PRB | Performance review body of the single european sky

Performance Review Body Monitoring Report

Switzerland - 2023

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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) 2023/178 of 14 December 2022

List of ACCs 2
Geneva ACC
Zurich ACC

No of airports in the scope of the performance plan:
- **≥80'K** 2
- **<80'K** 0

Exchange rate (1 EUR=)
2017: 1.11124 CHF
2023: 0.971299 CHF

Share of Union-wide:
- **traffic (TSUs) 2023** 1.3%
- **en route costs 2023** 3.0%

Share en route / terminal costs 2023 63% / 37%

En route charging zone(s)
Switzerland

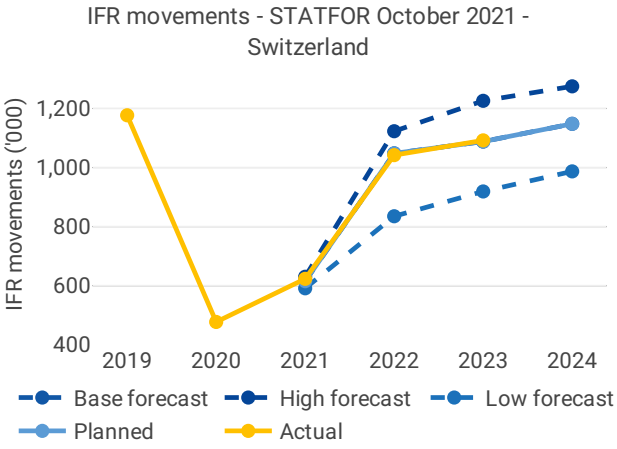
Terminal charging zone(s)
Switzerland

Main ANSP
- Skyguide

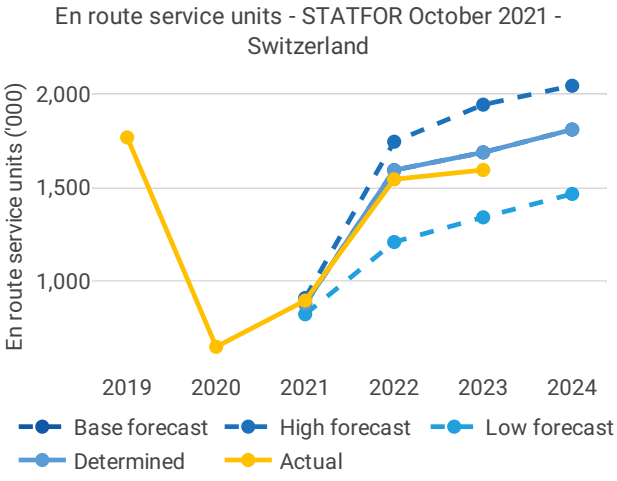
Other ANSPs
–

MET Providers
- Office Féderal de la Météorologie et de Climatologie MétéoSuisse

1.2 Traffic (En route traffic zone)

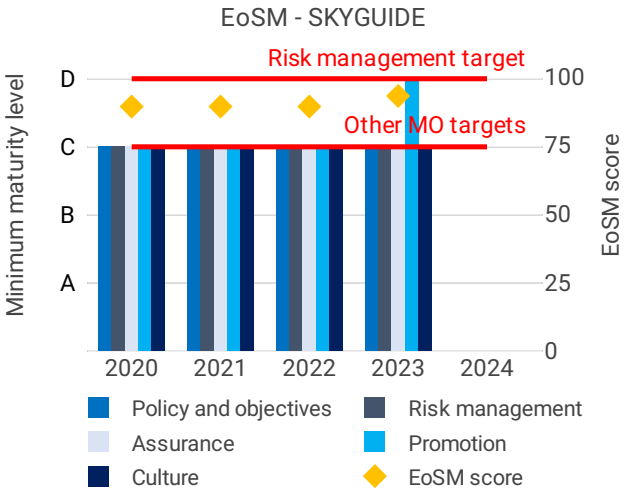


- Switzerland recorded 1,092K actual IFR movements in 2023, +5% compared to 2022 (1,042K).
- Actual 2023 IFR movements were +0.4% above the plan (1,088K).
- Actual 2023 IFR movements represent 93% of the actual 2019 level (1,177K).



- Switzerland recorded 1,595K actual en route service units in 2023, +3% compared to 2022 (1,545K).
- Actual 2023 service units were -5.6% below the plan (1,689K).
- Actual 2023 service units represent 90% of the actual 2019 level (1,769K).

1.3 Safety (Main ANSP)



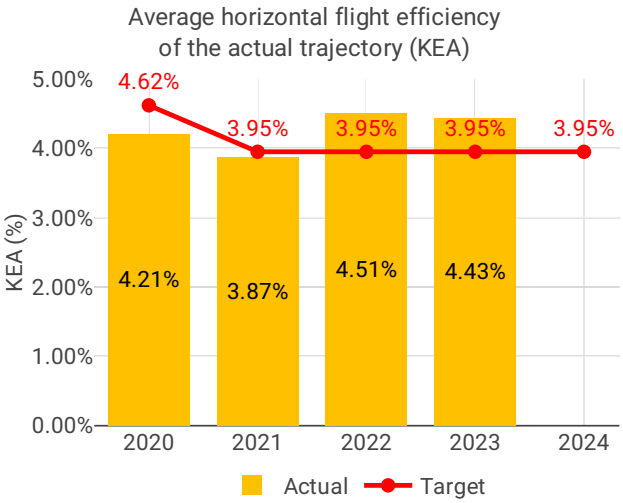
• Skyguide achieved the RP3 EoSM targets for all management objectives other than safety risk management. Over 2023, Skyguide has improved significantly on this management objective with only one question out of three at maturity level C.

• The NSA has cautioned that the ANSP might not be able to achieve the RP3 targets. The issue is related to the understanding of the EoSM guidance on specific aspects.

• Switzerland recorded the same rate of runway incursions, and lower rate of separation minima infringements despite significant traffic increase.

• Skyguide do not use automated safety data recording systems for runway incursions.

1.4 Environment (Member State)



• Switzerland achieved a KEA performance of 4.43% compared to its target of 3.95% and did not contribute positively towards achieving the Union-wide target.

• The NSA states that most inefficiencies are due to the network being impacted by ATC strikes or flight planning.

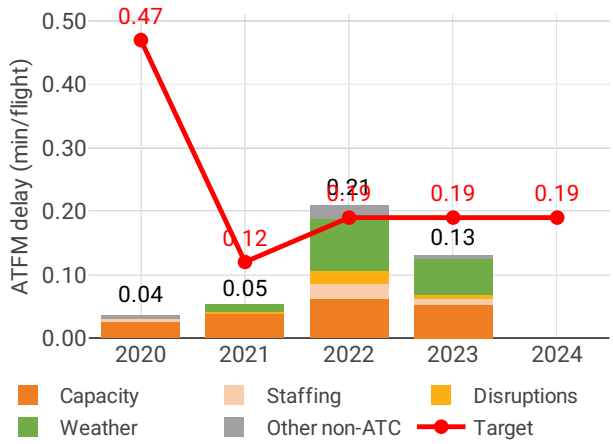
• Both SCR and KEP improved in 2023 compared to 2022. Despite the KEA target being missed, the improvement in SCR shows that Switzerland has improved the environmental efficiency of its airspace when accounting for impacts outside of its control.

• The share of CDO flights increased marginally from 17.42% to 17.86% in 2023.

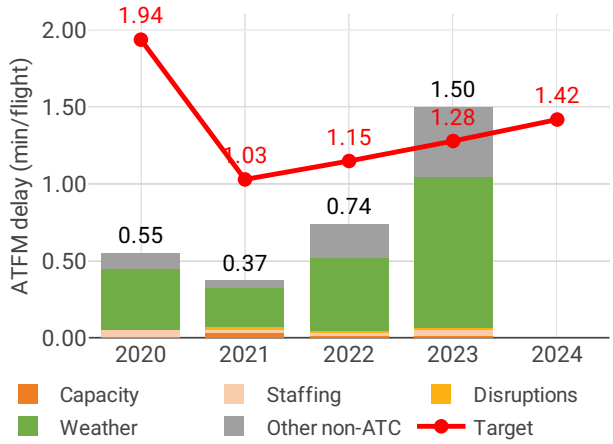
• During 2023, additional time in terminal airspace increased from 1.64 to 1.92 min/flight, while additional taxi out time increased from 2.22 to 2.72 min/flight.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



Average arrival ATFM delay per flight by delay groups



• Switzerland registered 0.2 minutes of average en route ATFM delay per flight during 2023 which has been adjusted to 0.13 during the post-ops adjustment process, thus achieving the local target value of 0.19. Delays in Switzerland decreased by 0.08 minutes per flight year-on-year.

• Delays were highest between June and September, mostly driven by adverse weather conditions and ATC capacity.

• The share of delayed flights with delays longer than 15 minutes in Switzerland increased by 5 p.p. compared to 2022 and was higher than 2019 values.

