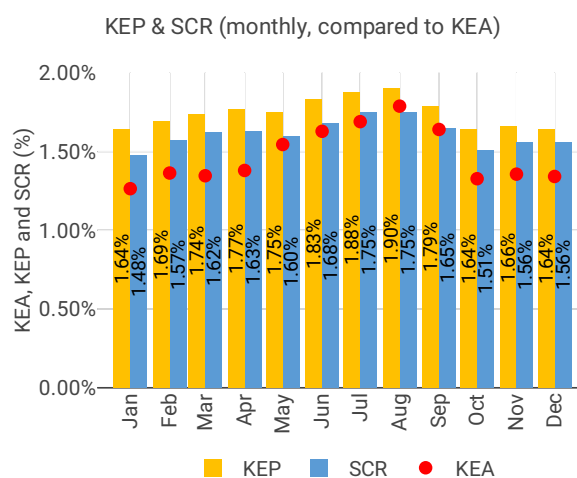
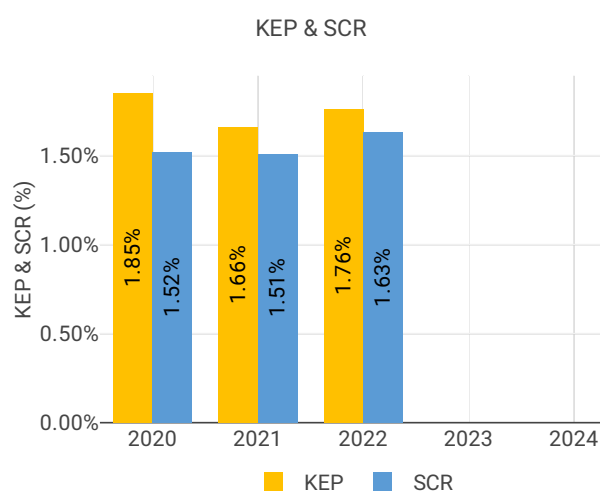
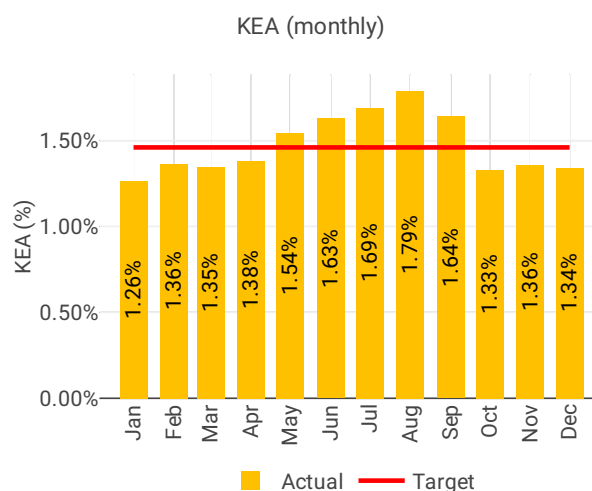
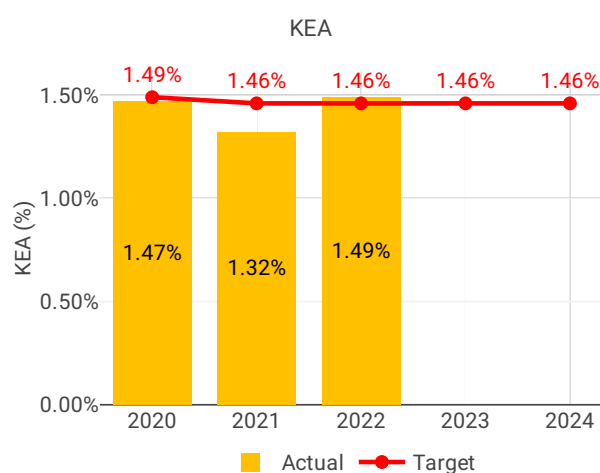
### 3.1 PRB monitoring

- Croatia achieved a KEA performance of 1.49% compared to its target of 1.46% and did not contribute positively towards achieving the Union-wide target. For the first time in five years, Croatia slightly missed the target in 2022.

