PRB | Performance review body of the single european sky

# Performance Review Body Monitoring Report

## Poland - 2021

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Performance Review Body of the Single European Sky | Rue de la Fusée 96, Office 50.659, 1130 Brussels
Office Telephone: +32 (0)2 234 7824 | cathy.mannion@prb.eusinglesky.eu | prb-office@prb.eusinglesky.eu | eu-single-sky.transport.ec.europa.eu

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# 1 OVERVIEW

## 1.1 Contextual information

*National performance plan adopted following Commission Decision (EU) 2022/779 of 13 April 2022*

**List of ACCs** 1
Warsaw ACC

**No of airports in the scope of the performance plan:**
- **≥80'K** 1
- **<80'K** 14

**Exchange rate (1 EUR=)**
2017: 4.25483 PLN
2021: 4.55963 PLN

**Share of Union-wide:**
- **traffic (TSUs) 2021** 3.9%
- **en route costs 2021** 2.4%

**Share en route / terminal costs 2021** 81% / 19%

**En route charging zone(s)**
Poland

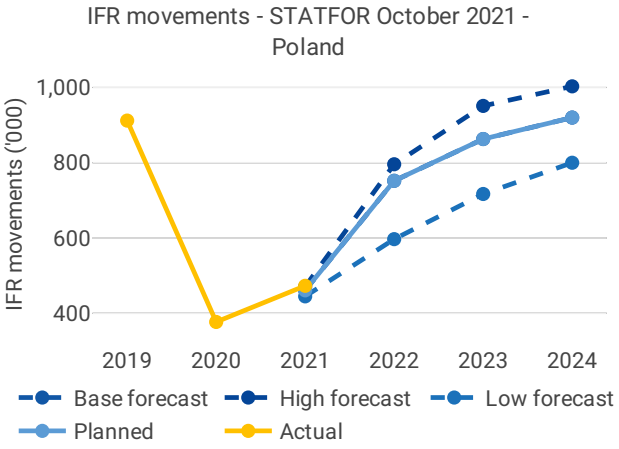
**Terminal charging zone(s)**
Poland EPWA
Poland Others

**Main ANSP**
- PANSA

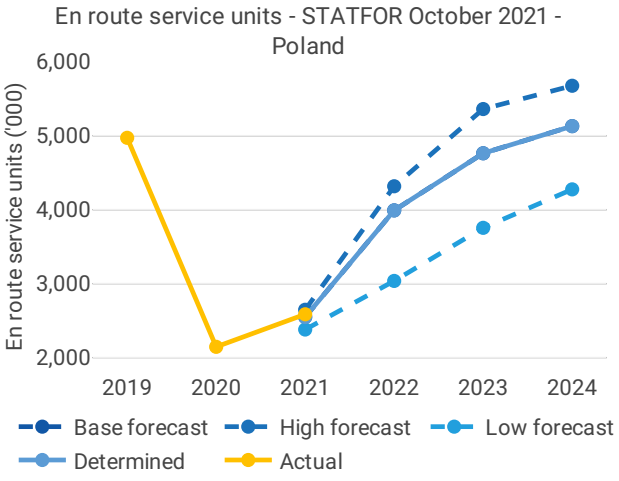
**Other ANSPs**
- Warmia i Mazury sp. z o.o.
- Port Lotniczy Bydgoszcz S.A.

**MET Providers**
- Institute of Meteorology and Water Management - National Research Institute (IMWM)
- Radom Meteo sp. z o.o.

## 1.2 Traffic (En route traffic zone)

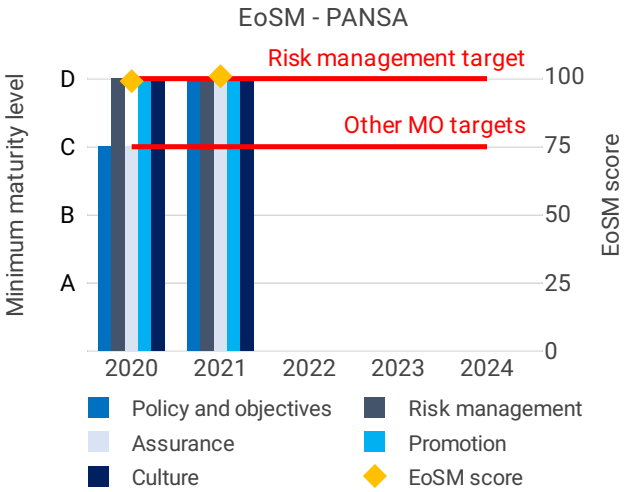



- Poland recorded 473K actual IFR movements in 2021, +26% compared to 2020 (377K).
- Actual 2021 IFR movements were +2.7% above the plan (461K).
- Actual 2021 IFR movements represent 52% of the actual 2019 level (912K).




- Poland recorded 2,586K actual en route service units in 2021, +21% compared to 2020 (2,146K).
- Actual 2021 service units were +1.4% above the plan (2,549K).
- Actual 2021 service units represent 52% of the actual 2019 level (4,972K).

## 1.3 Safety (Main ANSP)



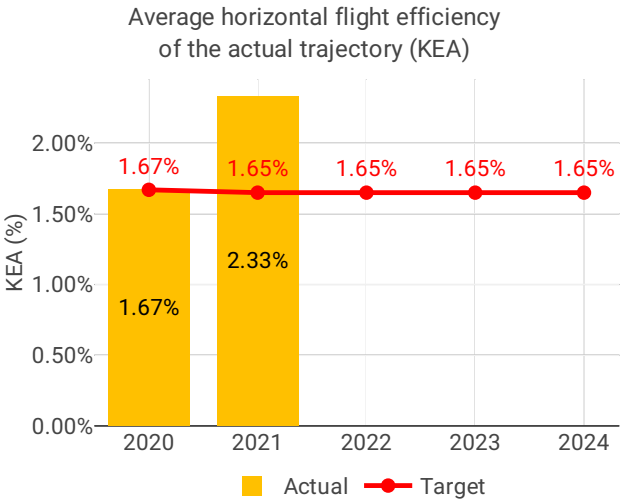

• PANSA achieved the RP3 EoSM targets in 2021 and exceeded the target maturity for safety culture and safety promotion. PANSA successfully implemented measures defined in their safety management development roadmap, leading PANSA to achieve the level D for all five management objectives.

• Port Lotniczy Bydgoszcz S.A. and Warmia i Mazury sp. z o.o. need to improve in the area of safety risk management but achieved the targets for the four other management objectives. Both ANSPs are in line with the maturity levels according to Poland's performance plan.

• Poland recorded a higher rate of runway incursions and lower rate of separation minima infringements in 2021 relative to 2020. The rate of runway incursions is above the Union-wide average rate.

• Poland should improve its safety management by implementing automated safety data recording systems.

## 1.4 Environment (Member State)




• Poland achieved a KEA performance of 2.33% compared to its target of 1.65% and did not contribute positively towards achieving the Union-wide target. KEA worsened by 40% compared to 2020.

• Poland states this situation was caused largely by elements linked to the geopolitical situation leading to users from the Russian Federation avoiding the airspace of Ukraine, European users avoiding that of Belarus, and flights circumnavigating Kaliningrad.

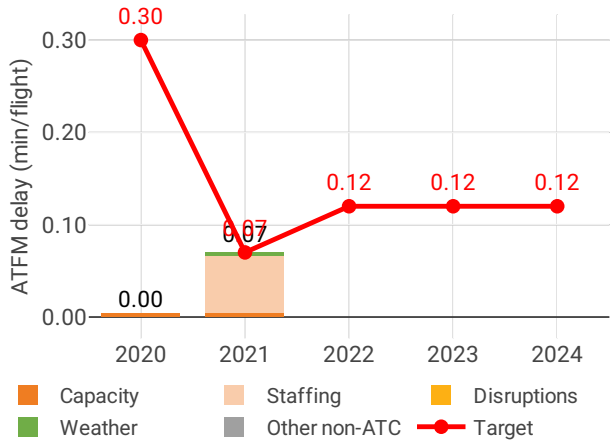
• SCR was the highest in five years, which the NSA states may be due to restricted airspace beyond Poland's control. KEP was also the highest in five years and increased by 20% compared to 2020.

• The share of CDO flights has slightly decreased compared to 2020, but is still higher than during pre-pandemic years.

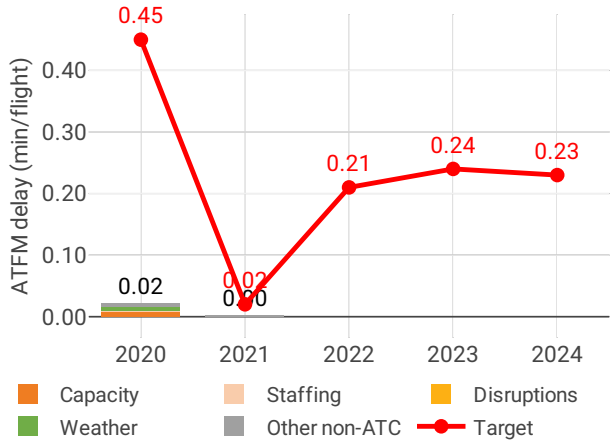
• Additional time in terminal airspace has improved by 0.16 min/flight, while additional taxi out time has increased by 0.12min/flight.

## 1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups




Average arrival ATFM delay per flight by delay groups




• Poland registered 0.07 minutes of average en route ATFM delay per flight during 2021, thus meeting the local breakdown value of 0.07. The main delay causes were ATC staffing and ATC capacity, and the delays were mostly generated in December 2021 due to staffing issues at Warsaw ACC.

• Delays should be considered in the context of lower traffic: in Poland, IFR movements in 2021 were 48% lower than in 2019.

• Poland has received additional traffic due to airspace closures East of the SES airspace. Despite this, 2019 traffic levels are not likely to be reached during RP3. An increase in the number of ATCOs in OPS is planned in Warsaw ACC by the end of RP3.

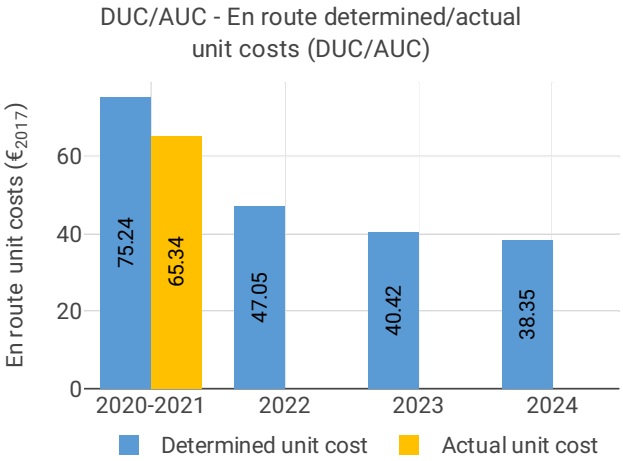
• Delays were highest in December, mostly driven by ATC Staffing issues.

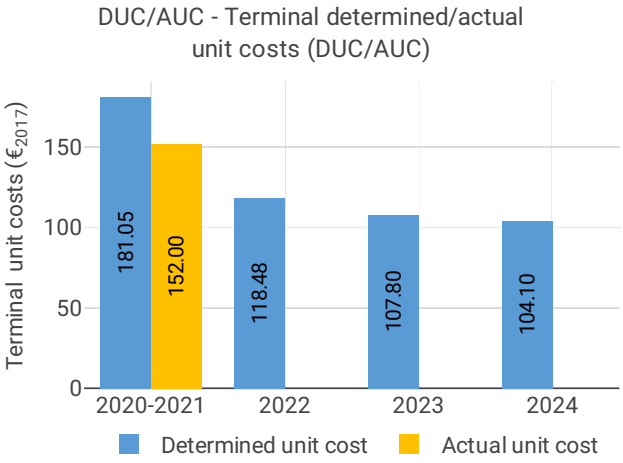
• The share of delayed flights with delays longer than 15 minutes in Poland increased by 23.05 p.p. compared to 2020 and was higher than 2019 values.

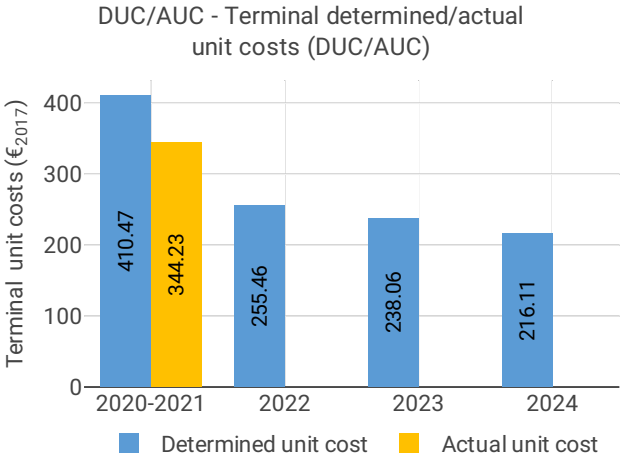
• The yearly total of sector opening hours in Warsaw ACC was 29,815, showing a 36.8% increase compared to 2020. Sector opening hours are 30.4% below 2019 levels.

• Warsaw ACC registered 14.11 IFR movements per one sector opening hour in 2021, being 26.5% below 2019 levels.

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




• The en route 2020/2021 actual unit cost of Poland was 65.342017, -13% lower than the determined unit cost (75.24 €2017). The terminal zone 1 actual unit cost was 152.00 €2017, -16% lower than the determined unit cost (181.05 €2017) and the terminal zone 2 actual unit cost was 344.23 €2017, -16% lower than the determined unit cost (410.47 €2017).