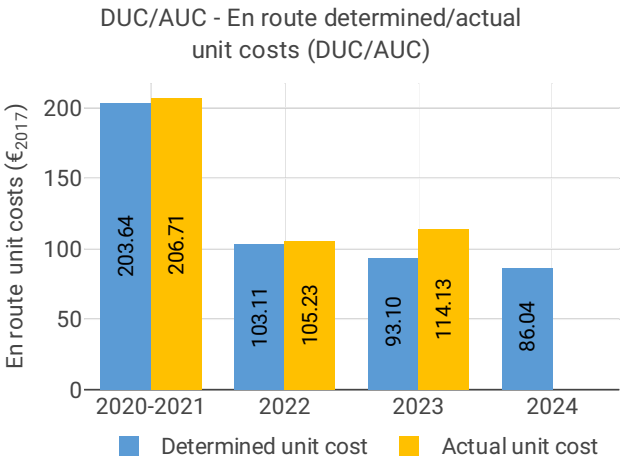
• The average number of IFR movements was 8% below 2019 levels in Switzerland in 2023.

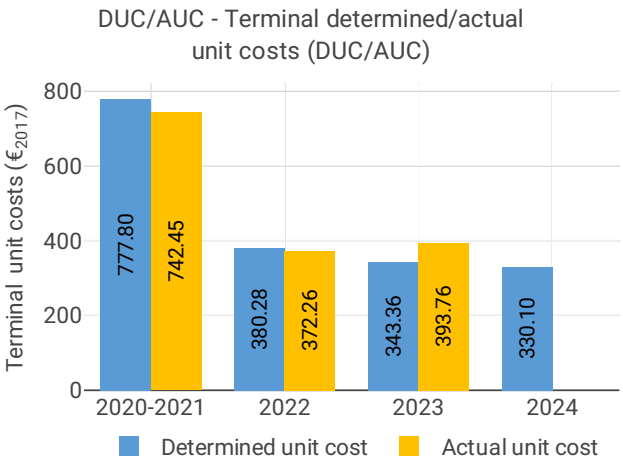
• The number of ATCOs in OPS is expected to increase by 2% by 2024, with the actual value being below the 2023 plan in Geneva by 9 FTEs. The number of ATCOs in OPS is expected to decrease by 10% by 2024, with the actual value being over the 2023 plan in Zurich by 13 FTEs.

• The yearly total of sector opening hours in Geneva ACC was 28,234, showing a 3.2% decrease compared to 2022. Sector opening hours are 12.6% below 2019 levels. The yearly total of sector opening hours in Zurich ACC was 32,064, showing a 0.5% increase compared to 2022. Sector opening hours are 9.6% above 2019 levels.

• Geneva ACC registered 20.99 IFR movements per one sector opening hour in 2023, being 0.5% below 2019 levels. Zurich ACC registered 23.72 IFR movements per one sector opening hour in 2023, being 2.3% above 2019 levels.

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





• The en route 2023 actual unit cost of Switzerland was 114.13 €2017, +23% higher than the determined unit cost (93.10 €2017). The terminal 2023 actual unit cost was 393.76 €2017, +15% higher than the determined unit cost (343.36 €2017).

• The en route 2023 actual service units (1.6M) were -5.6% lower than the determined service units (1.7M).

• In 2023, the en route actual total costs were higher (+25 M€2017, or +16%) than determined. The difference is driven by Skyguide's other operating costs (+11 M€2017, or +32%), where the NSA explained that it is due to higher purchased services and products as a result of increased technical incidents, as well as additional costs to correct compliance issues in many areas (Technical but also buildings/infrastructures). Additionally, an increase of +12 M€2017 relates to the impact of the capitalisation rules, which was included as a negative exceptional item in the determined costs (so as to be excluded from the amounts charged to airspace users), but has not been deducted from the actual costs, as it is reported as being actually incurred.

• Skyguide spent 44 M€2017 in 2023 related to costs of investments for both en route and terminal charging zones, +3.2% more than determined (42 M€2017).

• The en route actual unit cost incurred by users in 2023 was 116.29€ (+7.1% above the 2023 DUC), while the terminal actual unit cost incurred by users was 412.14€ (+2.9% above the 2023 DUC).

• The en route regulatory result for Skyguide amounted to -31 M€, or -19% of the 2023 revenue.

2 SAFETY - SWITZERLAND

2.1 PRB monitoring

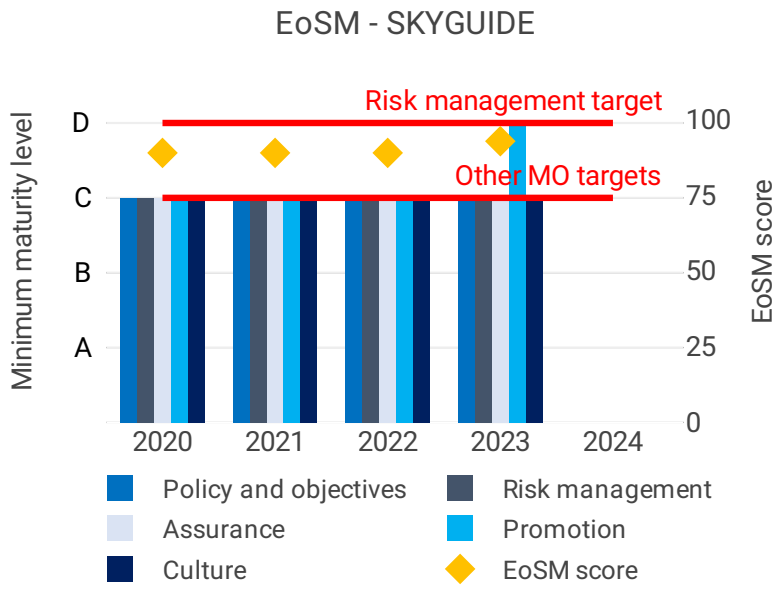
• Skyguide achieved the RP3 EoSM targets for all management objectives other than safety risk management. Over 2023, Skyguide has improved significantly on this management objective with only one question out of three at maturity level C.

• The NSA has cautioned that the ANSP might not be able to achieve the RP3 targets. The issue is related to the understanding of the EoSM guidance on specific aspects.

• Switzerland recorded the same rate of runway incursions, and lower rate of separation minima infringements despite significant traffic increase.

• Skyguide do not use automated safety data recording systems for runway incursions.

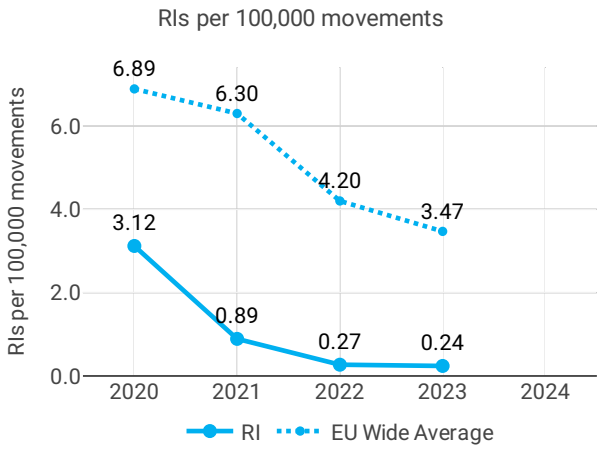
2.2 Effectiveness of Safety Management (EoSM) (KPI#1)

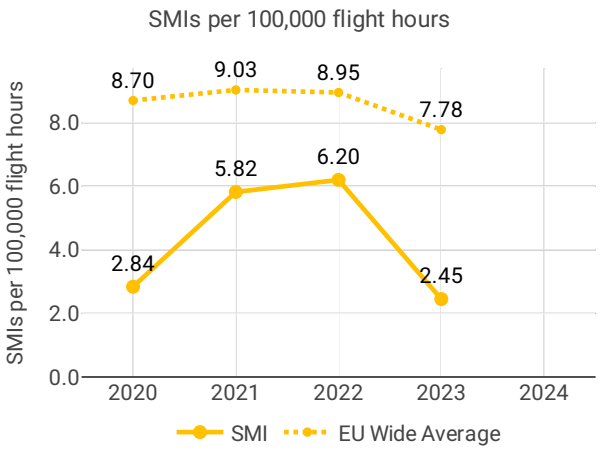


Focus on EoSM

Four out of five EoSM components of the ANSP meet the RP3 target level. Only the component "Safety Risk Management" is below 2024 target level, requiring improvement of a single question during RP3.

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





3 ENVIRONMENT - SWITZERLAND

3.1 PRB monitoring

• Switzerland achieved a KEA performance of 4.43% compared to its target of 3.95% and did not contribute positively towards achieving the Union-wide target.

• The NSA states that most inefficiencies are due to the network being impacted by ATC strikes or flight planning.