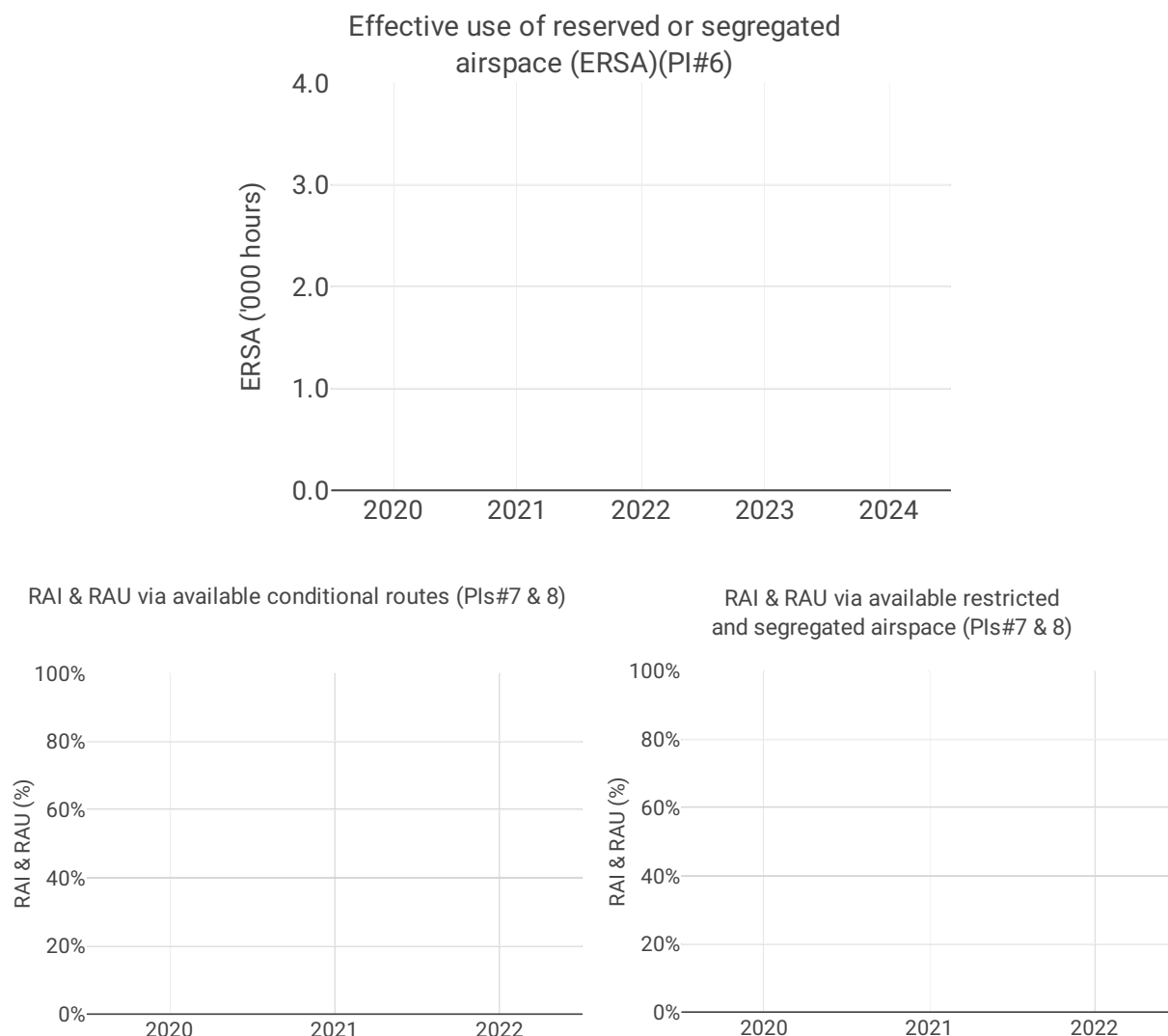
- The NSA states that there were no specific reasons why the performance target was not achieved.
- Both KEP and SCR deteriorated in comparison to 2021.
- Croatia has no airports that are regulated under the RP3 performance and charging scheme.

### 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.

During the preparation of the EUROCONTROL CAPAN study in 2022, it was recognized that military traffic has no significant impact on the sector capacities of the LDZO ACC.

##### 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 due to significant decrease of military activities and air traffic affected by COVID-19 crisis.

No remedial measures identified.

##### 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.

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.