• The en route 2021 actual service units (2,586K) were slightly higher (+1.4%) than the determined (2,549K).

• In 2021, actual total costs of Poland were -44 M€2017 (-24%) lower than determined. The significant decrease was mainly driven by -39 M€2017 lower staff costs (-35%), mostly due to changes to the renumeration scheme. In a first version of the monitoring report, Poland reported actual costs -37% lower than determined. The explanation for this change is unclear. The PRB recommends the Commission to request a transparent and clear explanation of this cost item given its direct impact on future performance and its alerting structure.

• PANSA spent 38 M€2017 in 2021 related to costs of investments, +4.2% higher than determined (37 M€2017), Poland indicates that growing inflation and the increase in interest rates account for the difference.

• The discrepancies regarding total costs are significant, especially as the performance plan has been submitted at the end of 2021. The PRB invites the NSA to analyse the discrepancies and identify their reasons, including potential inaccurate planning, treatment of the unspent staff costs, and possible misusing of the regulatory framework to finance the liquidity.

• The en route actual unit cost incurred by users in 2020/2021 was 74.06€, while the terminal zone 1 actual unit cost incurred by users was 183.17€ and 410.25€ for terminal zone 2.

# 2 SAFETY - POLAND

## 2.1 PRB monitoring

• PANSA achieved the RP3 EoSM targets in 2021 and exceeded the target maturity for safety culture and safety promotion. PANSA successfully implemented measures defined in their safety management development roadmap, leading PANSA to achieve the level D for all five management objectives.

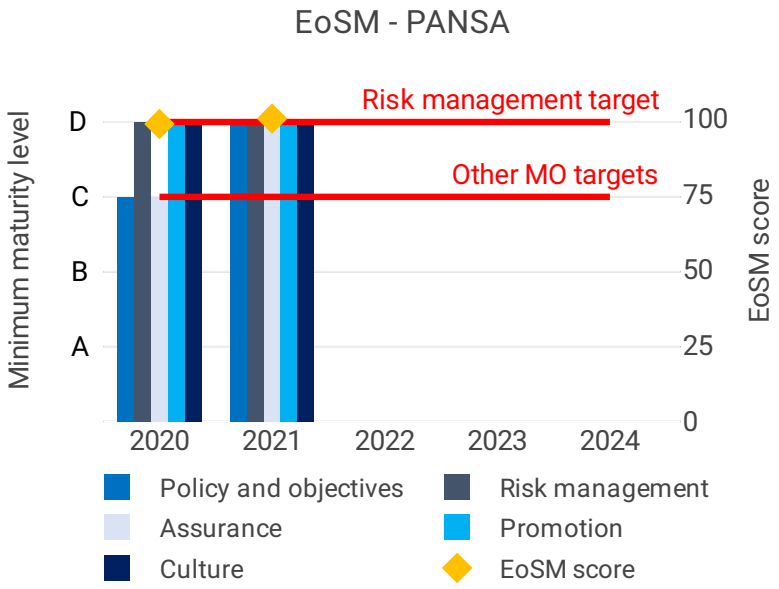
• Port Lotniczy Bydgoszcz S.A. and Warmia i Mazury sp. z o.o. need to improve in the area of safety risk management but achieved the targets for the four other management objectives. Both ANSPs are in line

with the maturity levels according to Poland's performance plan.

• Poland recorded a higher rate of runway incursions and lower rate of separation minima infringements in 2021 relative to 2020. The rate of runway incursions is above the Union-wide average rate.

• Poland should improve its safety management by implementing automated safety data recording systems.

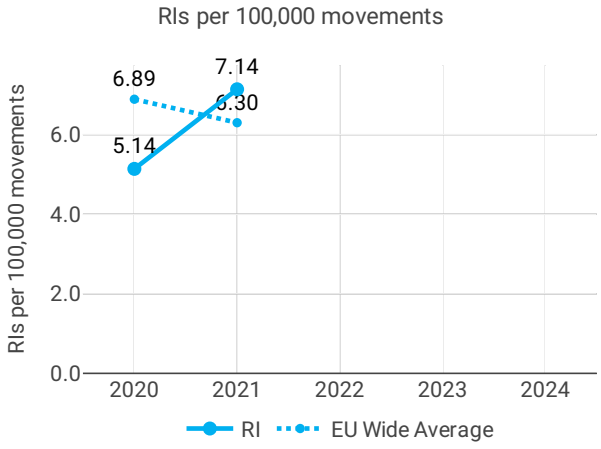
## 2.2 Effectiveness of Safety Management (EoSM) (KPI#1)

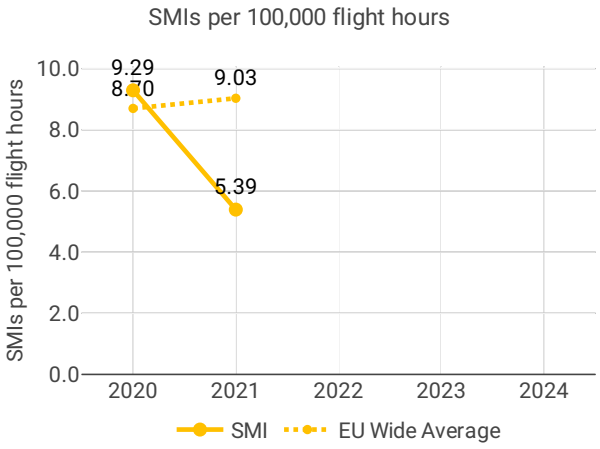



**Focus on EoSM**

All five EoSM components of PANSA meet, or exceed, already the 2024 target level. Improvements in maturity has been observed with respect to 2020, reaching the maximum level of maturity possible. Four out of five EoSM components of Port Lotniczy Bydgoszcz meet already the 2024 target level. Only the component "Safety Risk Management" is below 2024 target level. Improvements in safety risk management are still expected during RP3 to achieve 2024 targets. Same situation is applicable to Warmia i Mazury.

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



# 3 ENVIRONMENT - POLAND

## 3.1 PRB monitoring

• Poland achieved a KEA performance of 2.33% compared to its target of 1.65% and did not contribute positively towards achieving the Union-wide target. KEA worsened by 40% compared to 2020.

• Poland states this situation was caused largely by elements linked to the geopolitical situation leading to users from the Russian Federation avoiding the airspace of Ukraine, European users avoiding that of Belarus, and flights circumnavigating Kaliningrad.

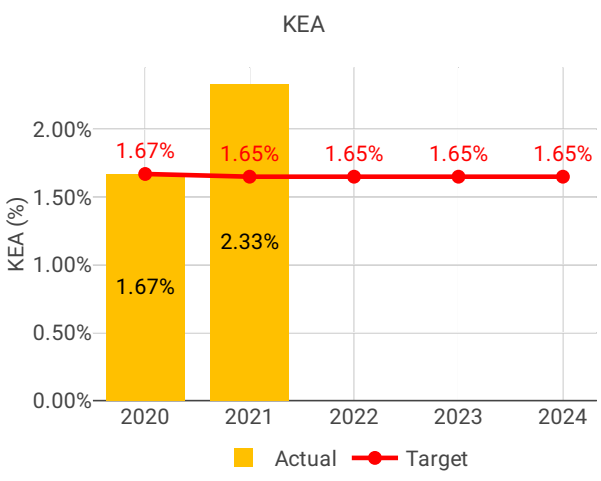
• SCR was the highest in five years, which the NSA states may be due to restricted airspace beyond Poland's control. KEP was also the highest in five years and increased by 20% compared to 2020.

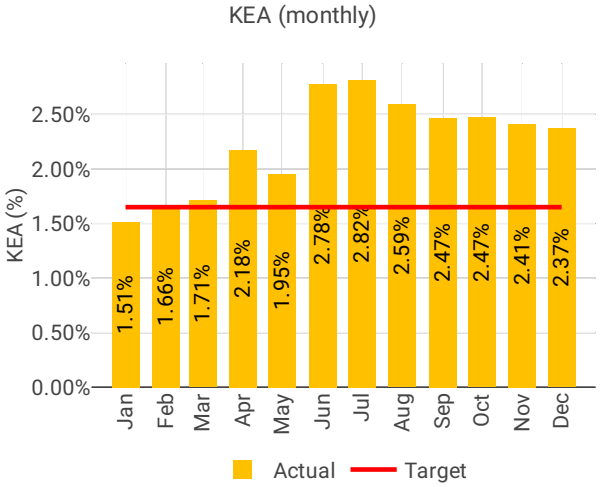
• The share of CDO flights has slightly decreased compared to 2020, but is still higher than during pre-pandemic years.

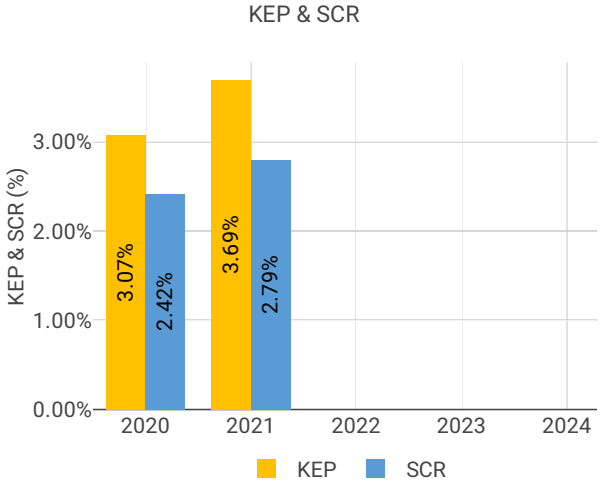
• Additional time in terminal airspace has improved by 0.16 min/flight, while additional taxi out time has increased by 0.12min/flight.