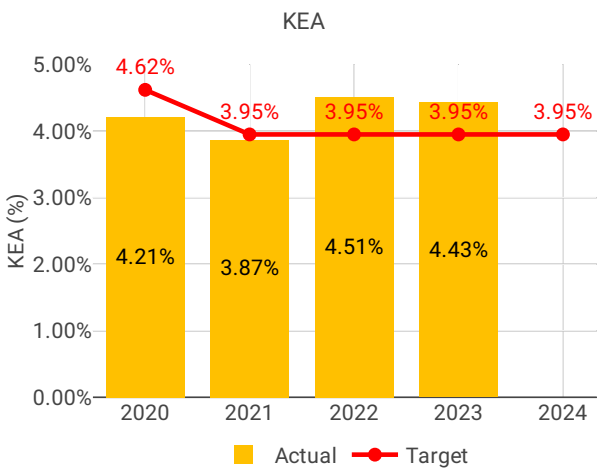
• Both SCR and KEP improved in 2023 compared to 2022. Despite the KEA target being missed, the improvement in SCR shows that Switzerland has improved the environmental efficiency of its airspace when accounting for impacts outside of its control.

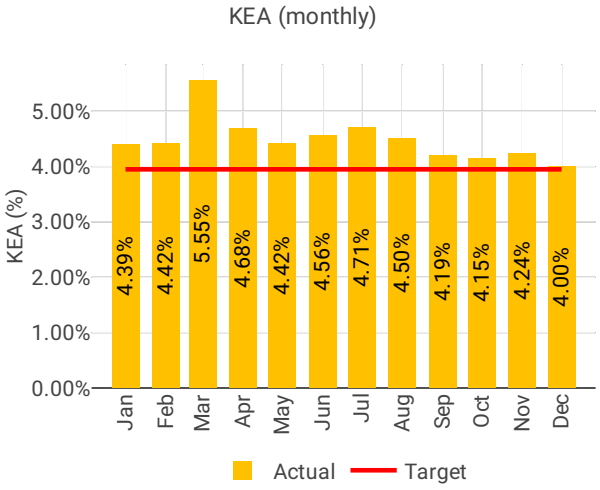
• The share of CDO flights increased marginally from 17.42% to 17.86% in 2023.

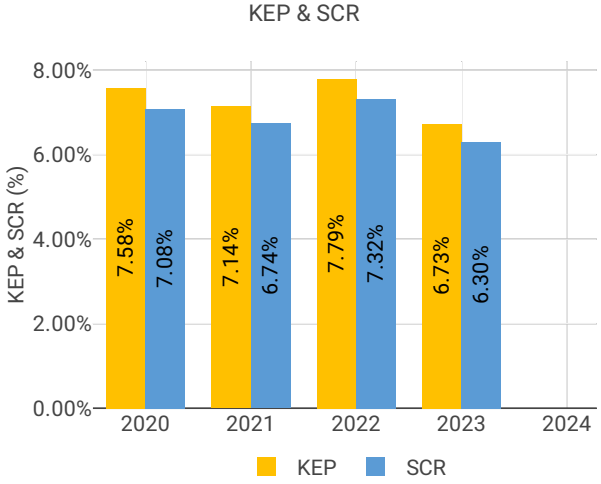
• During 2023, additional time in terminal airspace increased from 1.64 to 1.92 min/flight, while additional taxi out time increased from 2.22 to 2.72 min/flight.

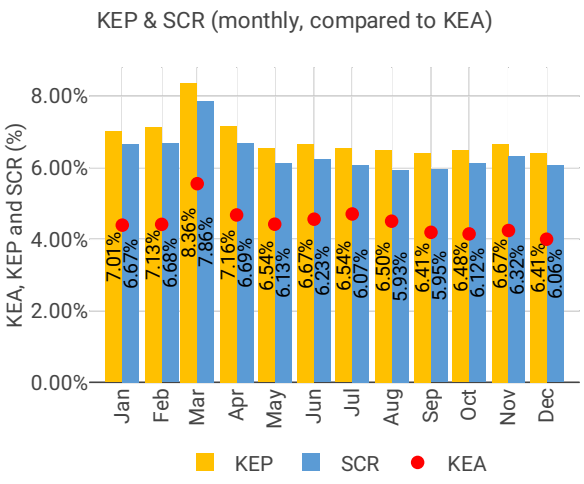
3.2 En route performance

3.2.1 Horizontal flight efficiency of the actual trajectory (KEA) (KPI#1), of the last filed flight plan (KEP) (PI#1) & shortest constrained route (SCR) (PI#2)



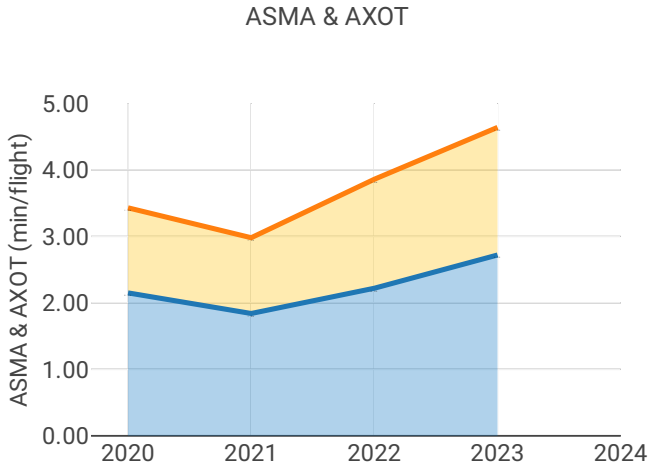


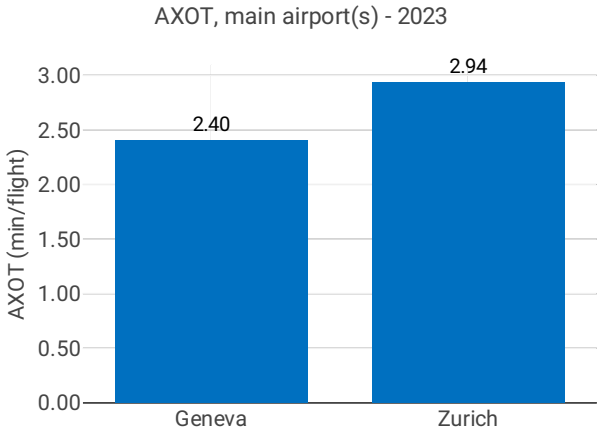


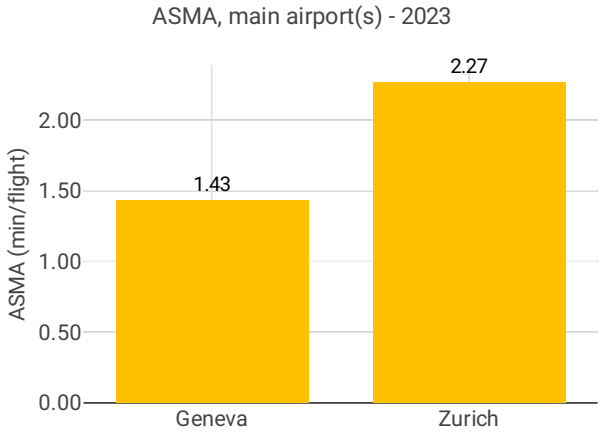


3.3 Terminal performance

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







Focus on ASMA & AXOT

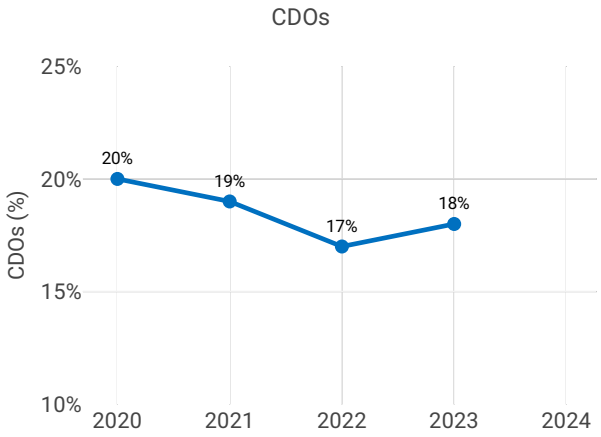
AXOT

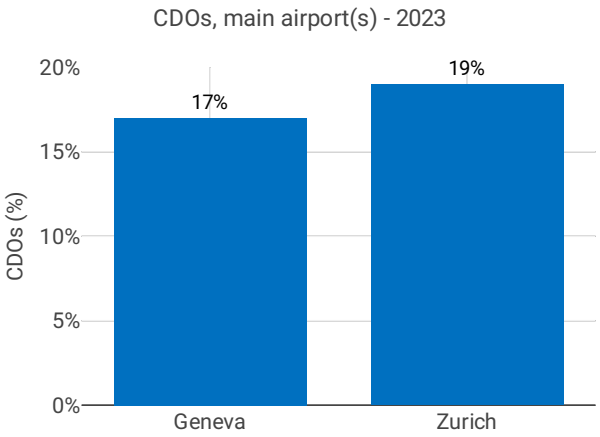
Additional taxi-out times at both Swiss airports increased in 2023. In particular Zurich (LSZH; 2019: 3,65 min/dep.; 2020: 2,23 min/dep.; 2021: 1,93 min/dep.; 2022: 2,49 min/dep.; 2023: 2,94 min/dep.) exceeded the SES average of 2.81 min/dep.
According to the Swiss monitoring report: *Ground efficiency suffered from traffic increased during summer 2023. Further improvements will stem from CP1 Airport Operation Plan deployment. It should be noted that taxi-out time depends on weather conditions, especially when de-icing is required.*