### **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 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.

### **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**

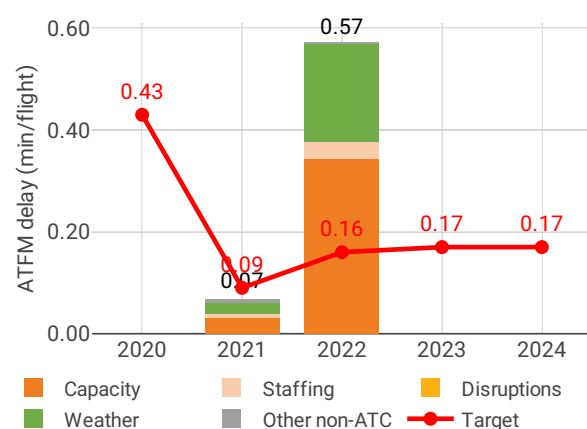
### **4.1 PRB monitoring**

- Croatia registered 0.57 minutes of average en route ATFM delay per flight during 2022, thus not achieving the local target value of 0.16.
- The average number of IFR movements was slightly below 2019 levels in Croatia in 2022.
- Traffic is expected to grow dynamically. The number of ATCOs in OPS is planned to increase by 32% in Zagreb ACC by the end of RP3. The Actual value remains slightly below the 2022 plan due to the higher-than-planned number of ATCOs leaving and a lower-than-planned number of ATCOs being trained by 2022.
- Delays were highest between July and September, mostly driven by ATC Capacity reasons and adverse weather.
- The share of delayed flights with delays longer than 15 minutes in Croatia increased by 13.94 p.p. compared to 2021 and was higher than 2019 values.
- The yearly total of sector opening hours in Zagreb ACC was 33,839 in 2022, showing a 36.7% increase compared to 2021. Sector opening hours are 7.5% below 2019 levels.
- Zagreb ACC registered 20.08 IFR movements per one sector opening hour in 2022, being 10.3% above 2019 levels.

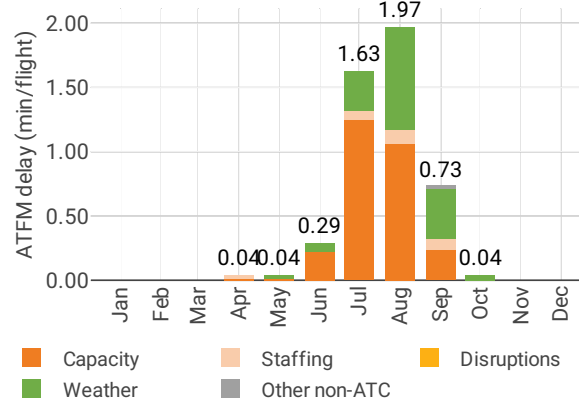
## 4.2 En route performance

### 4.2.1 En route ATFM delay (KPI#1)

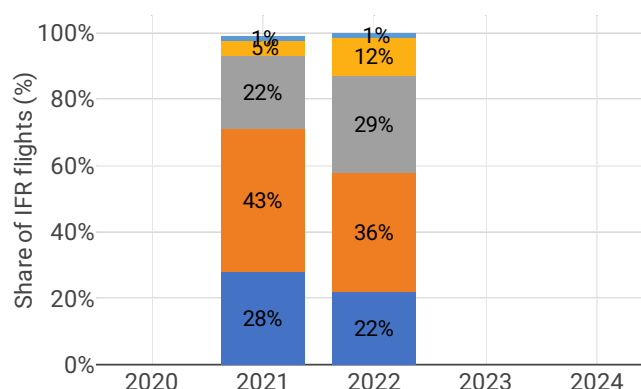
Average en route ATFM delay per flight by delay groups



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

Croatia experienced an increase in traffic from 461k flights in 2021 to 713k flights in 2021, compared to 714k flights in 2019.

Actions taken and results of improved capacity performance are visible in the handling of traffic during June 2022. In June 2022 Croatia had 24k minutes of ATFM delay while handling more than 80k flights. For comparison in June 2019 approximately 79k flights resulted in around 97k minutes of delay.

#### NSA's assessment of capacity performance

The COVID-19 pandemic has had significant impact on the aviation industry in 2020/2021 while bounce back of the traffic in FIR Zagreb was among highest in the Europe resulting in the actual traffic being at the 2019 level, whilst traffic during 2022 summer season (May – September) was 4% higher than in the same period of the 2019.

The ANSP did not meet the set CAP target due to the significant increase of traffic in LDZO ACC where actual traffic was 42% higher than planned in the RP3 Performance plan. As a consequence, limitations occurred during summer season due to unplanned high increase of traffic demand in peak hours.