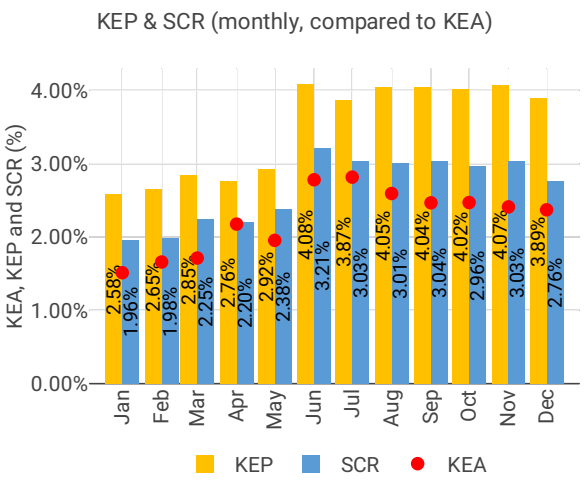
## 3.2 En route performance

### 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)



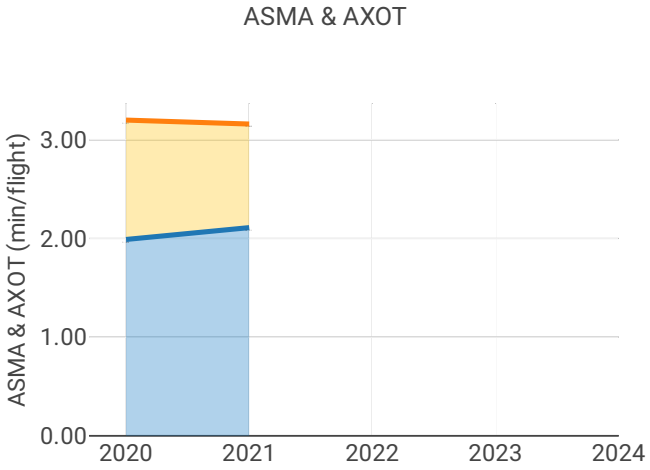



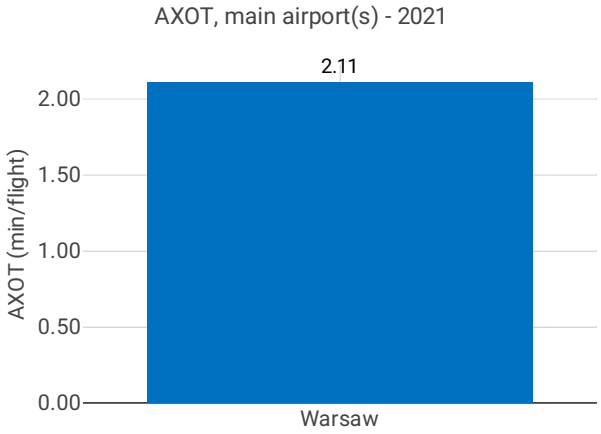



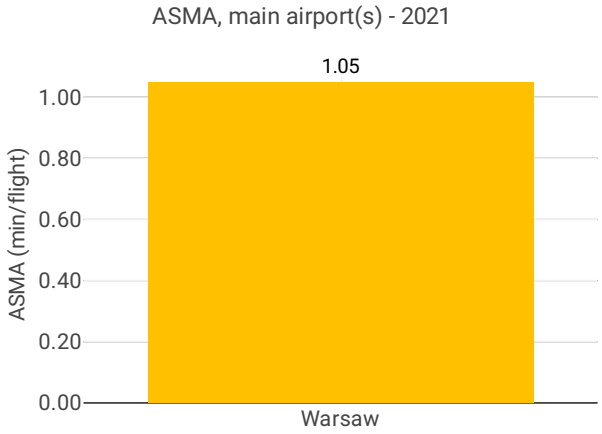



## 3.3 Terminal performance

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




**Focus on ASMA & AXOT**

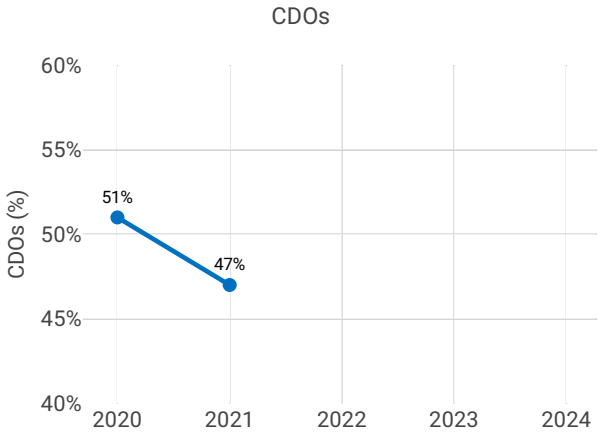
**AXOT**

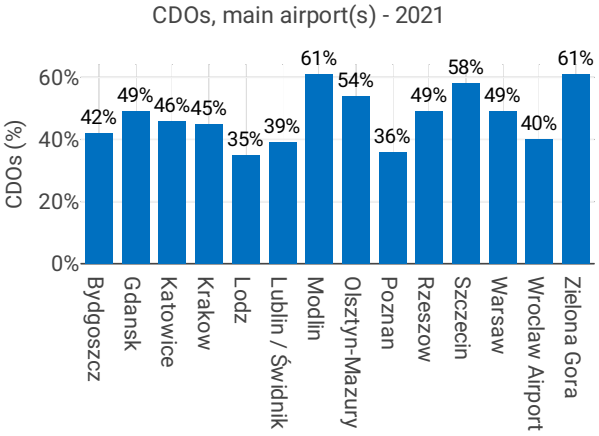
Additional taxi-out times at Warsaw (EPWA; 2019: 3.43 min/dep.; 2020: 1.99 min/dep.; 2021: 2.11 min/dep.) have slightly increased.
The annual average is influenced by the performance during the winter months due to de-icing. The longest additional times were observed in January, February and December with more than 5 min/dep., while in Summer they were somewhat above 1 min/dep.
The Polish NSA reports that *A-CDM was implemented in 2020 at Warsaw, which should also help reduce these additional taxi-out times. In addition, it is planned to implement a Traffic Complexity tool by 2022 and A-SMGCS by 2024.*

**ASMA**

Additional times in the terminal airspace of Warsaw (EPWA; 2019: 2.09 min/arr.; 2020: 1.21 min/arr. 2021: 1.05 min/arr.) remained under 1 min/arr. in the first half of the year, but then increased in line with the traffic recovery.
The Polish NSA reports that Arrival Manager (AMAN) (2019) was implemented in 2019 and that a TMA reconfiguration & resectorization, including new SID/STAR procedures was implemented in 2021.

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




**Focus CDOs**

All airports have shares of CDO flights (well) above the overall RP3 value in 2021 (30.5%) with values ranging from 34.5% to 61.2%.

Lublin, Olsztyn-Mazury and Szczecin-Goleniów had higher values than in 2020 (EPLB: +2.3 percentage points; EPSY: +6.5 percentage points; EPSC: +5.4 percentage points) while the values for the other airports decreased (between -8.5 and -1.4 percentage points).

According to the Polish monitoring report: *Measures implemented before 2021:*

*- Arrival Manager for EPWA (2019).*

*Implemented in 2021:*

*- New SID/STAR improved procedures for EPWA (2021);*

*- Electronic Flight Strip EFES implemented in: EPRZ, EPLB, EPSC, EPBY, EPLL, EPZG (2021).*

*Planned:*

*- Electronic Flight Strip EFES: EPMO (2022);*

*- EPKK, EPPO TMAs Reconfiguration & resectorisation (2022-23);*

*- New SID/STAR procedures for EPKK (2022);*

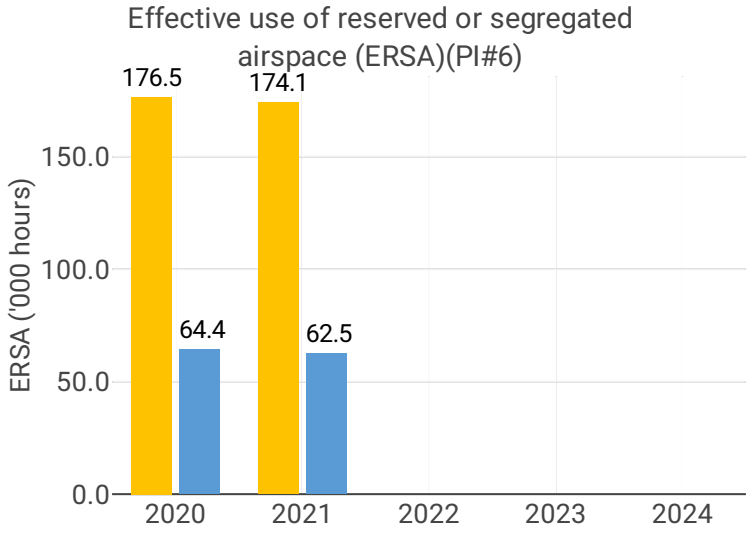
*- New SID/STAR procedures for EPRA (2023).*

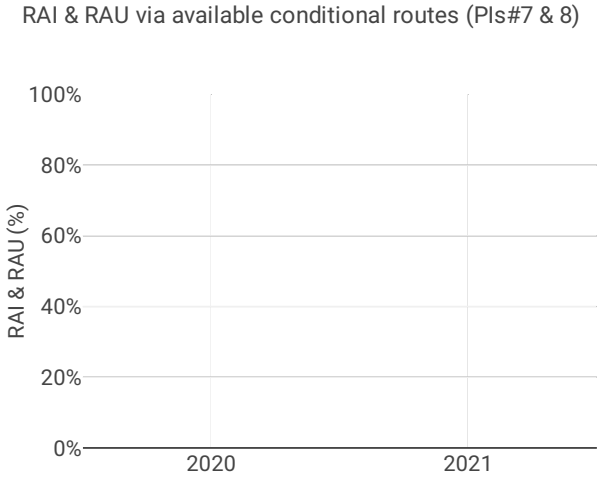
*The situation will be continuously monitored by NSA based on the information provided by Polish Air Navigation Services Agency – PANSA.*

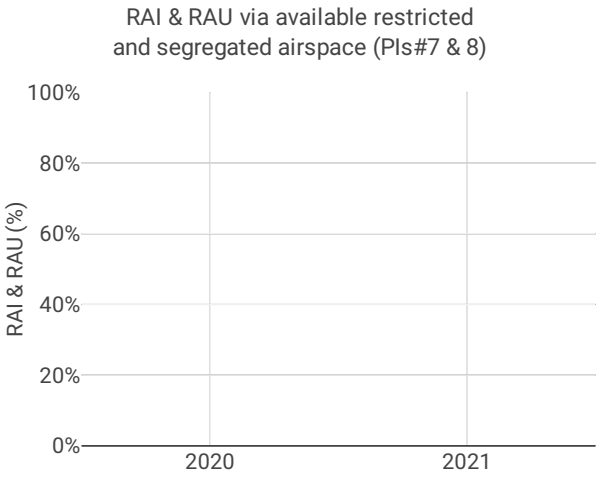
**Airport level**

| | Additional taxi-out time (PI#3) | | | | | Additional ASMA time (PI#4) | | | | | Share of arrivals applying CDO (PI#5) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Airport Name | 2020 | 2021 | 2022 | 2023 | 2024 | 2020 | 2021 | 2022 | 2023 | 2024 | 2020 | 2021 | 2022 | 2023 | 2024 |
| Warsaw | 1.99 | 2.11 | NA | NA | NA | 1.21 | 1.05 | NA | NA | NA | 51% | 49% | NA | NA | NA |
| Bydgoszcz | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 43% | 42% | NA | NA | NA |
| Gdansk | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 58% | 49% | NA | NA | NA |
| Krakow | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 53% | 45% | NA | NA | NA |
| Katowice | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 49% | 46% | NA | NA | NA |
| Lublin / Świdnik | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 37% | 39% | NA | NA | NA |
| Lodz | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 42% | 35% | NA | NA | NA |
| Modlin | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 66% | 61% | NA | NA | NA |
| Poznan | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 41% | 36% | NA | NA | NA |
| Rzeszow | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 53% | 49% | NA | NA | NA |
| Szczecin | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 53% | 58% | NA | NA | NA |
| Olsztyn-Mazury | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 48% | 54% | NA | NA | NA |
| Wroclaw Airport | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 43% | 40% | NA | NA | NA |
| Zielona Gora | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 68% | 61% | NA | NA | NA |
| Radom | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

## 3.4 Civil-Military dimension




### Focus on Civil-Military dimension

**Update on Military dimension of the plan**

No new information provided as update.

**Military - related measures implemented or planned to improve capacity**

On strategic airspace management level all significant military exercises and permanent military areas are evaluated and analysed taking into account historic civil traffic flows and civil traffic predictions taking into account both entry count and occupancy.
The locations of the military activities are, whenever possible, designed not to affect the main traffic flows, ATC routes, DCTs and POLFRA connectivity and to have minimal or even no impact on capacity. Segmentation, time and level restrictions are imposed when needed to mitigate the impact in location in heavy traffic periods of day. If possible class C TRA airspace is implemented to minimize the impact on civil operations.
Further measures include:
- update of local ASM system/radar data added to visualize military activity in segregated areas. As a result, update of coordination procedures to reduce time required to release segregated areas back to civil traffic.
- implementation of closer cooperation between AMC Poland and FMP Warszawa in order to reduce as much as possible negative influence of segregated areas on civil traffic. Implementation of new coordination procedures (NPZ management) taking into account forecasted demand of civil traffic on segregated airspace allocation in time on day of the operations.

**Initiatives implemented or planned to improve PI#6**

On strategic airspace management level all significant exercises and permanent areas are evaluated and analyzed taking into account historic civil traffic flows and civil traffic predictions.
The impact, depending on scale, is consulted with the key stakeholders including neighboring states, aerodrome operators, aircraft operators, ATS, military, EUROCONTROL NM.
The lateral and vertical limits of the airspace elements published are designated considering the actual needs of users and nature of activities. All airspace elements shall be planned only for the time period necessary to perform the intended task. The user is obliged to specify precisely the period of activity of a selected element and all timely suspensions of activity between these periods
The locations of the activities are designed not to affect the main traffic flows, ATC routes, DCTs and POLFRA connectivity. Segmentation, time and level restrictions are imposed when needed to mitigate the impact in location in heavy traffic periods of day. If possible class C TRA airspace is implemented to minimize the impact on civil routing.
When the areas excess the set scale they are always divided into smaller modules/segments. Each of these segments is designed in order to fit particular activities without necessity to activate the whole area to perform specific assignments. The shape of these segments is always aligned with main civil traffic flows to minimize the horizontal flight inefficiency.
Further measures planned to be implemented include:
- improvement/automation of exchange of information about military activity in segregated areas, especially on tactical level. Update of coordination procedures and local ASM support tool/system which will reduce time required to release segregated areas back to civil traffic.
- implementation of closer cooperation between AMC Poland and FMP Warszawa in order to reduce as much as possible negative influence of segregated areas on civil traffic. Implementation of new coordination procedures taking into account forecasted demand of civil traffic on segregated airspace allocation in time on day of the operations.

Annual review of the efficiency of airspace utilization is conducted.

**Initiatives implemented or planned to improve PI#7**

The available flight planning options are constantly updated to allow Aircraft Operator (AO) to plan the most horizontally effective trajectory, even when the areas are active. Except ATS network and DCTs, the AOs have the possibility to plan in Free Route Airspace environment (POLFRA). Implementation of cross-border free route airspace operations within Lithuanian and Polish airspace (BALTIC FRA) and the cross border operations between BALTIC FRA and South East Europe FRA were implemented in 1Q 2022 which could further increase the planning opportunities.
The lateral and vertical limits of the airspace elements published are designated considering the actual needs of users and nature of activities. All airspace elements shall be planned only for the time period necessary to perform the intended task. The user is obliged to specify precisely the period of activity of a selected element and all timely suspensions of activity between these periods.
Segmentation, time and level restrictions are imposed when needed to mitigate the impact in location in heavy traffic periods of day. If possible class C TRA airspace is implemented to minimize the impact on civil routing.
Special procedures are prepared including dynamic change of level or segment and creation of new temporary routings for avoidance of military traffic.
Further measures include:
- update of local ASM system/radar data added to visualize military activity in segregated areas. As a result, update of coordination procedures to reduce time required to release segregated areas back to civil traffic.
- implementation of closer cooperation between AMC Poland and FMP Warszawa in order to reduce as much as possible negative influence of segregated areas on civil traffic. Implementation of new coordination procedures (NPZ management) taking into account forecasted demand of civil traffic on segregated airspace allocation in time on day of the operations.

The situation will be continuously monitored by NSA based on the information provided by Polish Air Navigation Services Agency – PANSA.

**Initiatives implemented or planned to improve PI#8**

As for PI#7

# 4 CAPACITY - POLAND

## 4.1 PRB monitoring

• Poland registered 0.07 minutes of average en route ATFM delay per flight during 2021, thus meeting the local breakdown value of 0.07. The main delay causes were ATC staffing and ATC capacity, and the delays were mostly generated in December 2021 due to staffing issues at Warsaw ACC.

• Delays should be considered in the context of lower traffic: in Poland, IFR movements in 2021 were 48% lower than in 2019.

• Poland has received additional traffic due to airspace closures East of the SES airspace. Despite this, 2019 traffic levels are not likely to be reached during RP3. An increase in the number of ATCOs in OPS is planned in Warsaw ACC by the end of RP3.