ASMA

Additional times in the terminal area increased mainly at Zurich (LSZH; 2019: 2.91 min/arr.; 2020: 1.28 min/arr.; 2021: 1.29 min/arr.; 2022: 1.84 min/arr.; 2023: 2.27 min/arr.) resulted in the highest additional time among the SES monitored airports in 2023, even if its performance was still better than in 2019.
According to the Swiss monitoring report: *Efficiency within the last 40NM (additional time in descent flight phase) around LSZH and LSGG decreased in 2023 due to traffic increase. XMAN and Leading Optimised Runway Delivery (LORD) projects should help improving performance.*

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





Focus CDOs

The share of CDO flights have increased by 1.1 percentage points for Zurich and decreased 0.3 percentage points for Geneva. Both airports have shares of CDO flights which are below the overall RP3 value in 2023 (28.8%).

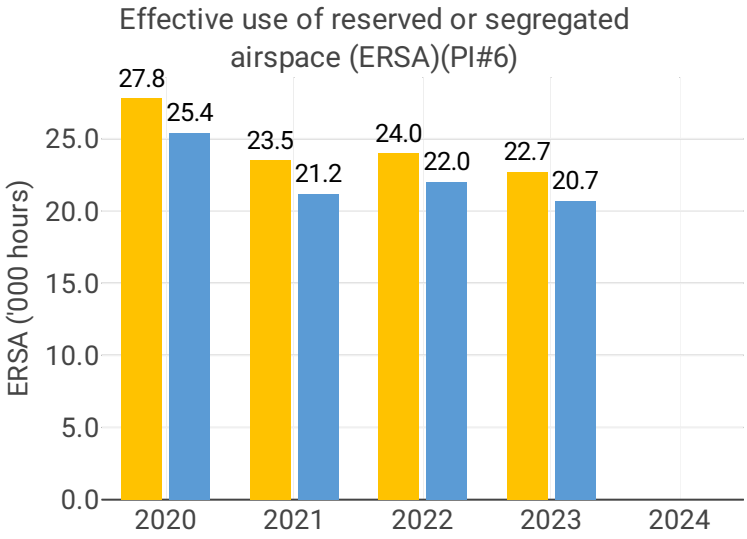
For Zurich, the share of CDO flight is lower from March to October.According to the Swiss monitoring report: *Vertical flight efficiency from Top of Descent remained stable in 2023 despite traffic increase. CDOs can be flown only when traffic is reduced.*

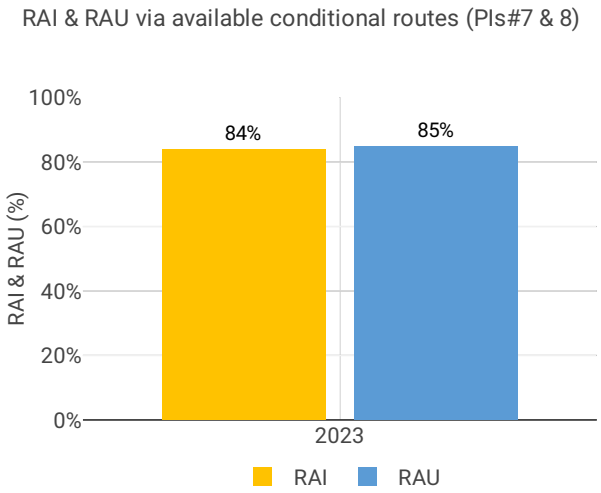
Skyguide was audited in 2023 and 2024 by CANSO for CCO/CDO practices in ZRH and GVA as part of its GreenATM accreditation. Room for improvement is identified and corrective actions will be taken.

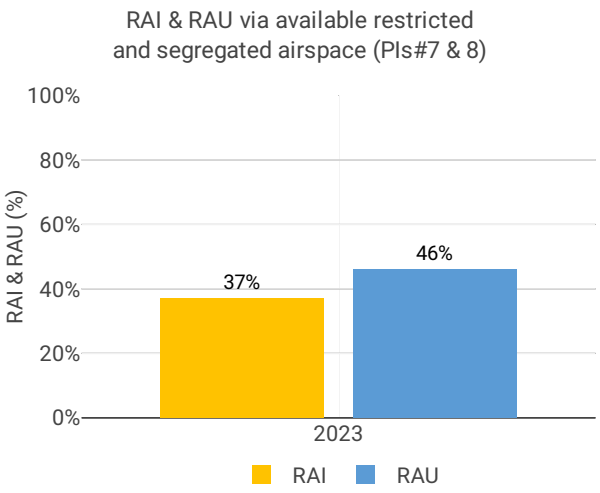
Airport level

	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
Geneva	2.06	1.71	1.88	2.40	NA	1.27	0.95	1.37	1.43	NA	NA	19%	17%	17%	NA
Zurich	2.23	1.93	2.49	2.94	NA	1.28	1.29	1.84	2.27	NA	NA	20%	18%	19%	NA

3.4 Civil-Military dimension







Focus on Civil-Military dimension

Update on Military dimension of the plan

For obvious flight safety reasons, military activities must be segregated from civil flows which has an impact on both horizontal (HFE) and vertical flight efficiency (VFE).
Because ASM manageable areas form an integral part of the nominal system, military airspace reservations shall be considered as part of the performance baseline rather than a key factor degrading environmental KPIs.
As a result of implementation of the FUA concept the impact of military activities using Restricted Airspace (RSA) on civil performance is highly minored when associated with an efficient ASM process:
- At strategic level (HLAPB) by designing areas in accordance with A-FUA concept (MVPA/VGA structures), especially for congested airspaces.
- At pre-tactical level (AMC), by managing these areas in a dynamic way, with an associated level 2 CDM process, validated by HLAPB.
- At tactical level (ACC/Regional Military Control Centre) by activating/deactivating areas as close as possible to actual use and allowing crossing or direct routes when possible (in accordance with TRA status), with an associated level 3 CDM process validated by HLAPB.
- At each level, HLAPB, AMC or ACC/Regional Military Control Centre, a key factor of efficiency is a trust-driven civil-military cooperation. As a counterpart, AOs and CFSPs must be reactive and take efficiently into account available or released airspaces. At last, ANSP have also to adapt the route network to create more DCTs within military areas.
Finally, local circumstances (e.g. constrained airspace, proximity of international hubs, etc…) as well as a large number of military missions that differ from one State to another must be taken into account. Therefore, airspace needs (e.g. airspace requirements for the 5th generation fighters) and related ASM procedures of the States differ and standardized objectives cannot be defined.

Military - related measures implemented or planned to improve capacity

FABEC States are working on mid-term improvements regarding implementation of ASM level 1. 2. and 3 procedures. Some local initiatives regarding ASM/ATFCM convergence, like the traffic Light Scheme concept in France are promoted at FABEC level, as well as at ECAC level in the EUROCONTROL OEP framework.
Another major improvement is the interconnection of the existing ASM tools (e.g. LARA, STANLY_ACOS) at FABEC Level, to enhance regional coordination among FABEC AMCs as well as with the NM.

Initiatives implemented or planned to improve PI#6

Remark
The Rolling UUP and Procedure 3 were introduced in Switzerland on 01.01.2016.
Monitoring of effectiveness
Since introduction of Rolling UUP and Procedure 3 in 2016. the PI#6 ratio improved and remained high and stable over years implying more reliable flight planning possibilities by AUs across Swiss airspace.
Ongoing national civil-military initiatives

Additional improvements are foreseen at the mid/long term such as introduction of VPA, improved CDM-ATFCM, improved civ-mil ASM Tools, etc. that shall give even more direct routing options to the Airspace Users. In addition, CH NSA is in the process of defining specific national PIs and/or " "Use cases" " in order to better assess (and improve, if necessary) the effectiveness of national FUA processes.

Initiatives implemented or planned to improve PI#7

Remark
In the figures provided by Eurocontrol (PRISMIL) until 2021 (included), there was no way of knowing whether the flights that filed through the available RSA are indeed a subset of the flights that could have filed through the available RSA. This correction is now available and has been computed retroactively for all years.
Ongoing national civil-military initiatives
Promoting a more proactive flight planning process (considering the last published airspace status) by the Airspace Users. Additional improvements are foreseen at the mid/long term such as introduction of VPA, improved CDM-ATFCM, improved civ-mil ASM Tools, etc. that shall give even more direct routing options to the Airspace Users.
Monitoring of effectiveness
Military mission planning remained stable at a high level over years implying more reliable flight planning by AUs across Swiss airspace. CH NSA is in the process of defining specific national PIs and/or " "Use cases" " in order to better assess (and improve, if necessary) the effectiveness of national FUA processes.