Croatian Civil Aviation Agency has established an agreement with CroControl Ltd. to convene biannually as part of the performance monitoring process. If the need is determined, a meeting can be organized to discuss the identified issues and/or discrepancies. Croatian Civil Aviation Agency identified the factors that directly affected the increase in minutes of delay compared to what was planned in the performance plan. Recognized factors are:

1. Traffic Levels – The target delay values were determined based on STATFOR's traffic forecast from May

2021, specifically the Base scenario. According to that specific forecast, Croatia was expected to have 501,000 flights in 2022. However, EUROCONTROL's NOP document (2022-2026) considered the STATFOR forecast from October 2021, which indicated that it was realistic to anticipate traffic levels higher than the High scenario of traffic demand. In other words, Croatia was projected to have approximately 700,000 flights. By the end of 2022, CroControl Ltd. recorded over 700,000 flights, which represents a 40% increase in traffic compared to the forecasted levels at the time when the performance plan targets were established. Furthermore, the South-East Axis stands out as a transportation corridor that experienced the swiftest and most significant recovery of traffic at the European level following the COVID restrictions. This can be exemplified by comparing traffic levels in 2019 with those in 2022. According to data from the Aviation Intelligence Portal, Croatia had only 1,000 fewer flights in 2022 compared to 2019.

2. Number of Available ATCOs – In August 2022, there was an unexpected departure of controllers due to eight resignations classified as extraordinary. Additionally, one individual requested to cease working in operations for personal reasons.