• Delays were highest in December, mostly driven by ATC Staffing issues.

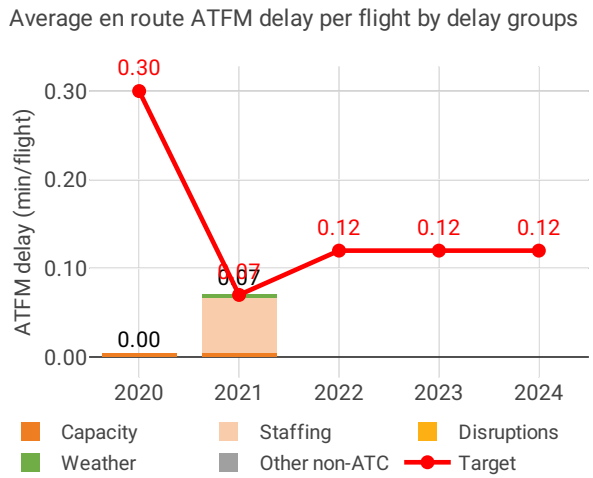
• The share of delayed flights with delays longer than 15 minutes in Poland increased by 23.05 p.p. compared to 2020 and was higher than 2019 values.

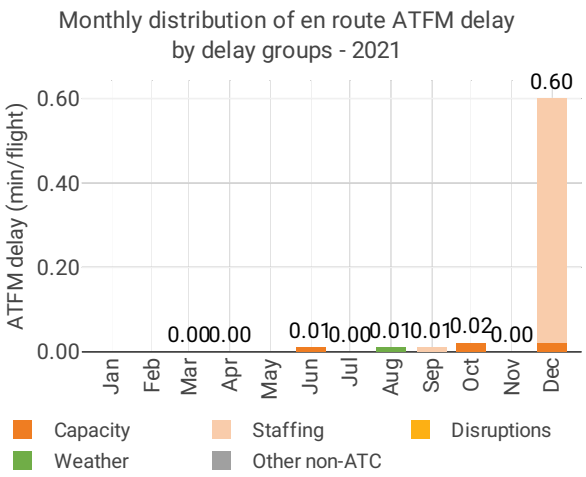
• The yearly total of sector opening hours in Warsaw ACC was 29,815, showing a 36.8% increase compared to 2020. Sector opening hours are 30.4% below 2019 levels.

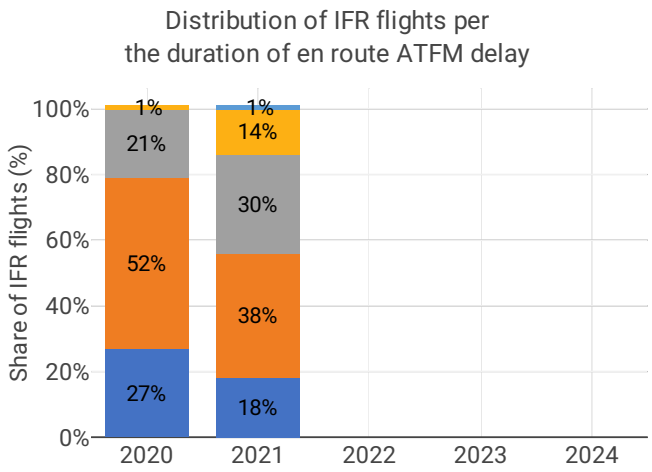
• Warsaw ACC registered 14.11 IFR movements per one sector opening hour in 2021, being 26.5% below 2019 levels.

## 4.2 En route performance

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






## Focus on en route ATFM delay

### Summary of capacity performance

Poland experienced an increase in traffic from 377k flights in 2020 to 473k flights in 2021. However, traffic levels were still substantially below the 912k flights in 2019.
In 2021, Poland had 32k minutes of ATFM delay - with more than 90% attributed to ATC staffing. The vast majority of ATFM delays (29k) occurred in December 2021.

### NSA's assessment of capacity performance

Actual annual performance recorded in 2021 was in line with the target set for Poland in the revised RP3 performance plan. The target set for 2021 already took into account lower traffic levels following the outbreak of the COVID-19 pandemic.
The delays recorded in 2021 were determined mostly by two factors: ATC Staffing and ATC Capacity. 2% of the delays were attributable to weather conditions. Majority of the delays was generated in December 2021 and was related to staffing issues at ACC Warszawa.
The traffic reduction related to COVID-19 pandemic and actions undertaken by PANSA to mitigate risks related to possible infection spread among employees as well as flexible roster planning responding to expected traffic evolution under the rolling NOP planning allowed for achieving very low value of delays in the period January-November 2021 an in consequence to achieve the goal set for the year.

### Monitoring process for capacity performance

The monitoring process in 2021 was conducted in accordance with Regulations (EU) 2019/317 and 2017/373 based on the information received from ANSPs. The data included ANSP's business and annual plans and their consistency with the PP.
Despite the fact that the monitoring process was affected by COVID-19 pandemic, the monitoring activities of KPA CAPACITY were conducted systematically and covered, among the others, the following areas:
- implementation of major projects aimed at increasing capacity and enhancing flight efficiency,
- execution of employment plan, especially operational personnel,
- execution of training plan,
- ATCO productivity.

The scope of the selected areas was chosen taking into account airspace users' remarks, as well as CAA own assessment. All the above supervision exercise was providing the CAA the awareness and knowledge on the ANSPs Performance.
The monitoring was performed also by dedicated Polish NSA inspectors during routine inspections.

### Capacity planning

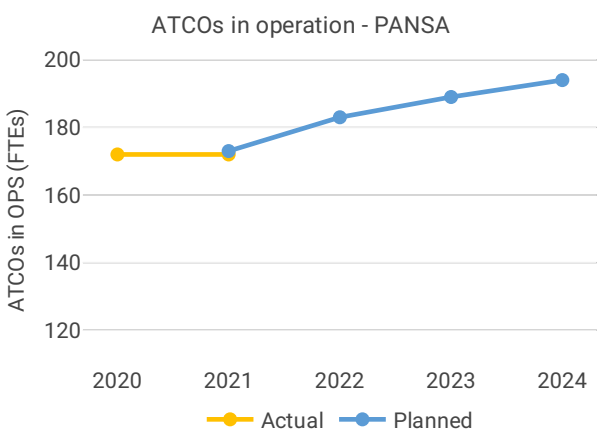
Due to COVID-19 pandemic and related traffic drop, 2021 was (similarly as 2020) quite exceptional - also in terms of capacity planning. Capacity planning focused on mid and long-term planning based on STATFOR forecasts, NM data, PANSA simulations and internal recovery plan prepared by PANSA as well as short term planning (up to 4-6 weeks) under the NOP rolling planning initiative coordinated by the Network Manager.

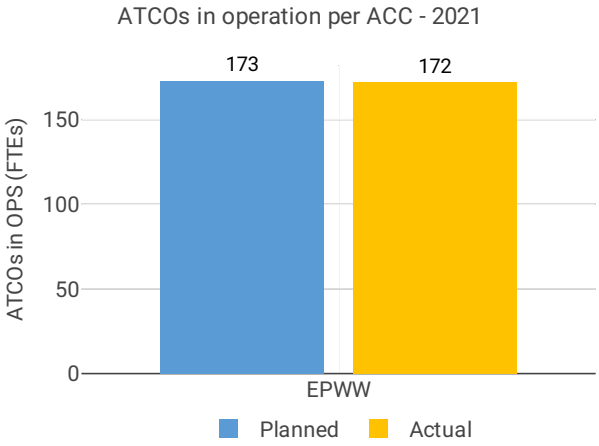
Rostering at PANSA also had to consider implementation of measures aimed at limiting the risk of virus spread among ATCOs.
Despite the traffic drop and along with the above mentioned flexible rolling short-term capacity planning, PANSA continued to implement initiatives aimed at improving capacity in FIR Warszawa to meet challenges related to traffic increase after the crisis as well as potential changes in traffic flows. These included the following:
- continuation of new ATCOs training (continued training process for trainees employed before the pandemic breakout, while plans for additional recruitments to start 2020+ were suspended/revised, considering lower traffic levels expected by end of RP3 as well as difficulties related to training caused by low levels of traffic and COVID restrictions; new recruitment process for ATCO trainees started in January 2022),
- continued adaptation of the air traffic management system (Pegasus_21) to operational needs and modernisation of the ATM system,
- development of tools supporting ATCOs and flow management optimisation (including Traffic Complexity Tool and update of CAT system – implementation of CAT 3.0),
- continued investments in infrastructure (CNS) and technology allowing for optimisation of airspace structures and optimisation of coverage in the Polish airspace as well as supporting contingency,
- continued improvement of AMAN in Warsaw TMA,
- reorganisation of Warsaw TMA and Poznań TMA.
Plans for the following years of RP3 include, among others:
- reorganisation of ACC Warszawa sector configuration - three layer vertical division - to be implemented under staged approach (planned implementation postponed – new date to be decided),
- reorganisation of TMA Kraków in 2022 – new sectors, new SID/STAR procedures,
- continuation of training process for new ATCOs (new recruitment started 2022),
- refreshment training for current ATCOs to maintain their competence following the 2020-2021 significant traffic drop,
- adaptation of the air traffic management system to operational needs and modernisation of the ATM System,
- continued investments in infrastructure (CNS) and technology allowing for optimisation of airspace structures and optimisation of coverage in the Polish airspace as well as supporting resilience, scalability and flexibility of service provision,
- continuation of flexible rostering,
- evolving ACC sector configurations and management to cope with updated traffic forecasts,
- continued FMP dynamic management and ATFCM techniques including STAM,
- improvement of comprehensive airspace management.

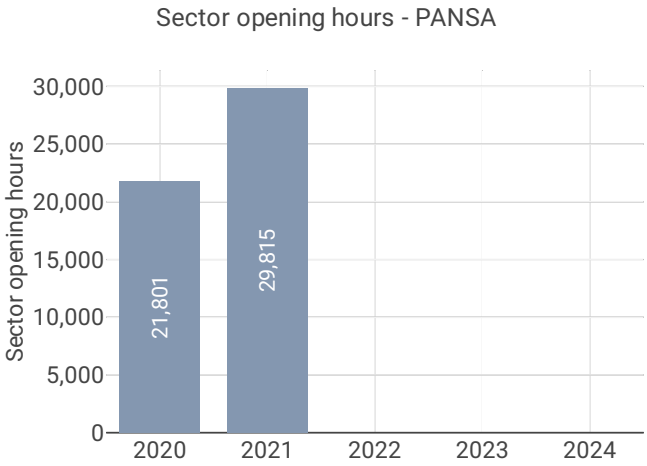
**Application of Corrective Measures for Capacity (if applicable)**

There are two streams of risks which are expected to impact delays level in 2022:
- Risks linked to War in Ukraine – possible increase in delays due to military activities, also liked to increased number of NATO flights in eastern part of the Polish airspace. Significant portion of this part of airspace is reserved for military flights (performed H24) thus unavailable for civil traffic.
- Risks linked to staffing issues in ACC and APP Warszawa.
Depending on further evolution of the military conflict and situation related to ATCOs in PANSA, the impact may be also visible in 2023-2024 results.
On the risk related to impact of war in Ukraine, PANSA implemented RAD measures and EU Restrictions that were aimed to reduce ATFCM delays within EPWW FIR sectors with limited capacity due to additional military activity.
On the risk related to ATCOs, PANSA Management is running intensive negotiation process with the ATCO Trade Union.

### 4.2.2 Other indicators



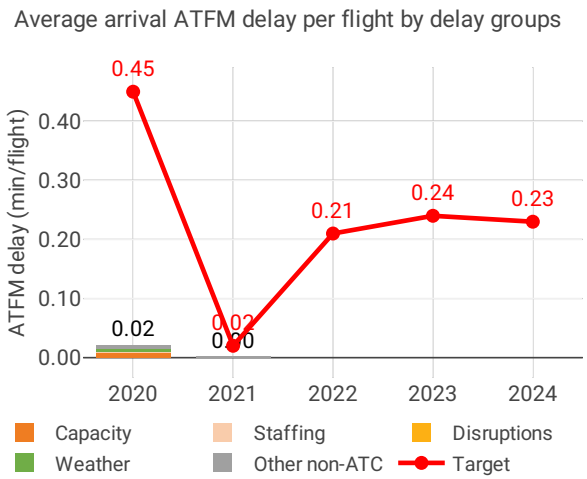



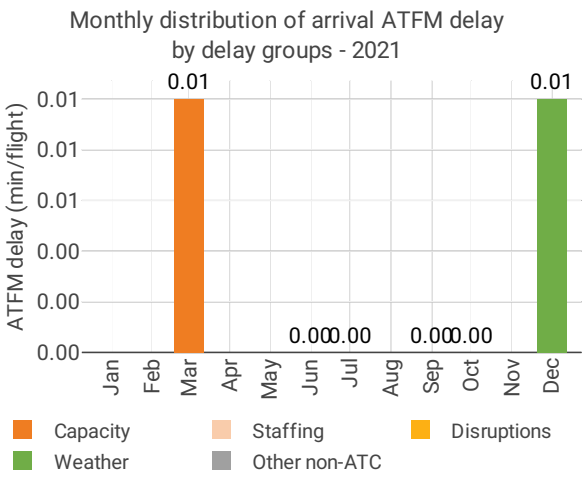

**Focus on ATCOs in operations**

The deviation from planned figure at the end of 2021 results from unplanned demise of one ACC ATCO and reduction of working time of another ACC ATCO.