Initiatives implemented or planned to improve PI#8

Remark
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4 CAPACITY - SWITZERLAND

4.1 PRB monitoring

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• Delays were highest between June and September, mostly driven by adverse weather conditions and ATC capacity.

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• Geneva ACC registered 20.99 IFR movements per one sector opening hour in 2023, being 0.5% below 2019 levels. Zurich ACC registered 23.72 IFR movements per one sector opening hour in 2023, being 2.3% above 2019 levels.

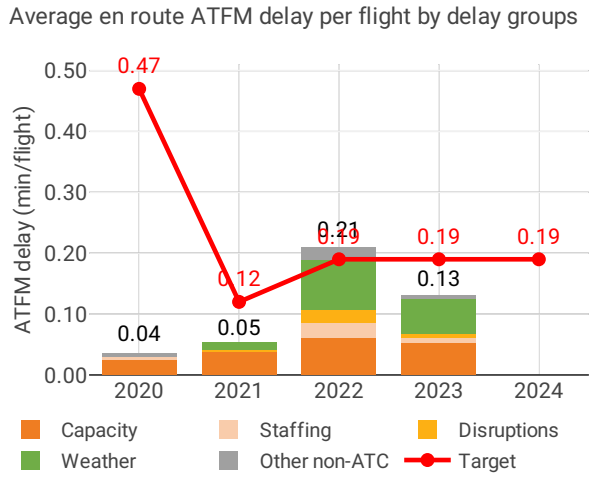
• Switzerland registered an average airport arrival ATFM delay of 1.50 minutes per flight in 2023, thus not achieving the local target of 1.28 minutes.

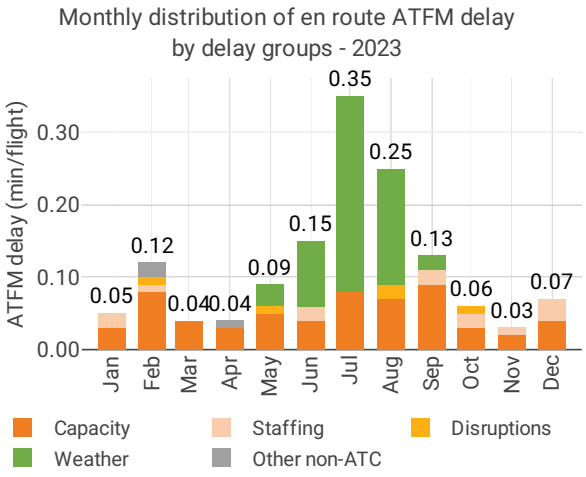
• Compared to 2022, average arrival ATFM delays in Switzerland were 103% higher in 2023, while the number of IFR arrivals increased by 12%.

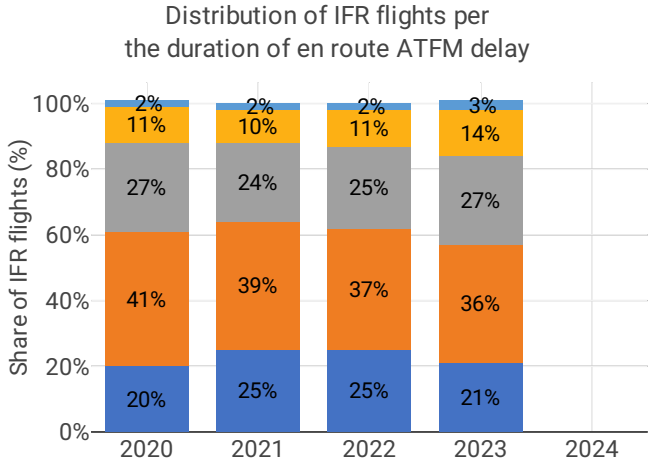
• The main reasons for delays were weather, accounting for 65% of delays, and other, non-ATC related causes, responsible for 30%.

4.2 En route performance

4.2.1 En route ATFM delay (KPI#1)







Focus on en route ATFM delay

Summary of capacity performance

Switzerland experienced an increase in traffic from 1 042k flights in 2022, with 242k minutes of en route ATFM delay, to 1 092k flights in 2023 with 155k minutes of en route ATFM delay.
There were an additional 15k minutes of delay originating in Switzerland that were re-attributed to DFS via the NM post operations delay attribution process, according to the NMB agreement for eNM/S23 measures, to ameliorate capacity shortfalls in Karlsruhe UAC.

NSA's assessment of capacity performance

2023 en-route capacity target set in the Swiss National performance plan was met (total ATFM-Delay per flight : 0.13 min/fl., 0.06 min. below the target). The CRSTMP ATFM delay per flight target was achieved as well, so a bonus is applied in 2023 for the en-route part.

Monitoring process for capacity performance

The monitoring for en-route capacity performance is carried out under the auspices of the FABEC Financial and Performance Committee (FPC), counterpart of the European Commission at the States side, consulting and reporting to FABEC Council as appropriate.
On a monthly basis and through the AFG/PMWG (ANSP FABEC Group / Performance Management Group) the ANSPs collectively submit a report to the FPC, based on PRU available data, consolidated and analysed, on their joint progress in achieving the national target set and reference or indicative values and on the results and analysis of the en- route capacity achievement.
In case the national target set and/or the annual/reference values are threatened not to be met, AFG/PMG is asked to propose to FPC possible corrective measures which the ANSPs determine fit to react to the weaker performance at national and/or ACC level, in order to remedy the situation.
The FPC analyses the reports, assesses the actions considered by the ANSPs together with the necessity of appropriate measures to be taken by the States or the NSAs and makes an advice to the proposals, made by the AFG/PMWG, to the FABEC Council for such appropriate measures, after consultation with the AFG/PMWG. The potential corrective measures take into account the seriousness of the risk of not meeting the targets set and/or the annual/reference values.
The Swiss NSA has periodical meetings with its ANSPs. - The Swiss NSA is regularly provided with various reports, analysis and data such as FABEC monthly capacity reports (including Skyguide data), Skyguide reports, PRU dahboards which enable to closely monitor the performance evolution.

Capacity planning

In 2023, Skyguide achieved its en-route ATFM delay per flight target.
Traffic increased by 12.7% in 2023 vs. 2022 whereas the en-route ATFM delay decreased by 51.4% compared to one year earlier. The post-ops adjustment process was applied and allowed for re-attributing 5098 minutes of CRSTMP delay to DFS and 10338 minutes of non-CRSTMP delay to DFS as well.

Application of Corrective Measures for Capacity (if applicable)

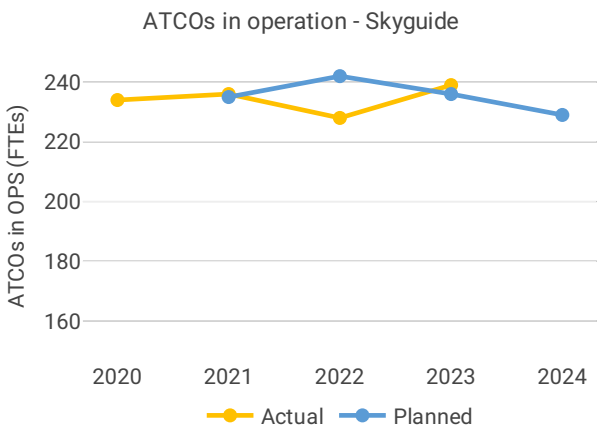
Information Relating to Significant Risks for Capacity Performance in Remainder of RP3

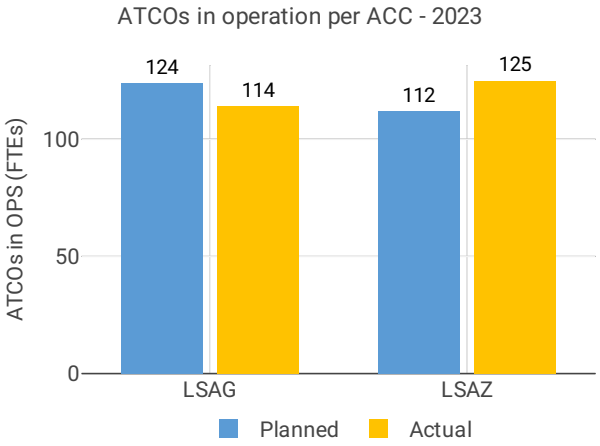
A resilience technical programme was launched at Skyguide end of 2022. It has been officially closed in 2024, however, certain corrective measures have not been implemented yet, and during the first semester of 2024, to support these measures, a uniform decrease of capacity was applied in both Geneva and Zurich ACC (-20%) leading to generate unusual high ATFM delays. This capacity reduction should be applied until beginning of July in Zurich ACC and June in Geneva ACC.