3. Priority of Training for new ATCOs – CroControl Ltd. places high priority on the training of controllers. Consequently, during the summer season, eight ATCO instructors were assigned to provide simulator training to new controllers as part of the ATCO TO program.

### **Monitoring process for capacity performance**

Monitoring of all available KPI's and PI's is done through the Single European Sky Data Portal which is considered as the main source of information.

In the year 2022 there were significant challenges for LDZO ACC capacity KPI as the actual traffic was 42% higher than planned in the RP3 Performance plan while summer season traffic was 4% above historical highest year (2019). As a consequence, limitations occurred during summer season due to unplanned high increase of traffic demand in peak hours.

### **Capacity planning**

Capacity planning is done in line with NM's initiative for development of a rolling NOP document in which short-term capacity and demand on the Network level is described. The expected traffic outlook is given for eight weeks ahead and revised weekly, while capacity is adapted to traffic demand and reported to NM which assesses the efficiency for planned period. In the planning process on local level, several departments are involved in strategic and tactical development of the plan.

### **Application of Corrective Measures for Capacity (if applicable)**

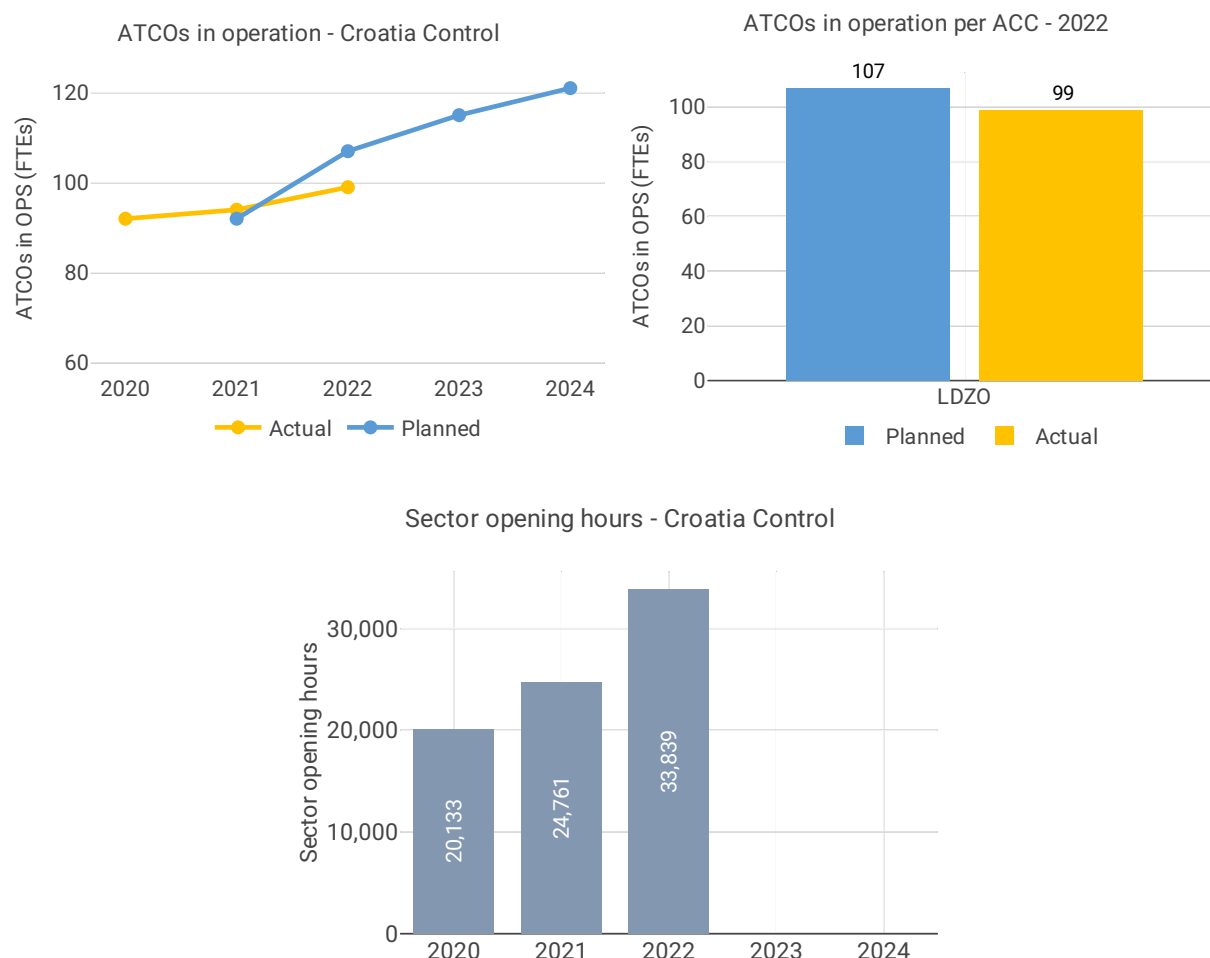
The shortage of air traffic controllers is a recognized problem that is being continuously addressed. Sector capacities and available staff have been communicated with the Network Manager, and on a daily basis, additional management of available capacities is carried out to optimize the utilization of resources to the fullest extent possible.