## 4.3 Terminal performance

### 4.3.1 Arrival ATFM delay (KPI#2)



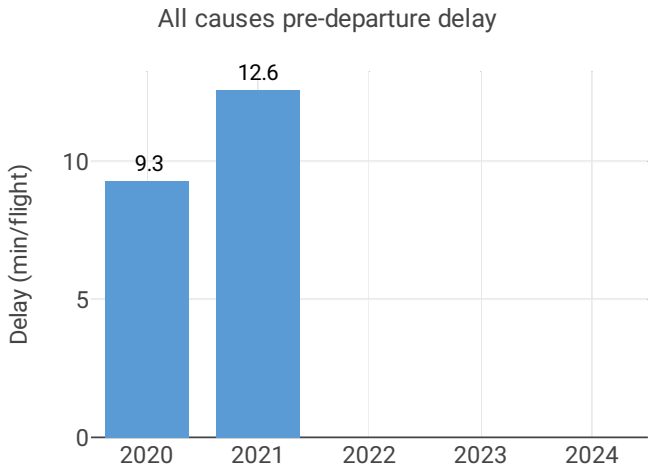
**Focus on arrival ATFM delay**

For Poland the scope of the RP3 monitoring comprises a total of 15 airports. However, in accordance with IR (EU) 2019/317 and the traffic figures, only the main airport Warsaw (EPWA) must be monitored for the pre-departure delay indicators.
The Airport Operator Data Flow, necessary for the monitoring of the pre-departure delays, is correctly established where required and the monitoring of these indicators can be performed.
Traffic at the ensemble of these 15 airports in 2021, regardless of an increase of 22% with respect to 2020, was still 46 % lower than in 2019.
EPRA has been closed for civil traffic due to airport extension project.
Average arrival ATFM delays in 2021 was 0.00 min/arr, compared to 0.02 min/arr in 2020.
ATFM slot adherence has improved (2021: 96.2%; 2020: 95.3%).
The Polish monitoring report mentions these measures planned to be implemented at Warsaw (EPWA) in 2022+:
- *Traffic Complexity Tool (2022),*
- *A-SMGCS (2024).*

In average, arrival ATFM delays at Polish airports under monitoring have virtually disappeared in 2021.
The actual performance over 2021 was better than the target set in the revised RP3 performance plan.
From these marginal delays, ATC-related delays accounted for 60%, weather conditions generated 27% and aerodrome-related delays 13%.
At airport level, all airports accrued zero or nearly zero delays, with only Poznań-Ławica (EPPO) showing some marginal ATC capacity delays in July and September.

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

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



**Airport level**

| | Avg arrival ATFM delay (KPI#2) | | | | Slot adherence (PI#1) | | | |
|---|---|---|---|---|---|---|---|---|
| Airport name | 2020 | 2021 | 2022 | 2023 | 2020 | 2021 | 2022 | 2023 |
| Bydgoszcz | NA | NA | NA | NA | 94.0% | 100.0% | NA% | NA% |
| Gdansk | NA | NA | NA | NA | 93.3% | 97.0% | NA% | NA% |
| Katowice | NA | NA | NA | NA | 89.6% | 92.3% | NA% | NA% |
| Krakow | 0.04 | NA | NA | NA | 95.9% | 97.9% | NA% | NA% |
| Lodz | NA | NA | NA | NA | 100.0% | 92.0% | NA% | NA% |
| Lublin / Świdnik | NA | NA | NA | NA | 91.7% | 96.2% | NA% | NA% |
| Modlin | 0.01 | NA | NA | NA | 96.4% | 98.3% | NA% | NA% |
| Olsztyn-Mazury | NA | NA | NA | NA | 88.9% | 100.0% | NA% | NA% |
| Poznan | NA | 0.01 | NA | NA | 97.9% | 97.3% | NA% | NA% |
| Radom | NA | NA | NA | NA | NA | NA | NA | NA% |
| Rzeszow | NA | NA | NA | NA | 93.3% | 98.4% | NA% | NA% |
| Szczecin | NA | NA | NA | NA | 95.7% | 100.0% | NA% | NA% |
| Warsaw | 0.04 | 0.00 | NA | NA | 97.5% | 97.4% | NA% | NA% |
| Wroclaw Airport | NA | 0.00 | NA | NA | 88.9% | 92.1% | NA% | NA% |
| Zielona Gora | NA | NA | NA | NA | 100.0% | 100.0% | NA% | NA% |

| | ATC pre departure delay (PI#2) | | | | All causes pre departure delay (PI#3) | | | |
|---|---|---|---|---|---|---|---|---|
| Airport name | 2020 | 2021 | 2022 | 2023 | 2020 | 2021 | 2022 | 2023 |
| Bydgoszcz | NA | NA | NA | NA | NA | NA | NA | NA |
| Gdansk | NA | NA | NA | NA | NA | NA | NA | NA |
| Katowice | NA | NA | NA | NA | NA | NA | NA | NA |
| Krakow | NA | NA | NA | NA | NA | NA | NA | NA |
| Lodz | NA | NA | NA | NA | NA | NA | NA | NA |
| Lublin / Świdnik | NA | NA | NA | NA | NA | NA | NA | NA |
| Modlin | NA | NA | NA | NA | NA | NA | NA | NA |
| Olsztyn-Mazury | NA | NA | NA | NA | NA | NA | NA | NA |
| Poznan | NA | NA | NA | NA | NA | NA | NA | NA |
| Radom | NA | NA | NA | NA | NA | NA | NA | NA |
| Rzeszow | NA | NA | NA | NA | NA | NA | NA | NA |
| Szczecin | NA | NA | NA | NA | NA | NA | NA | NA |
| Warsaw | 0.32 | 0.54 | NA | NA | 9.3 | 12.6 | NA | NA |
| Wroclaw Airport | NA | NA | NA | NA | NA | NA | NA | NA |
| Zielona Gora | NA | NA | NA | NA | NA | NA | NA | NA |

## Focus on performance indicators at airport level

### ATFM slot adherence

With the drastic drop in traffic, the share of regulated departures from Polish airports virtually disappeared until July 2021.
Polish airports showed adherence between 88.9% and 100% and Warsaw (EPWA) reached 97.4%. The national average was 96.2%, slightly better than the previous year (95.3%). With regard to the 3.8% of flights that did not adhere, 2% was early and 1.8% was late.
According to the Polish monitoring report: *Performance achieved in 2021 should not be compared to previous years (before 2020). Due to COVID-19 pandemic and related traffic drop, data for 2021 is not reliable and not comparable to periods before the pandemic.*

### ATC pre-departure delay

The calculation of the ATC pre-departure delay is based on the data provided by the airport operators through the Airport Operator Data Flow (APDF) which is properly implemented at Warsaw. The quality of the airport data reported by EPWA has improved after the COVID crisis and it is possible again to calculate this indicator.
The annual value has decreased with respect to 2019 (EPWA: 2019: 0.87 min/dep; 2021: 0.59 min/dep) driven by the lower values in the first half of 2021. At monthly level and with the traffic recovery, the figures have increased and gotten closer to the 2019 values.

### All causes pre-departure delay

Warsaw is the only Polish airport subject to the monitoring of this indicator.
The total (all causes) delay in the actual off block time at Warsaw increased in 2021 (EPWA: 2020: 9.32 min/dep.; 2021: 12.61 min/dep.). The highest delays per flight were observed in December, averaging

almost 18 min/dep.
According to the Polish monitoring report: *Due to COVID-19 pandemic and related traffic reduction, data for 2021 is not reliable and not comparable to periods before 2020 (pre-pandemic).*

# 5 COST-EFFIENCY - POLAND

## 5.1 PRB monitoring

• The en route 2020/2021 actual unit cost of Poland was 65.342017, -13% lower than the determined unit cost (75.24 €2017). The terminal zone 1 actual unit cost was 152.00 €2017, -16% lower than the determined unit cost (181.05 €2017) and the terminal zone 2 actual unit cost was 344.23 €2017, -16% lower than the determined unit cost (410.47 €2017).

• The en route 2021 actual service units (2,586K) were slightly higher (+1.4%) than the determined (2,549K).

• In 2021, actual total costs of Poland were -44 M€2017 (-24%) lower than determined. The significant decrease was mainly driven by -39 M€2017 lower staff costs (-35%), mostly due to changes to the renumeration scheme. In a first version of the monitoring report, Poland reported actual costs -37% lower than determined. The explanation for this change is unclear. The PRB recommends the Commission to request a transparent and clear explanation of this cost item given its direct impact on future performance and its alerting structure.

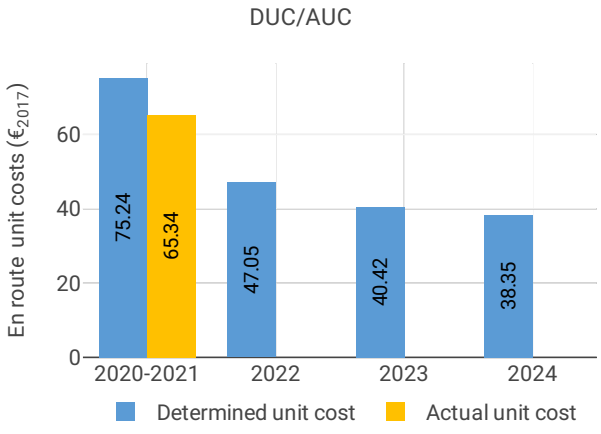
• PANSA spent 38 M€2017 in 2021 related to costs of investments, +4.2% higher than determined (37 M€2017), Poland indicates that growing inflation and the increase in interest rates account for the difference.

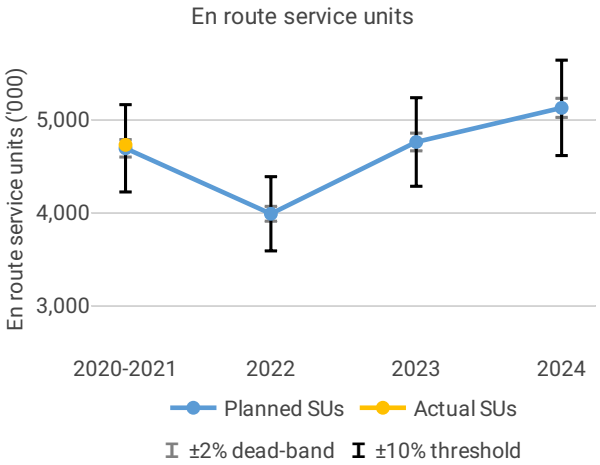
• The discrepancies regarding total costs are significant, especially as the performance plan has been submitted at the end of 2021. The PRB invites the NSA to analyse the discrepancies and identify their reasons, including potential inaccurate planning, treatment of the unspent staff costs, and possible misusing of the regulatory framework to finance the liquidity.

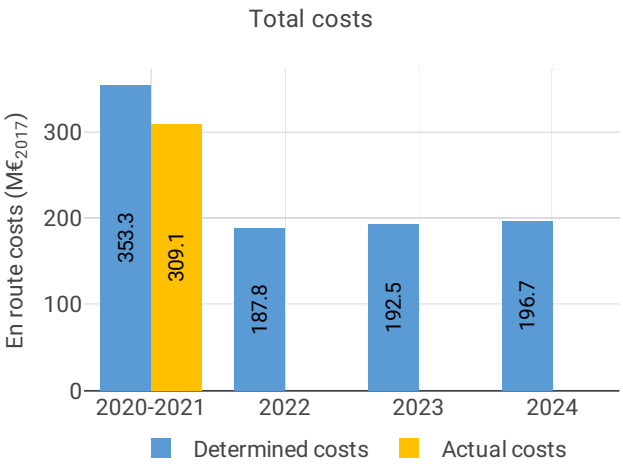
• The en route actual unit cost incurred by users in 2020/2021 was 74.06€, while the terminal zone 1 actual unit cost incurred by users was 183.17€ and 410.25€ for terminal zone 2.

## 5.2 En route charging zone

### 5.2.1 Unit cost (KPI#1)

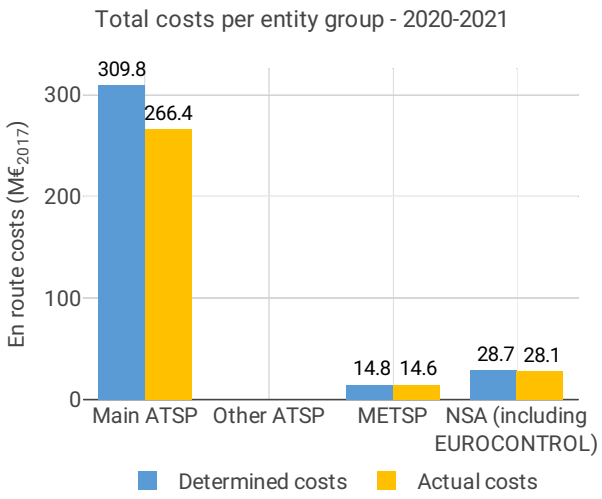


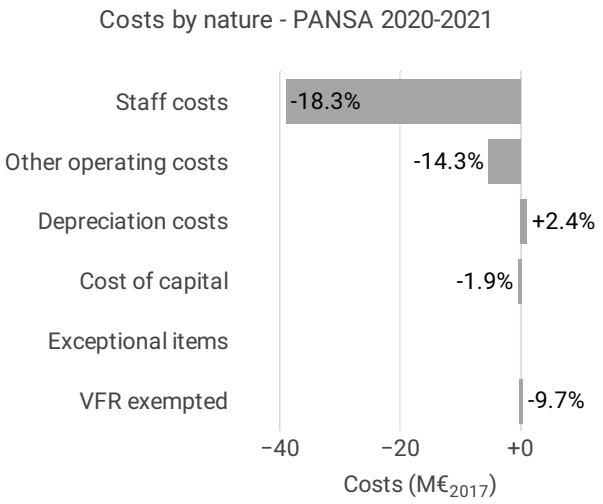






**Actual and determined data**

| Total costs - nominal (M€) | 2020-2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| Actual costs | 330 | NA | NA | NA |
| Determined costs | 377 | 206 | 215 | 223 |
| Difference costs | -47 | NA | NA | NA |
| **Inflation assumptions** | **2020-2021** | **2022** | **2023** | **2024** |
| Determined inflation rate | NA | 2.5% | 2.5% | 2.5% |
| Determined inflation index | NA | 113.4 | 116.2 | 119.1 |
| Actual inflation rate | NA | NA | NA | NA |
| Actual inflation index | NA | NA | NA | NA |
| Difference inflation index (p.p.) | NA | NA | NA | NA |




## Focus on unit cost

### AUC vs. DUC

In the combined year 2020-2021, the en route AUC was lower by -13.2% (or -42.15 PLN2017 or -9.91 €2017) comparing to the DUC. This was in particular, the effect of the lower than planned en route costs in real terms (-12.5%, -187.7 MPLN2017 or -44.1 M€2017).