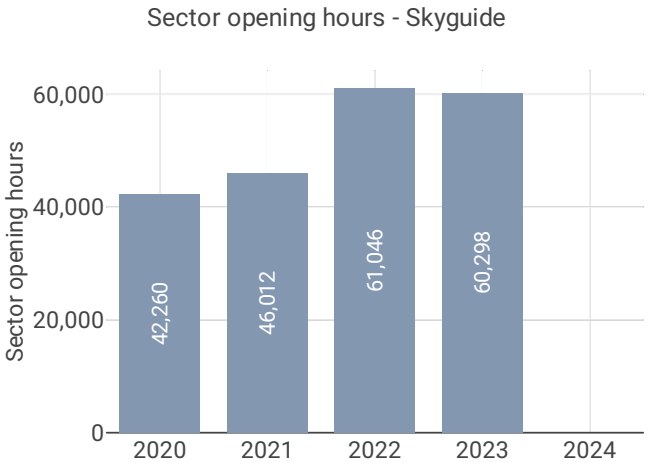
En route Capacity Incentive Scheme

Skyguide: Switzerland uses an incentive scheme based only on delays attributed to C,R,S,T,M & P delay codes. The national target was set at 0.13 minutes per flight and the actual performance is reported as 0.07 minutes per flight (CRSTMP only). This results in a reported bonus of 780,390 CHFIn accordance with Article 3(3)(a) of Implementing Regulation (EU) 2020/1627: The incentive scheme shall cover only the calendar years 2022 to 2024.

4.2.2 Other indicators





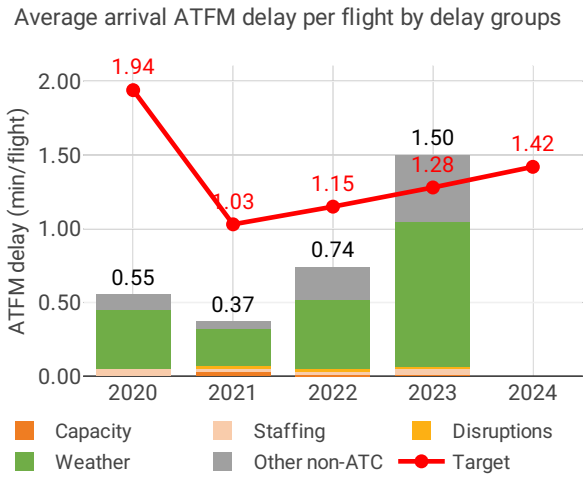


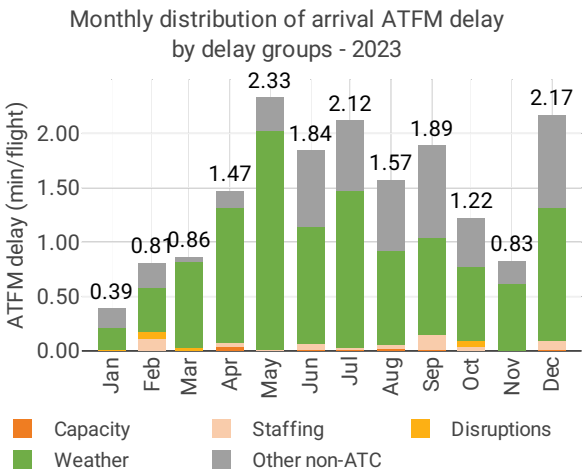
Focus on ATCOs in operations

These figures are based on a financial view. However, the 1st of January 2024 Skyguide implemented a new ERP. Unfortunately it led to change the process of collecting financial data, hence, it is not possible anymore to check if those values are in line with the way Skyguide provided data for 2022. In 2024, Skyguide will use the same file as for this report and for RP4, it will be used the operational view for which there are some automated ways to retrieve part of these figures (it will be more efficient and a lot less time consuming).

4.3 Terminal performance

4.3.1 Arrival ATFM delay (KPI#2)





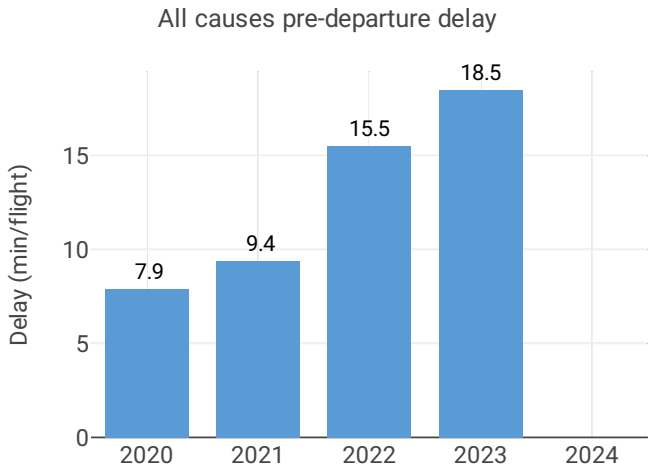
Focus on arrival ATFM delay

Switzerland identifies its two main airports Zurich (LSZH) and Geneva (LSGG) as subject to RP3 monitoring. Both airports have a fully implemented data flow that allows the proper monitoring of the pre-departure delays.
Traffic in 2023 at these two airports was still 9% lower than in 2019, but 12% higher than in 2021.
Average arrival ATFM delays in 2023 was 1.5 min/arr, compared to 0.74 min/arr in 2022. The national target was not met.
ATFM slot adherence was very similar to the previous year (2023: 95.7%; 2022: 95.6%).

ATFM delays at both Swiss airports increased in 2023, especially in Zurich (LSZH: 2019: 1.99 min/arr.; 2020: 0.60 min/arr.; 2021: 0.51 min/arr.; 2022: 0.93 min/arr.; 2023: 2.12 min/arr.)
65% of these delays at Swiss airports were attributed to weather and 23% to aerodrome capacity issues.According to the Swiss monitoring report:
In 2023, delays were due to Aerodrome Capacity (31%), Weather (29%), Staffing (18%), Industrial Action (non-ATC) (13%), ATC-Capacity (4%), Other (3%, activists on RWY) and Accident (2%) in Geneva.
Delays were due to Weather (73%), Aerodrome Capacity (20%), Environmental issues (3%), Equipment (non-ATC) (1%), Special Event (1%), Equipment (ATC) (1%) and Airspace Management (1%) in Zurich.
As 94% of the delays are due to regulations that are not under Skyguide's control, and as the CRSTMP target was just achieved, the situation is assessed as good.

The Swiss performance plan sets a national target on arrival ATFM delay for 2023 of 1.28 min/arr. This target was not met, with an actual performance of 1.5 min/arr. The incentive scheme uses modulated pivot values limited to CRSTMP delay causes. According to the Swiss monitoring report, this pivot value for CRSTMP is 0.09 min/arr in 2023 and based on the attribution of the regulation reason, the actual CRSTMP value for 2023 was 0.09 min/arr, which falls within the deadband.According to the Swiss monitoring report:
Skyguide just achieved its CRSTMP target: the target was set at 0.09 min/flt and the actual value is 0.09 min/flt and didn't achieve the total ATFM ARR delay per ARR movement target: the target was set at 1.28 min/flt and the actual value is 1.50 min/flt. This is mainly due to Weather and aerodrome capacity regulations.
With respect to the total Arrival ATFM delay, 94% of the ATFM delays were due to reasons not under managerial control (Weather, Aerodrome capacity, Environmental issues, etc.). Therefore, no specific measure is required.

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
Geneva	0.49	0.19	0.48	0.59	94.7%	93.1%	94.0%	93.8%
Zurich	0.60	0.51	0.93	2.12	94.4%	96.0%	96.7%	97.0%

	ATC pre departure delay (PI#2)				All causes pre departure delay (PI#3)			
Airport name	2020	2021	2022	2023	2020	2021	2022	2023
Geneva	0.24	0.13	0.32	0.52	8.5	9.0	15.1	16.4
Zurich	0.48	0.39	0.71	1.13	7.5	9.7	15.8	19.8

Focus on performance indicators at airport level

ATFM slot adherence

On average, these airports showed a 95,7% adherence to ATFM slots, similar to the performance in 2022 (95.6%). With regard to the 4.3% of flights that did not adhere, 2.9% was early and 1.4% was late.
According to the Swiss monitoring report:
National level and main national individual airports involved are above the 80% threshold of compliance and is close to 2022 achievement.