CroControl Ltd. has re-evaluated its sector capacities in late 2022 in order to optimize available resources. The new sector capacity values have been in effect since March 6, 2023.

Furthermore, CroControl Ltd. continuously improves its ATS system, staff training, and sharing of best practices which has resulted in significantly more efficient utilization of existing capacities. This is evidenced by comparing traffic and delays in June and July 2022 to the same period in 2019.

In late 2022, a refreshment course for FMP personnel was conducted, and in 2023, CroControl Ltd., in collaboration with EUROCONTROL, has agreed to share best practices in preparation for the summer period.

## 4.2.2 Other indicators



### Focus on ATCOs in operations

During 2022 there was an increase in the ATCO in OPS FTE compared to 2021 due to the new ATCO licences coupled with increased ATCO in OPS utilisation following high traffic recovery during summer season on Southeast Axis traffic flow.

Difference between planned and actual number of ATCO in OPS FTE is mainly due to higher than planned number of ATCOs in OPS who have stopped working in the OPS room and lower than planned ATCO training success rate.

## 5 COST-EFFICIENCY - CROATIA

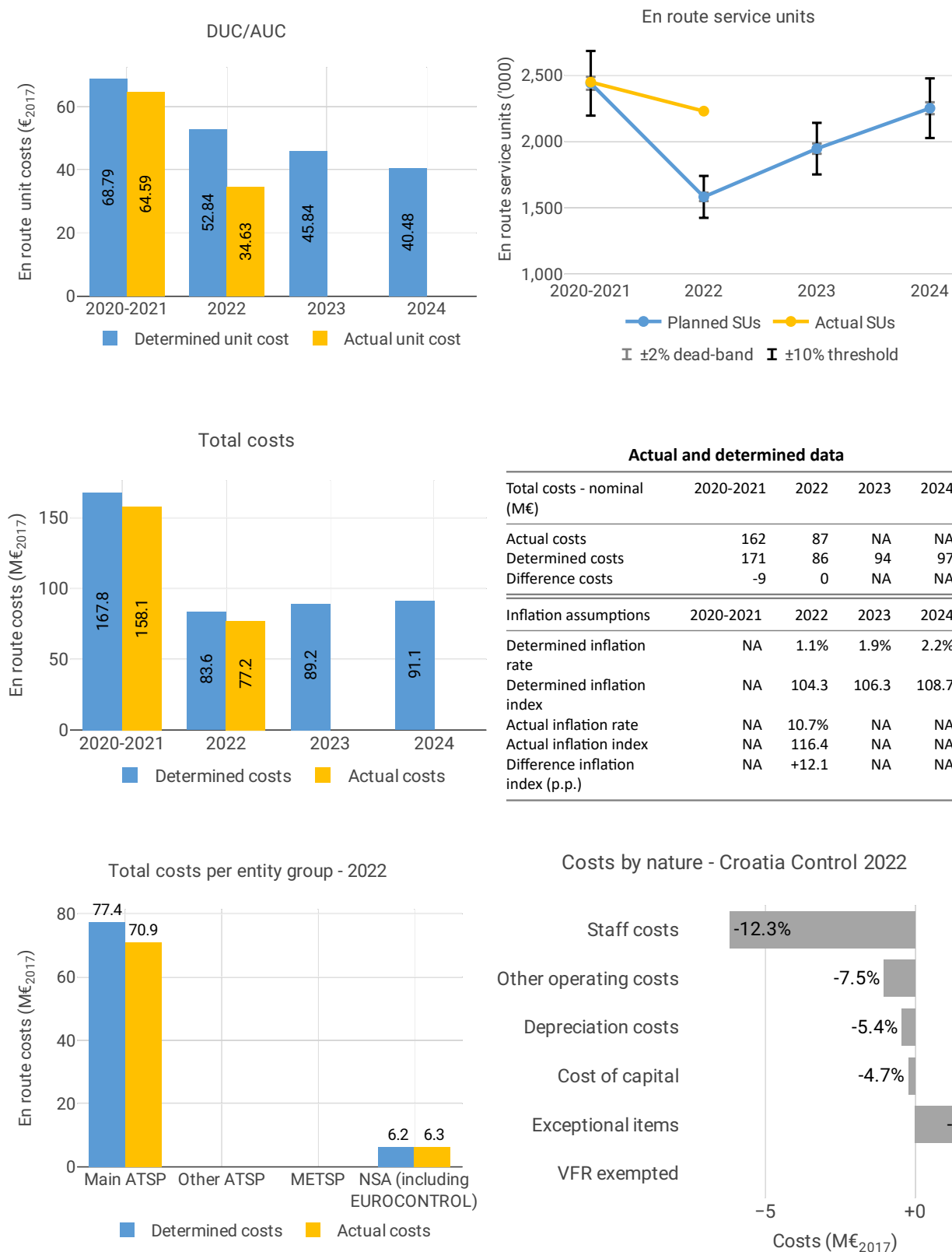
### 5.1 PRB monitoring

- The en route 2022 actual unit cost of Croatia was 34.32 €2017, -36% lower than the determined unit cost (53.35 €2017). Croatia does not have a terminal charging zone.
- The en route 2022 actual service units (2,229K) were +41% higher than the determined service units (1,582K).
- The en route 2022 actual total costs were 7.9 M€2017 (-9.4%) lower than determined, as all cost categories decreased. It was mainly attributable to lower staff costs (-5.6 M€2017, or -11%). The NSA explained that it is mainly due to not fully realised recruitment plan. The decreases in real terms were also a result of significantly higher-than-expected inflation.
- Croatia Control spent 10.5 M€2017 in 2022 related to costs of investments, -3.4% less than determined (10.9 M€2017), mainly due to the postponement of investments.

- As for the previous monitoring year, the discrepancies regarding total costs were significant. As mentioned last year, the PRB invites the NSA to analyse the discrepancies, identify their reasons, and the Member State to take immediate, adequate, and proportionate actions.
- The en route actual unit cost incurred by users in 2022 was 41.73€.

## 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 -35.7% (or -142.04 HRK2017, -19.04 €2017) lower than the planned DUC. This results from the combination of significantly higher than planned TSUs (+40.9%) and significantly lower than planned en route costs in real terms (-9.4%, or -59.1 MHRK2017, -7.9 M€2017). It should be noted that actual inflation index in 2022 was +12.1 p.p. higher than planned.

### En route service units

The difference between actual and planned TSUs (+40.9%) falls outside 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 (Croatia Control) retaining an amount of +2.8 M€2017.