### En route service units

The difference between actual and planned TSU (+0.8%) is within the ±2% dead-band which results in additional revenues kept by the ANSPs.

### En route costs by entity

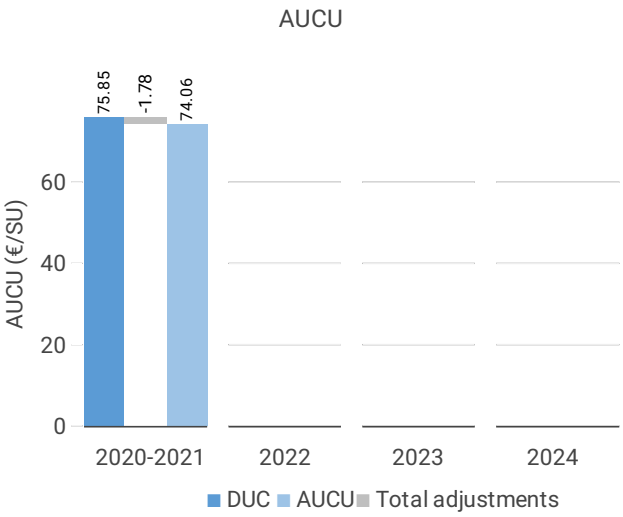
Actual en route costs are -12.5% lower than planned (-44.1 M€2017) which is mainly driven by the lower costs for PANSA (-14.0% or -43.4 M€2017). Slightly lower actual costs are observed for NSA/EUROCONTROL, -2.1% (or -0.6 M€2017) and the METSPs, -1.0% (or -0.1 M€2017).

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

The lower than planned en route costs in real terms for PANSA (-14.0%, or -43.4 M€2017) result from:
- lower en route staff costs (by -18.3% or -39.0 M€2017), *"resulting from a number of factors, including evolution of provisions also those for one-off elements of staff benefits reflected in the RP3 determined cost"*, lower remuneration costs (due to lower employment level) and lower actual level of bonuses and rewards;
- lower en-route other operating costs (by -14.3% or -5.3 M€2017) resulting from costs cutting measures in 2021;
- higher, by +2.4% (or +1.1 M€2017) depreciation due to the difference in the useful life of some assets;

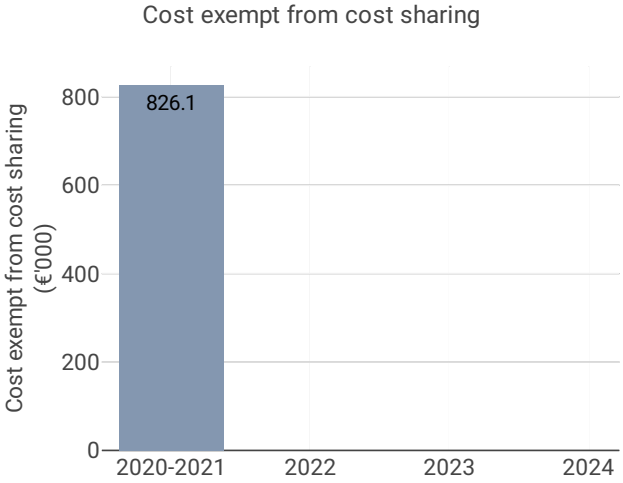
- lower, by -1.9% (or -0.3 M€2017) actual cost of capital due to slightly lower value of asset base;
- lower deduction for the costs of exempted VFR flights (-9.7%).

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



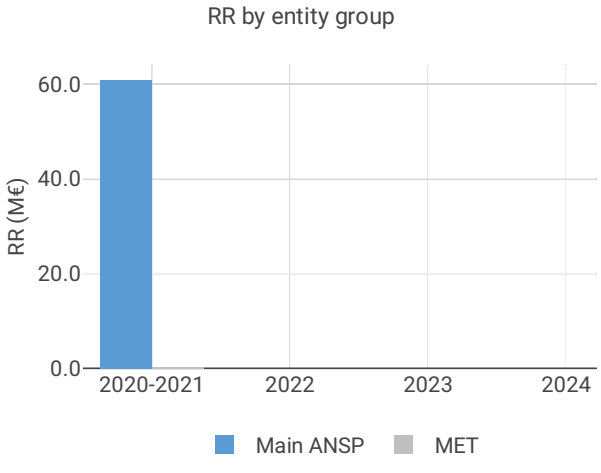

**AUCU components (€/SU) – 2020-2021**

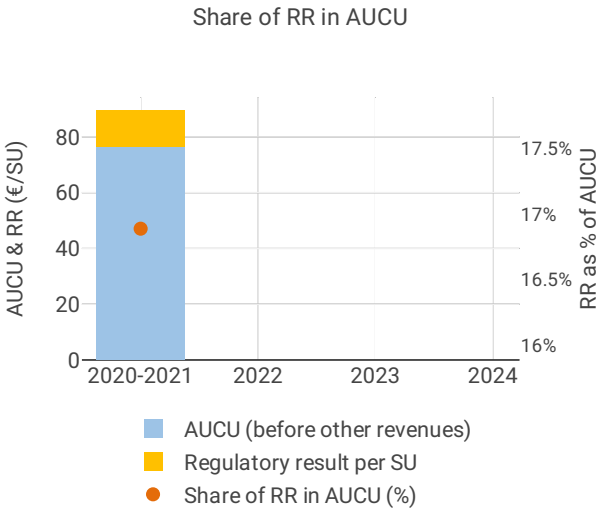
| Components of the AUCU in 2020-2021 | €/SU |
|---|---|
| **DUC** | **75.85** |
| Inflation adjustment | 0.57 |
| Cost exempt from cost-sharing | 0.17 |
| Traffic risk sharing adjustment | 0.00 |
| Traffic adj. (costs not TRS) | -0.07 |
| Finantial incentives | 0.00 |
| Modulation of charges | 0.00 |
| Cross-financing | 0.00 |
| Other revenues | -2.46 |
| Application of lower unit rate | 0.00 |
| Total adjustments | -1.78 |
| **AUCU** | **74.06** |
| **AUCU vs. DUC** | **-2.3%** |

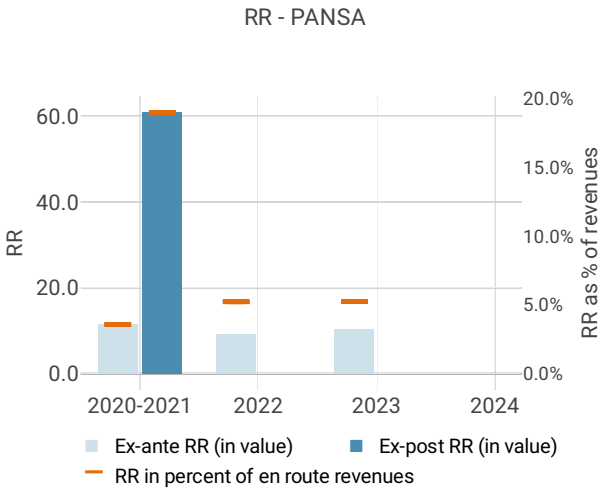


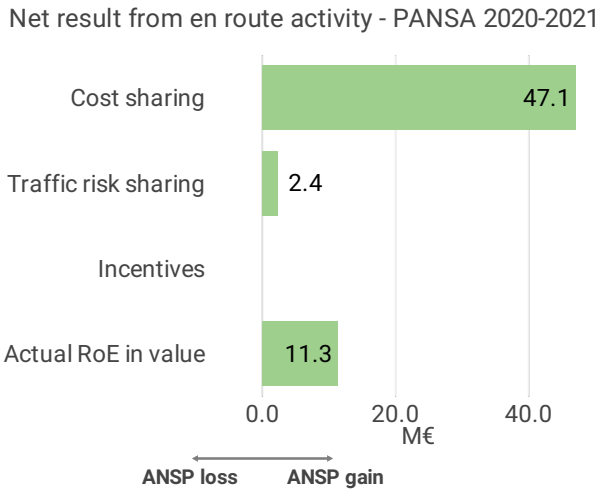

| Cost exempt from cost sharing by item - 2020-2021 | €'000 | €/SU |
|---|---|---|
| New and existing investments | 1,217.6 | 0.26 |
| Competent authorities and qualified entities costs | 33.5 | 0.01 |
| Eurocontrol costs | -602.8 | -0.13 |
| Pension costs | 0.0 | 0.00 |
| Interest on loans | 177.8 | 0.04 |
| Changes in law | 0.0 | 0.00 |
| **Total cost exempt from cost risk sharing** | **826.1** | **0.17** |

### 5.2.3 Regulatory result (RR)





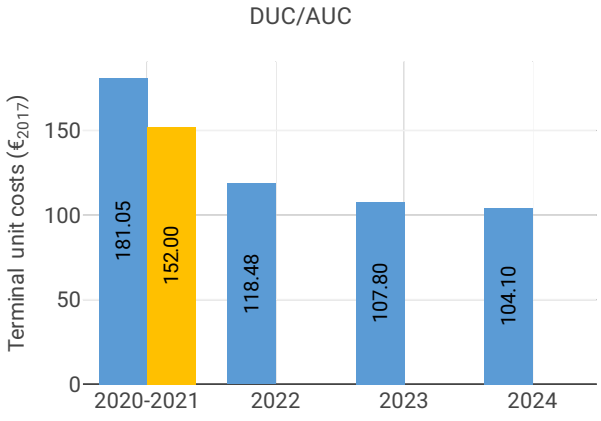



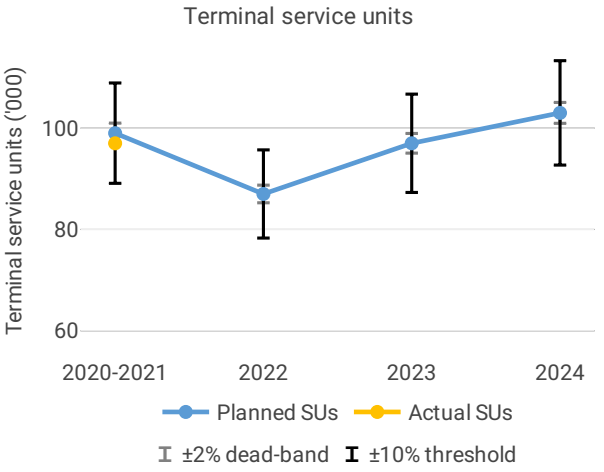

## Focus on regulatory result

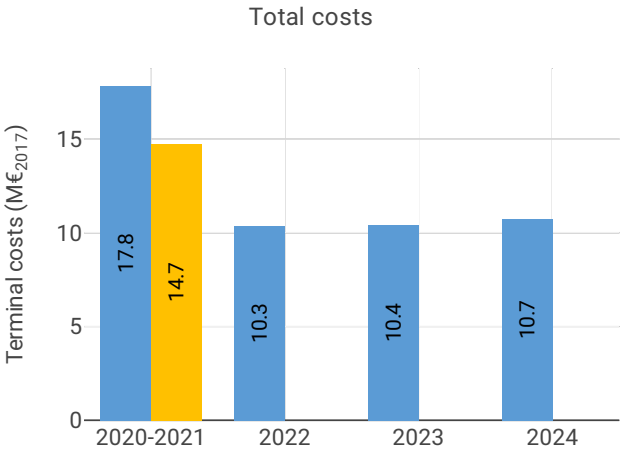
**PANSA net gain on activity in the en route charging zone in the combined year 2020-2021**
PANSA's net gain amounts to +225.9 MPLN (or +49.5 M€), mainly due to the gains of +214.9 MPLN from the cost sharing mechanism, and of +11.0 MPLN from the traffic risk sharing mechanism.
**PANSA overall regulatory 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 (+49.5 M€) and the actual RoE (+50.8 MPLN or +11.2 M€) amounts to +276.8 MPLN or +60.9 M€ (19.2% of the en route revenues). The resulting ex-post rate of return on equity is 13.0%, which is significantly higher than the 2.4% planned in the PP.