ATC pre-departure delay

The performance at both Swiss airports in terms of ATC pre-departure delay deteriorated in 2023. At Zurich (LSZH; 2019: 1.63 min/dep.; 2020: 0.52 min/dep.; 2021: 0.39 min/dep.; 2022: 0.71 min/dep.; 2023: 1.13 min/dep.) it was still better than in 2019.
At Geneva (LSGG: 2019: 0.36 min/dep.; 2022: 0.32 min/dep.; 2023: 0.52 min/dep.) on the other hand, performance is worse than in 2019.
According to the Swiss monitoring report: *2023 actual performance is worse than 2022 (and 2021 or 2020), which is fully in line with the traffic increase at both airports. Traffic increased by 15% in 2023 vs 2022 at Zurich Airport and by 7% at Geneva Airport, but traffic levels remained lower than 2019, however, traffic predictability and traffic volatility were 2 factors playing a key role in generating delay at departure. No particular issues have been identified and no specific measures have been implemented in 2023 in relation to this PI.*

All causes pre-departure delay

The total (all causes) delay in the actual off block time at both Geneva and Zurich increased again in 2023 (LSZH: 2020: 7.55 min/dep.; 2021: 9.66 min/dep.;2022: 15.82 min/dep.; 2023: 19.85 min/dep.; LSGG: 2020: 8.46 min/dep.; 2021: 9.03 min/dep.; 2022: 15.12 min/dep.; 2023: 16.42 min/dep.).
According to the Swiss monitoring report: *With the increase of traffic at airports (+15% at LSZH and +6% at LSGG), the indicator 'average time of all cause departure delay per flight' deteriorated in 2023 compared with 2022. At ANSP level, we are not in a position to explain all delays reasons, and more particularly the non-ATFM delays.*

5 COST-EFFIENCY - SWITZERLAND

5.1 PRB monitoring

• The en route 2023 actual unit cost of Switzerland was 114.13 €2017, +23% higher than the determined unit cost (93.10 €2017). The terminal 2023 actual unit cost was 393.76 €2017, +15% higher than the determined unit cost (343.36 €2017).

• The en route 2023 actual service units (1.6M) were -5.6% lower than the determined service units (1.7M).

• In 2023, the en route actual total costs were higher (+25 M€2017, or +16%) than determined. The difference is driven by Skyguide's other operating costs (+11 M€2017, or +32%), where the NSA explained that it is due to higher purchased services and products as a result of increased technical incidents, as well as additional costs to correct compliance issues in many areas (Technical but also buildings/infrastructures). Additionally, an increase of +12 M€2017 relates to the impact of the capitalisation rules, which was included as a negative exceptional item in the determined costs (so as to be excluded from the amounts charged to airspace users), but has not been deducted from the actual costs, as it is reported as being actually incurred.

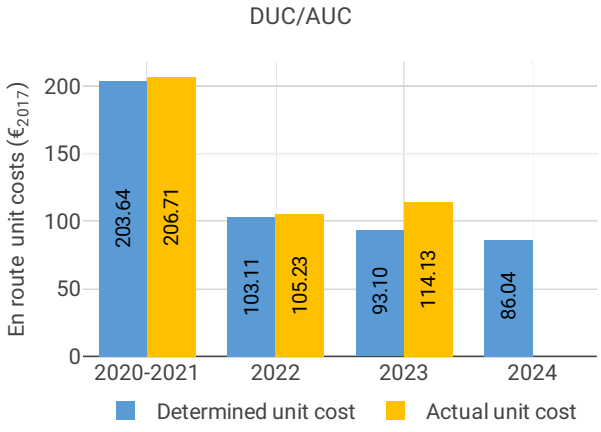
• Skyguide spent 44 M€2017 in 2023 related to costs of investments for both en route and terminal charging zones, +3.2% more than determined (42 M€2017).

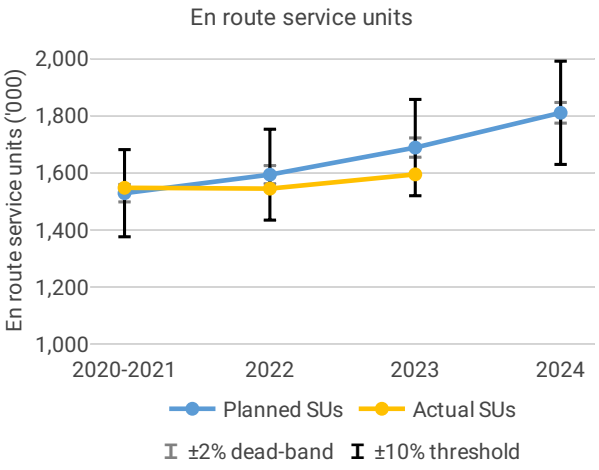
• The en route actual unit cost incurred by users in 2023 was 116.29€ (+7.1% above the 2023 DUC), while the terminal actual unit cost incurred by users was 412.14€ (+2.9% above the 2023 DUC).

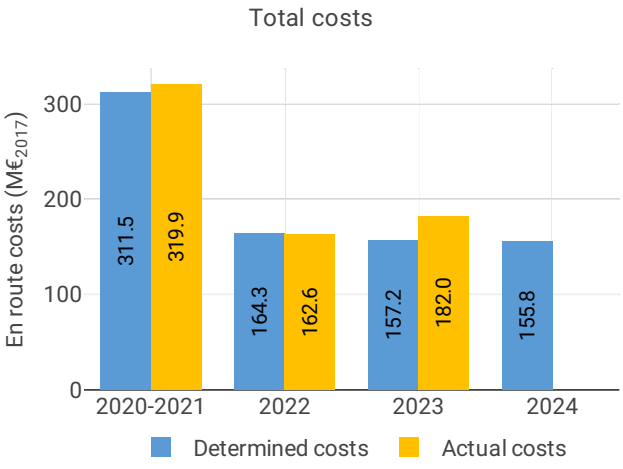
• The en route regulatory result for Skyguide amounted to -31 M€, or -19% of the 2023 revenue.

5.2 En route charging zone

5.2.1 Unit cost (KPI#1)

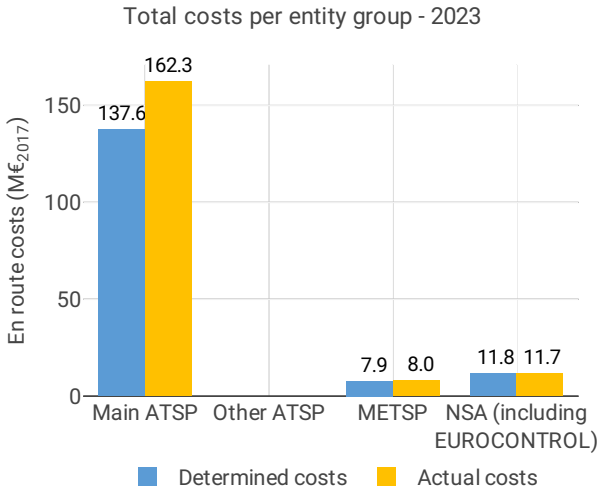


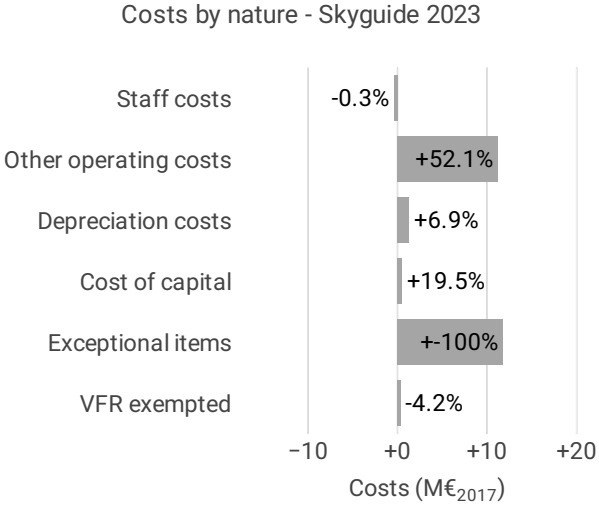




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	324	168	192	NA
Determined costs	315	166	160	160
Difference costs	9	2	32	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	0.3%	0.8%	0.9%
Determined inflation index	NA	101.7	102.5	103.4
Actual inflation rate	NA	2.7%	2.3%	NA
Actual inflation index	NA	104.6	107	NA
Difference inflation index (p.p.)	NA	+2.9	+4.5	NA





Focus on unit cost

AUC vs. DUC

In 2023, the en route AUC was +22.6% (or +23.37 CHF2017, +21.03 €2017) higher than the planned DUC. This results from the combination of significantly higher than planned en route costs in real terms (+15.7%, or +27.5 MCHF2017, +24.8 M€2017) and significantly lower than planned TSUs (-5.6%).

En route service units

The difference between actual and planned TSUs (-5.6%) falls outside the ±2% dead band, but does not exceed the ±10% threshold. The resulting loss of revenue is therefore shared between the ANSP and the airspace users .