### En route costs by entity

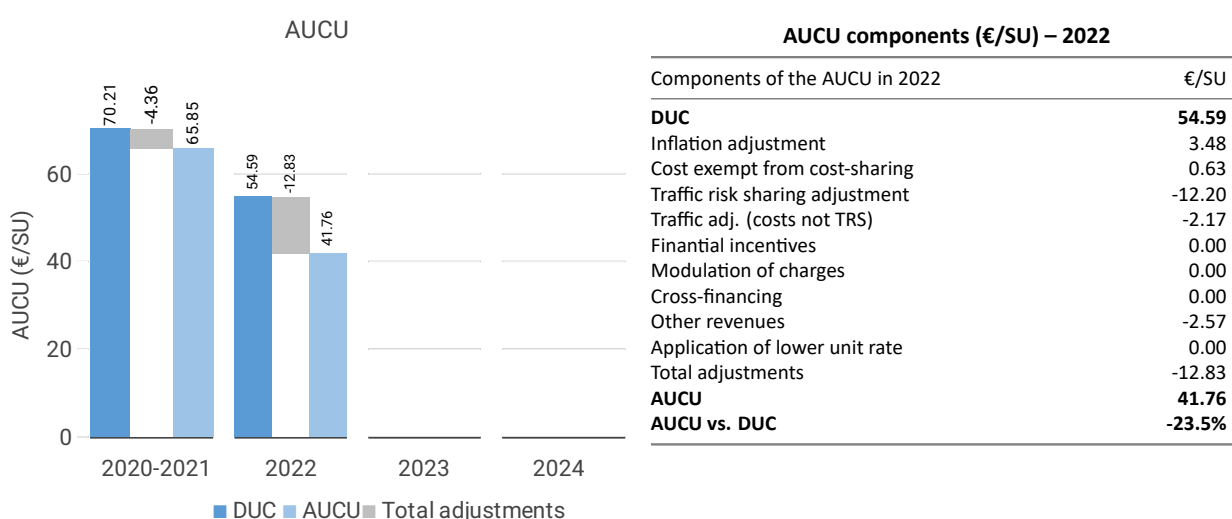
Actual real en route costs are -9.4% (-7.9 M€2017) lower than planned. This is the result of lower costs for the main ANSP, Croatia Control (-10.2%, or -8.0 M€2017) and higher costs for the NSA/EUROCONTROL (+1.1%, or +0.07 M€2017).

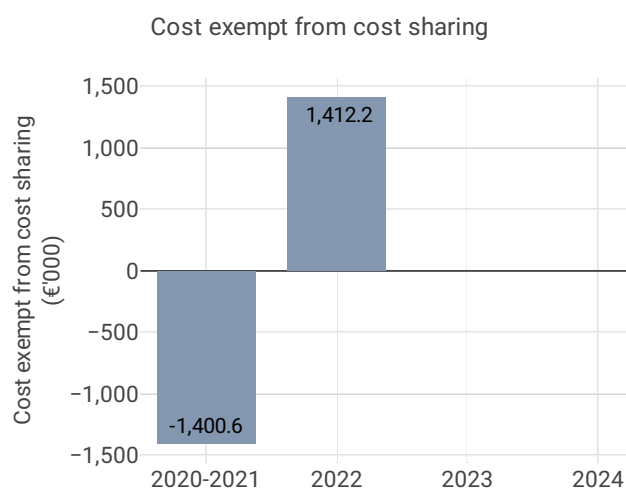
### En route costs for the main ANSP at charging zone level

Significantly lower than planned en route costs in real terms for Croatia Control in 2022 (-10.2%, or -8.0 M€2017) result from:

- Significantly lower staff costs (-12.3%), due to not fully realized recruitment plan. This result is also impacted by higher actual inflation index (+12.1 p.p.).
- Significantly lower other operating costs (-7.5%), mainly due to inflation index impact (+12.1 p.p.) since in nominal terms other operating costs are higher than planned by 3.2%.
- Significantly lower depreciation (-5.4%), due to lower than planned realization of capex due to logistic and production delays and decommissioning of some CC's assets.
- Lower cost of capital (-4.7%), due to lower than expected assets base.
- Significantly lower deduction for VFR exempted flights (-11.8%).