## 5.3 Terminal charging zone - Poland EPWA

### 5.3.1 Unit cost (KPI#1)

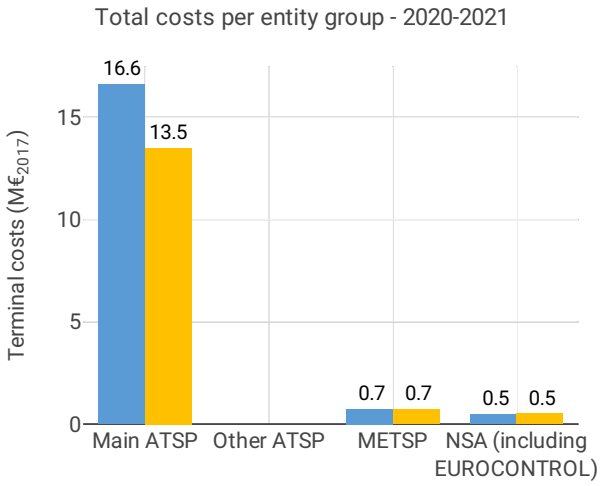


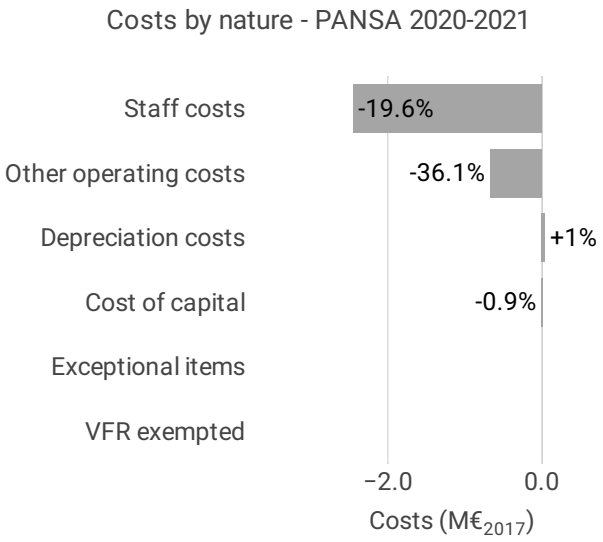






**Actual and determined data**

| Total costs - nominal (M€) | 2020-2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| Actual costs | 16 | NA | NA | NA |
| Determined costs | 19 | 11 | 12 | 12 |
| Difference costs | -3 | NA | NA | NA |
| **Inflation assumptions** | **2020-2021** | **2022** | **2023** | **2024** |
| Determined inflation rate | NA | 2.5% | 2.5% | 2.5% |
| Determined inflation index | NA | 113.4 | 116.2 | 119.1 |
| Actual inflation rate | NA | NA | NA | NA |
| Actual inflation index | NA | NA | NA | NA |
| Difference inflation index (p.p.) | NA | NA | NA | NA |




## Focus on unit cost

### AUC vs. DUC

In the combined year 2020-2021, the terminal AUC for TCZ1 was lower by -16.0% (-123.61 PLN or -29.05€2017) comparing to the DUC. This was in particular the effect of the lower than planned terminal costs in real terms (-17.4%, -13.2 MPLN2017 or -3.1 M€2017) for TCZ1.

### Terminal service units

The difference between actual and planned TNSU for the zone (-1.6%) is within the ±2% dead-band, which results in a loss borne by ANSPs.

### Terminal costs by entity

Actual terminal costs are -17.4% lower than planned (-3.1 M€2017) which is mainly driven by the lower costs for PANSA (-18.8% or -3.1 M€2017). Slightly lower actual costs are observed in the IMWM (METSP), -0.8%. For the NSA costs are higher by +4.8%.

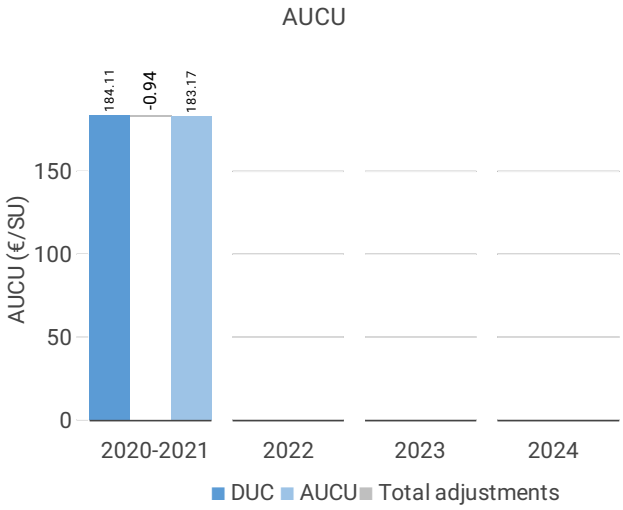
### Terminal costs for the main ANSP at charging zone level

The lower than planned terminal costs for TCZ1 in real terms for PANSA (-18.8%, or -3.1 M€2017) result from:

- lower en route staff costs for TCZ1 (by -19.6% or -2.5 M€2017), *"resulting from a number of factors, including evolution of provisions also those for one-off elements of staff benefits reflected in the RP3 determined cost",* lower remuneration costs (due to lower employment level) and lower actual level of bonuses and rewards;
- lower terminal other operating costs for the zone (by -36.1% or -0.7 M€2017), resulting from costs cutting

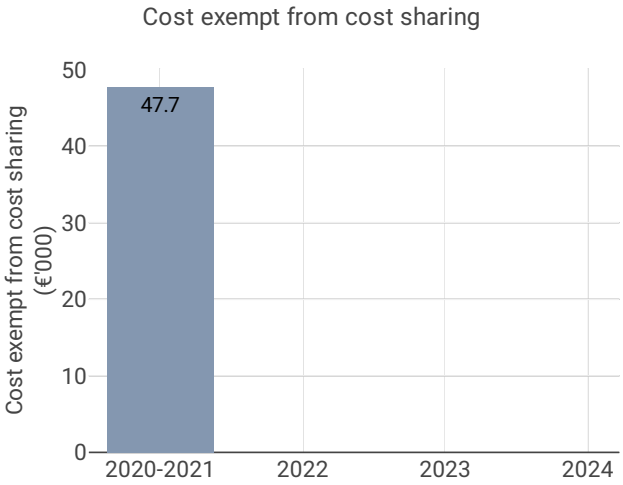
measures in 2021;
- higher, by +1.0% (or +0.02 M€2017) depreciation costs due to the difference in the useful life of some assets;
- lower, by -0.9% cost of capital due to slightly lower value of asset base.

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



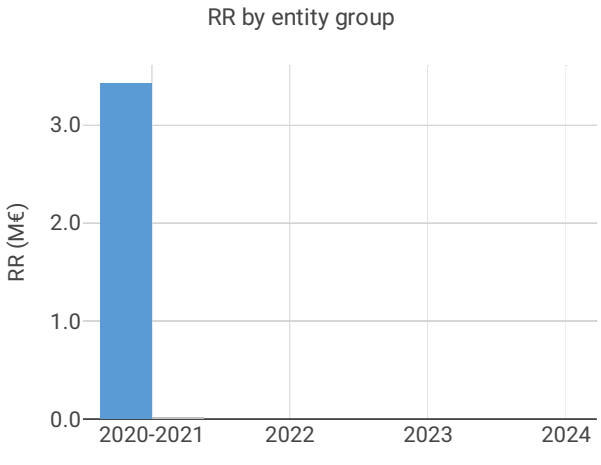

**AUCU components (€/SU) – 2020-2021**

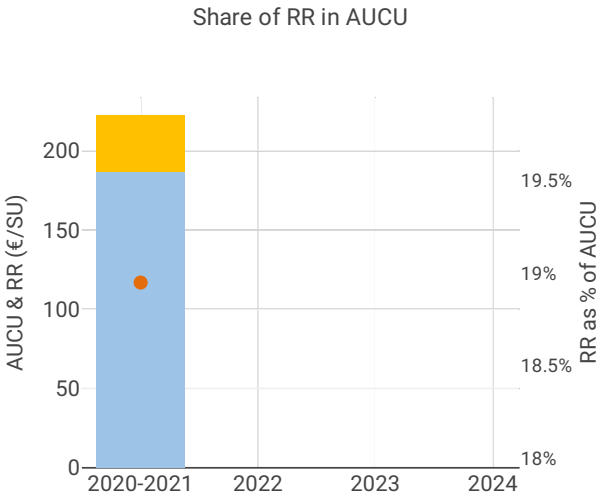
| Components of the AUCU in 2020-2021 | €/SU |
|---|---|
| **DUC** | **184.11** |
| Inflation adjustment | 1.85 |
| Cost exempt from cost-sharing | 0.49 |
| Traffic risk sharing adjustment | 0.00 |
| Traffic adj. (costs not TRS) | 0.20 |
| Finantial incentives | 0.00 |
| Modulation of charges | 0.00 |
| Cross-financing | 0.00 |
| Other revenues | -3.47 |
| Application of lower unit rate | 0.00 |
| Total adjustments | -0.94 |
| **AUCU** | **183.17** |
| **AUCU vs. DUC** | **-0.5%** |

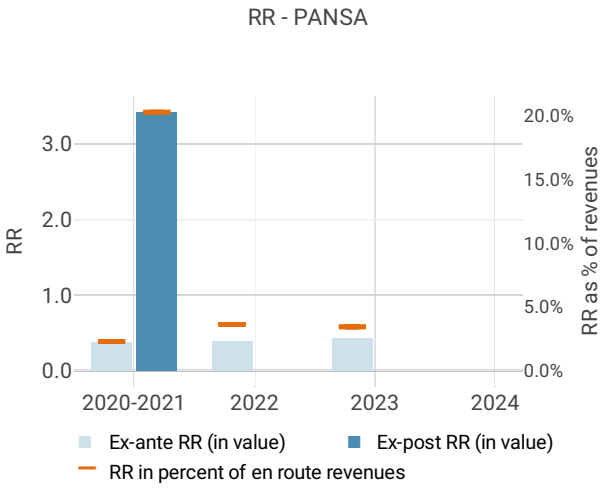


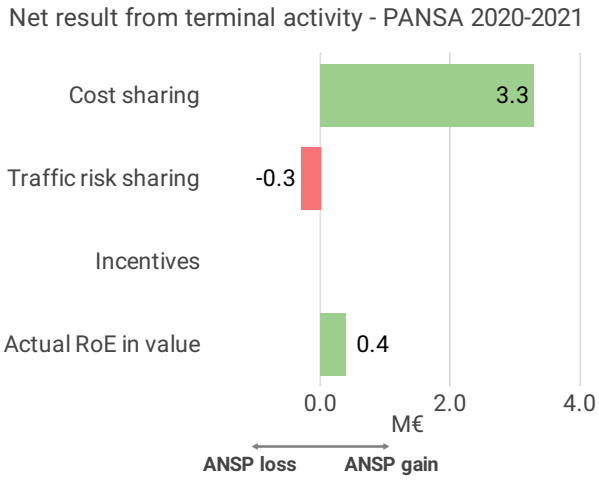

| Cost exempt from cost sharing by item - 2020-2021 | €'000 | €/SU |
|---|---|---|
| New and existing investments | 19.5 | 0.20 |
| Competent authorities and qualified entities costs | 21.4 | 0.22 |
| Eurocontrol costs | 0.0 | 0.00 |
| Pension costs | 0.0 | 0.00 |
| Interest on loans | 6.8 | 0.07 |
| Changes in law | 0.0 | 0.00 |
| **Total cost exempt from cost risk sharing** | **47.7** | **0.49** |

### 5.3.3 Regulatory result (RR)





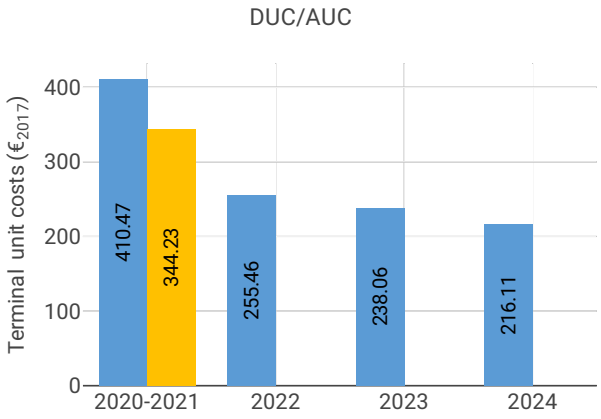



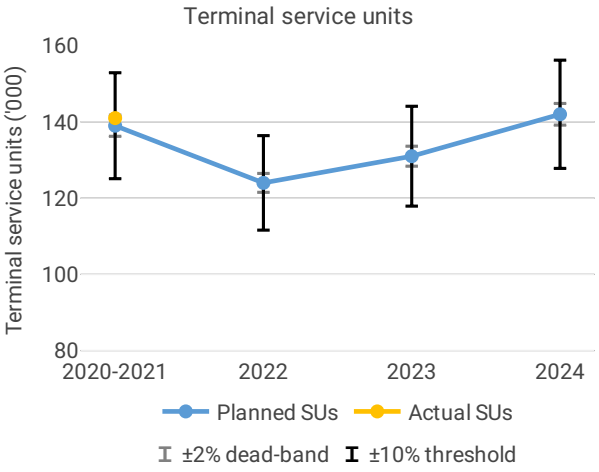

## Focus on regulatory result

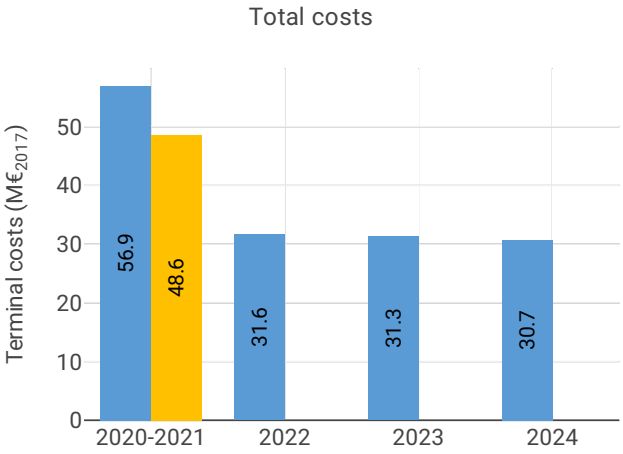
**PANSA net gain on activity in the TCZ1 in the combined year 2020-2021**
PANSA's net gain amounts to +13.9 MPLN (or +3.0 M€), as a result of gains of +15.1 MPLN from the cost sharing mechanism, and the loss of -1.2 MPLN from the traffic risk sharing mechanism**.**
**PANSA overall regulatory results (RR) for the terminal activity in TCZ1**
Ex-post, the overall RR taking into account the net gain from the activity mentioned above (+3.0 M€) and the actual RoE (+1.7 MPLN or +0.4 M€) amounts to +15.6 MPLN or +3.4 M€ (20.5% of the terminal revenues for TCZ1). The resulting ex-post rate of return on equity is 21.6% which is higher than the 2.4% planned in the PP.

## 5.4 Terminal charging zone - Poland Others

### 5.4.1 Unit cost (KPI#1)

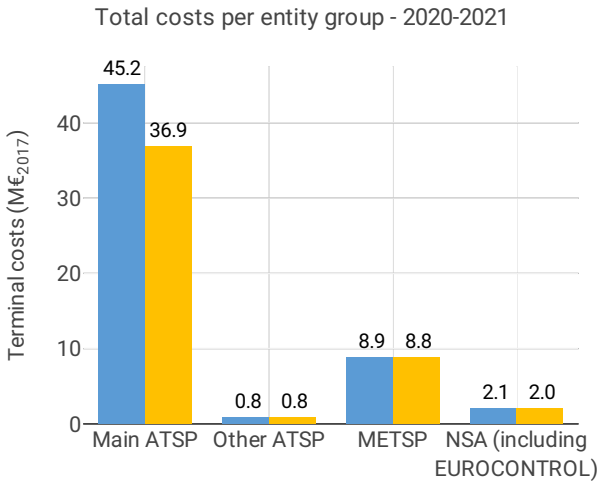


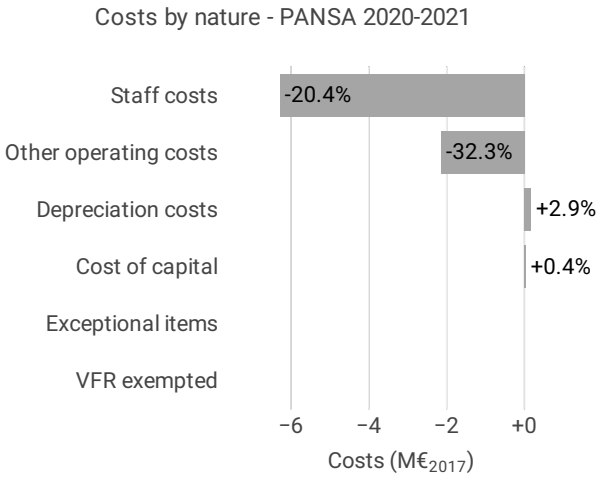






**Actual and determined data**

| Total costs - nominal (M€) | 2020-2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| Actual costs | 52 | NA | NA | NA |
| Determined costs | 61 | 35 | 35 | 35 |
| Difference costs | -9 | NA | NA | NA |
| **Inflation assumptions** | **2020-2021** | **2022** | **2023** | **2024** |
| Determined inflation rate | NA | 2.5% | 2.5% | 2.5% |
| Determined inflation index | NA | 113.4 | 116.2 | 119.1 |
| Actual inflation rate | NA | NA | NA | NA |
| Actual inflation index | NA | NA | NA | NA |
| Difference inflation index (p.p.) | NA | NA | NA | NA |




## Focus on unit cost

### AUC vs. DUC

In combined year 2020-2021, the terminal AUC for TCZ2 was lower by -16.1% (-281.85 PLN2017 or -66.24 €2017) comparing to the DUC. This was in particular the effect of the lower than planned terminal costs in real terms (-14.7%, -35.5 MPLN2017 or -8.3 M€2017) for TCZ2.

### Terminal service units

The difference between actual and planned TNSU for the zone (+1.8%) is within the ±2% dead-band, which results in additional revenues kept by the ANSPs.

### Terminal costs by entity

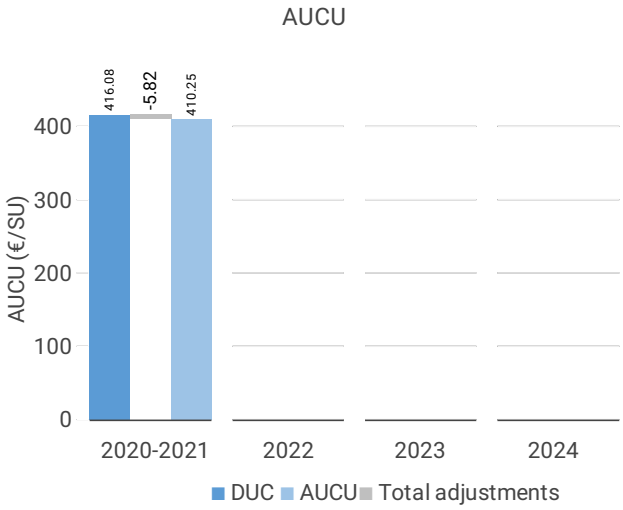
Actual terminal costs are -14.7% lower than planned (-8.3 M€2017) which is mainly driven by the lower costs for PANSA (-18.2% or -8.2 M€2017). Slightly lower actual costs were observed for the METSPs in the zone (-1.0% or -0.09 M€2017), other ATSPs in the zone (-3.4% or -0.03 M€2017) and the NSA (-0.1%).

### Terminal costs for the main ANSP at charging zone level

The lower than planned TCZ2 costs in real terms for PANSA (-18.2%, or -8.2M €2017) result from:
- lower en route staff costs for TCZ2 (by -20.4% or -6.3 M€2017), *"resulting from a number of factors, including evolution of provisions also those for one-off elements of staff benefits reflected in the RP3 determined cost"*, lower remuneration costs (due to lower employment level) and lower actual level of bonuses and rewards;
- lower terminal other operating costs for the zone (by -32.3% or -2.1 M€2017), resulting from costs cutting measures in 2021;
- higher, by +2.9% (or +0.2 M€2017) depreciation costs due to the difference in the useful life of some

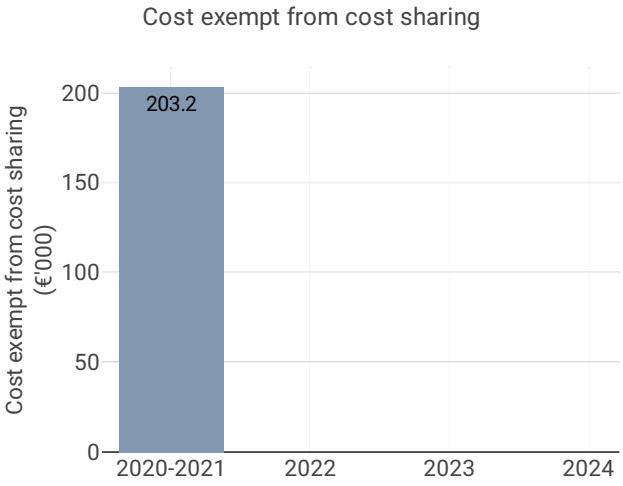
assets;
- slightly higher, by +0.4% costs of capital due to slightly lower value of asset base.

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



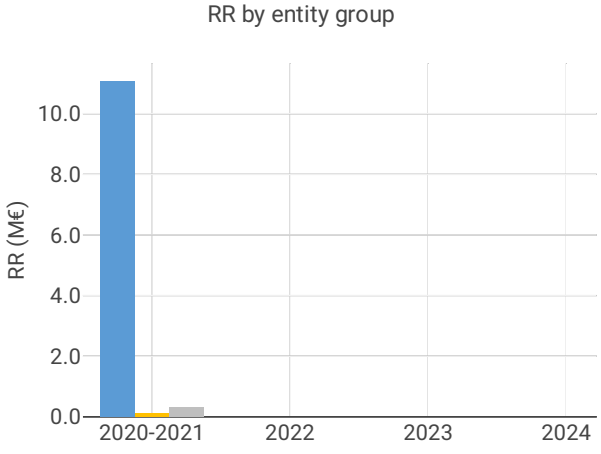

**AUCU components (€/SU) – 2020-2021**

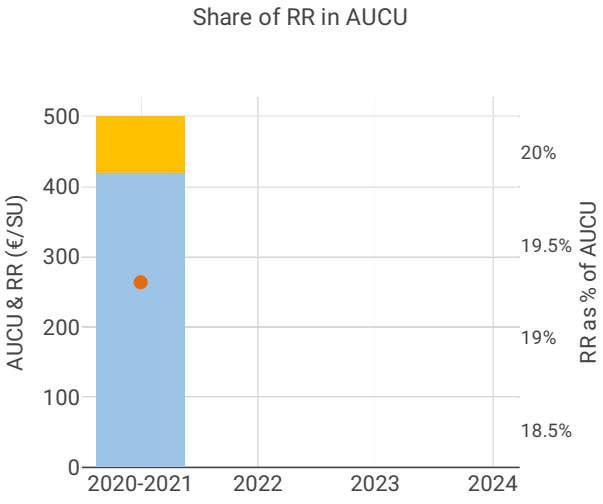
| Components of the AUCU in 2020-2021 | €/SU |
|---|---|
| **DUC** | **416.08** |
| Inflation adjustment | 3.88 |
| Cost exempt from cost-sharing | 1.44 |
| Traffic risk sharing adjustment | 0.00 |
| Traffic adj. (costs not TRS) | -1.35 |
| Finantial incentives | 0.00 |
| Modulation of charges | 0.00 |
| Cross-financing | 0.00 |
| Other revenues | -9.79 |
| Application of lower unit rate | 0.00 |
| Total adjustments | -5.82 |
| **AUCU** | **410.25** |
| **AUCU vs. DUC** | **-1.4%** |

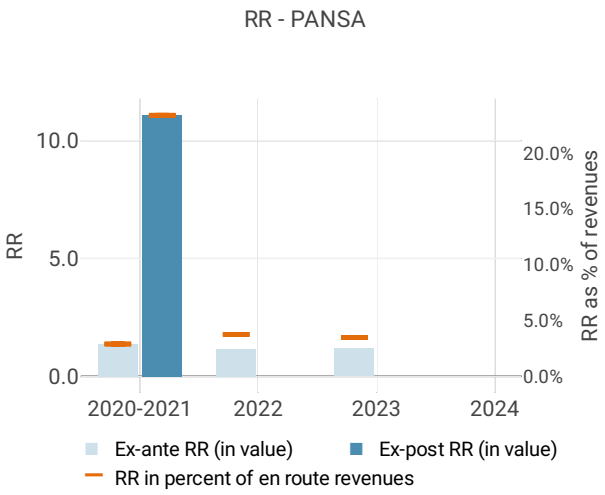


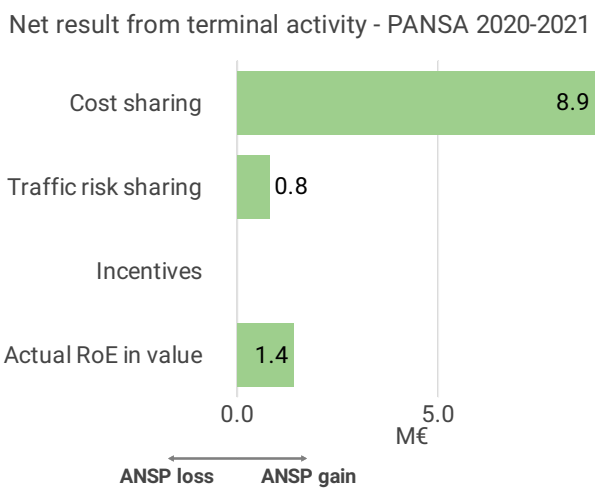

| Cost exempt from cost sharing by item - 2020-2021 | €'000 | €/SU |
|---|---|---|
| New and existing investments | 186.9 | 1.32 |
| Competent authorities and qualified entities costs | -1.1 | -0.01 |
| Eurocontrol costs | 0.0 | 0.00 |
| Pension costs | 0.0 | 0.00 |
| Interest on loans | 17.4 | 0.12 |
| Changes in law | 0.0 | 0.00 |
| **Total cost exempt from cost risk sharing** | **203.2** | **1.44** |

### 5.4.3 Regulatory result (RR)






## Focus on regulatory result

**PANSA net gain on activity in the TCZ2 in the combined year 2020-2021**

PANSA's net gain amounts to +44.2 MPLN (or +9.7 M€), due to gains of +40.6 MPLN from the cost sharing mechanism, and gains of +3.6 MPLN from the traffic risk sharing mechanism**.**

**PANSA overall regulatory results (RR) for the terminal activity in TCZ2**

Ex-post, the overall RR taking into account the net gain from the activity mentioned above (+9.7 M€) and the actual RoE (+6.2 MPLN or +1.4 M€) amounts to +50.4 MPLN or +11.1 M€ (23.6% of the terminal revenues for TCZ2). The resulting ex-post rate of return on equity is 19.3% which is higher than the 2.4% planned in the PP.