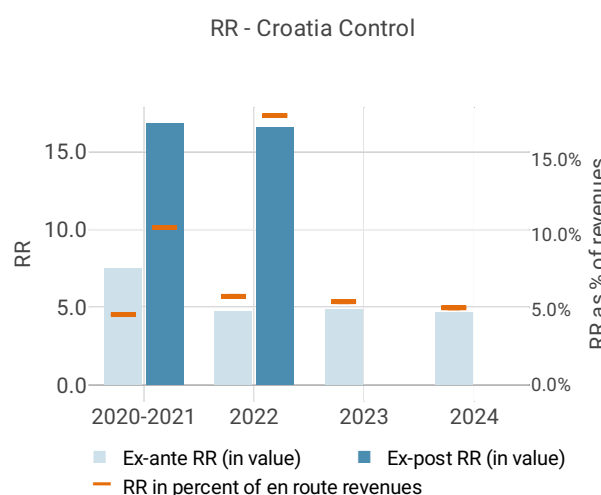
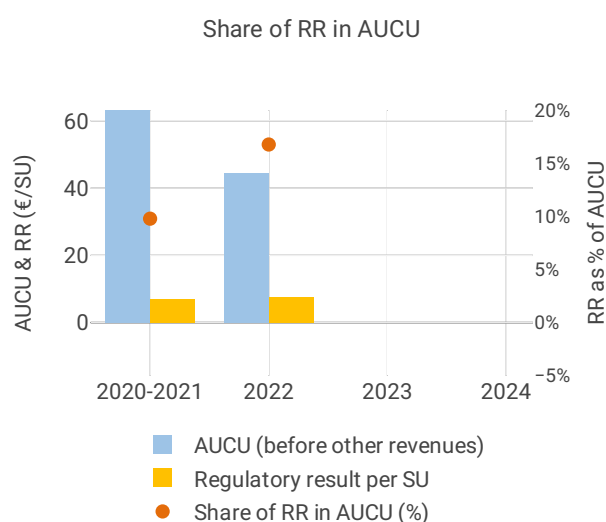
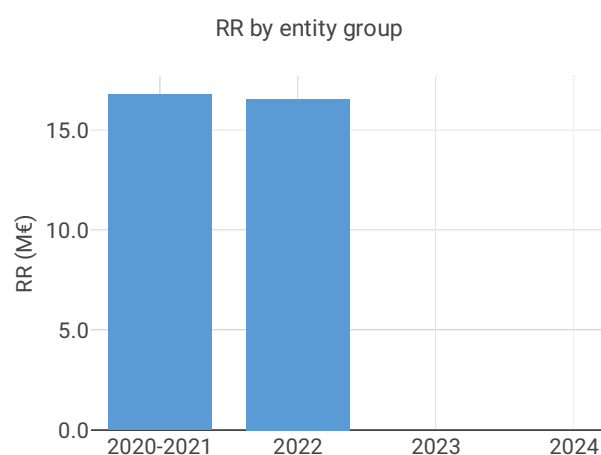
## 5.2.2 Actual unit cost incurred by the users (AUCU) (PI#1)



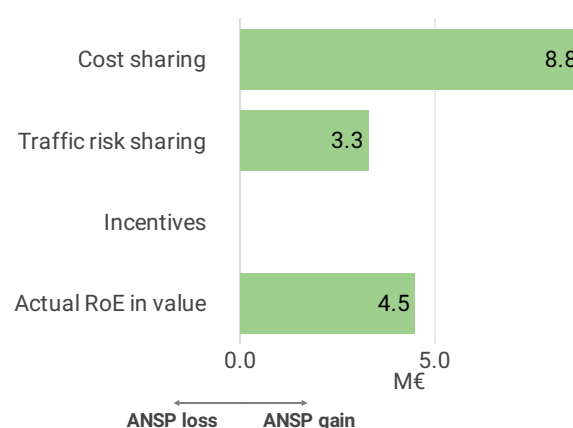


| Cost exempt from cost sharing by item - 2022       | €'000          | €/SU        |
|----------------------------------------------------|----------------|-------------|
| New and existing investments                       | -366.5         | -0.16       |
| Competent authorities and qualified entities costs | -56.3          | -0.03       |
| Eurocontrol costs                                  | 174.6          | 0.08        |
| Pension costs                                      | -38.5          | -0.02       |
| Interest on loans                                  | 97.7           | 0.04        |
| Changes in law                                     | 1,601.2        | 0.72        |
| <b>Total cost exempt from cost risk sharing</b>    | <b>1,412.2</b> | <b>0.63</b> |

### 5.2.3 Regulatory result (RR)



#### Net result from en route activity - Croatia Control 2022



### Focus on regulatory result

#### Croatia Control net gain on activity in the Croatia en route charging zone in the year 2022

Croatia Control reported a net gain of +102.5 MHRK, as a combination of a gain of +77.8 MHRK arising from the cost sharing mechanism, with a gain of +24.7 MHRK arising from the traffic risk sharing mechanism.

**Croatia Control 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 (+102.5 MHRK) and the actual RoE (+34.0 MHRK) amounts to +136.5 MHRK (19.6% of the en route revenues). The resulting ex-post rate of return on equity is 25.4%, which is higher than the 6.3% planned in the PP.