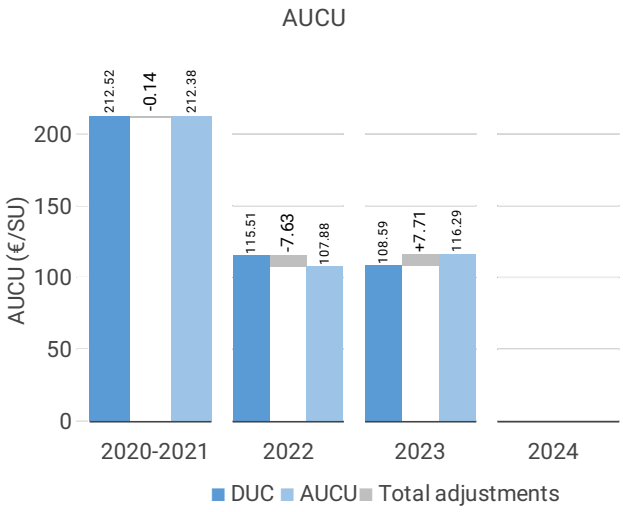
En route costs by entity

Actual real en route costs are +15.7% (+24.8 M€2017) higher than planned. This is the result of higher costs for the main ANSP, Skyguide (+18.0%, or +24.8 M€2017) and the MET service provider (+1.3%, or +0.1 M€2017), while the NSA/EUROCONTROL costs are lower (-1.0%, or -0.1 M€2017) than planned.

En route costs for the main ANSP at charging zone level

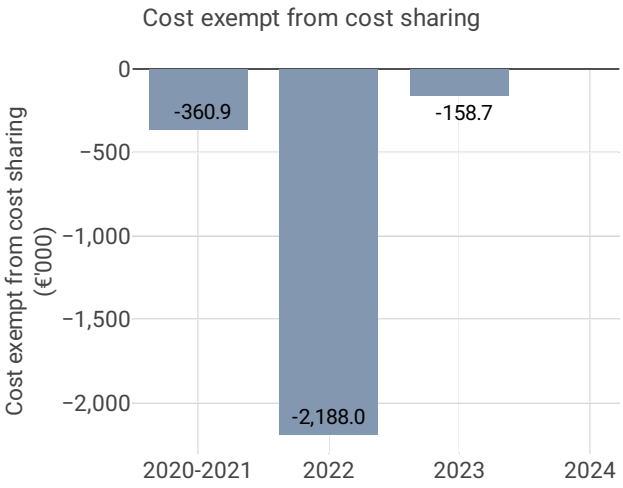
Significantly higher than planned en route costs in real terms for Skyguide in 2023 (+18.0%, or +24.8 M€2017). However, the differences by nature of costs are distorted by two factors:
a) The overall reported costs in each cost item are netted by the financing of the services provided by Skyguide outside the Swiss FIR;
b) Skyguide's costs include significant amounts linked to the additional costs caused by the change in the capitalisation rule in 2023 (+11.8 M€2017). However, in order for this amount not to be billed to airspace users, it has also been reported as negative exceptional item in the determined costs, but not in the actual costs (-100% of negative exceptional costs, or +11.8 M€2017). Other desviations result from:
- Slightly lower staff costs (-0.3%);
- Significantly higher other operating costs (+52.1%), due to higher purchased services and products than planned, primarily due to Skyguide's response to a 22% increase in technical incidents over the last three years.
- Significantly higher depreciation (+6.9%);
- Significantly higher cost of capital (+19.5%).

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



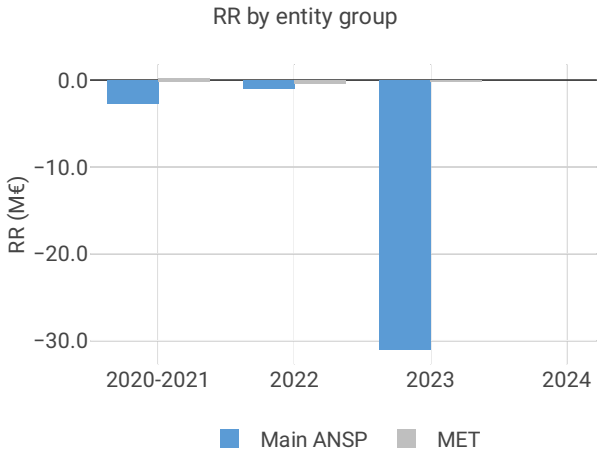
AUCU components (€/SU) – 2023

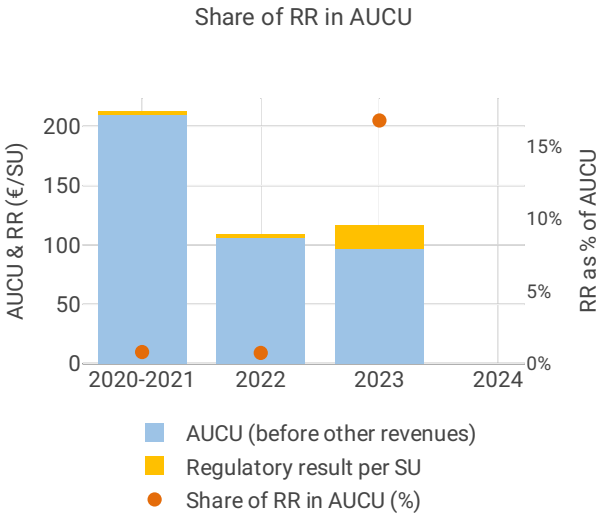
Components of the AUCU in 2023	€/SU
DUC	**108.59**
Inflation adjustment	3.98
Cost exempt from cost-sharing	-0.10
Traffic risk sharing adjustment	2.53
Traffic adj. (costs not TRS)	0.79
Finantial incentives	0.50
Modulation of charges	0.00
Cross-financing	0.00
Other revenues	0.00
Application of lower unit rate	0.00
Total adjustments	7.71
AUCU	**116.29**
AUCU vs. DUC	**+7.1%**

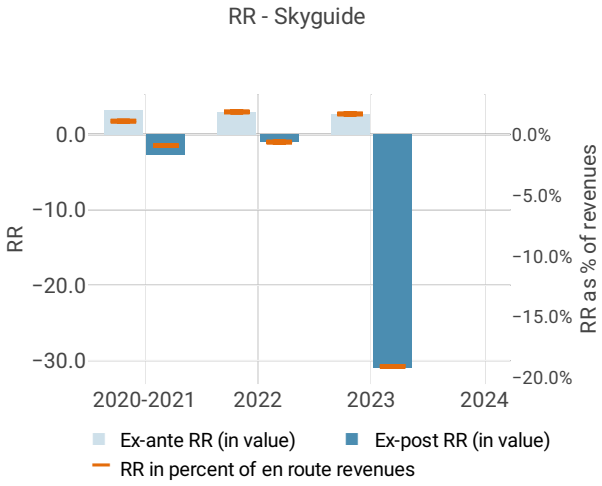


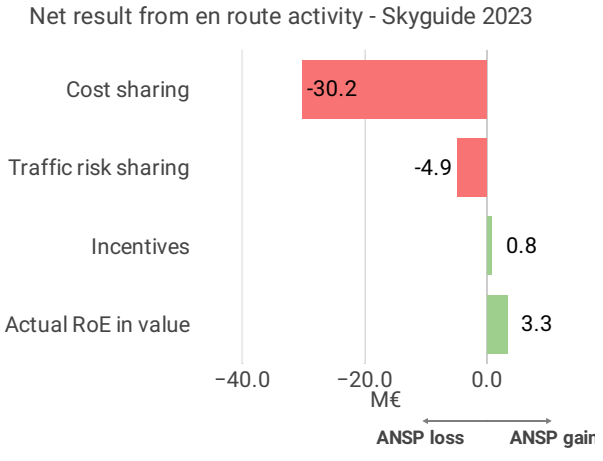
Cost exempt from cost sharing by item - 2023	€'000	€/SU
New and existing investments	-25.7	-0.02
Competent authorities and qualified entities costs	-0.5	0.00
Eurocontrol costs	-132.5	-0.08
Pension costs	0.0	0.00
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**-158.7**	**-0.10**

5.2.3 Regulatory result (RR)









Focus on regulatory result

Skyguide net gain on activity in the Switzerland en route charging zone in the year 2023

Skyguide reported a net loss of -33.3 MCHF, as a combination of a loss of -29.3 MCHF arising from the cost sharing mechanism, with a loss of -4.8 MCHF arising from the traffic risk sharing mechanism and a gain of +0.8 MCHF relating to financial incentives.

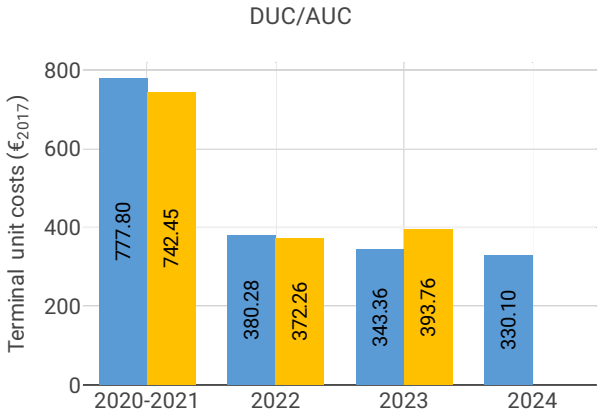
Skyguide overall regulatory results (RR) for the en route activity

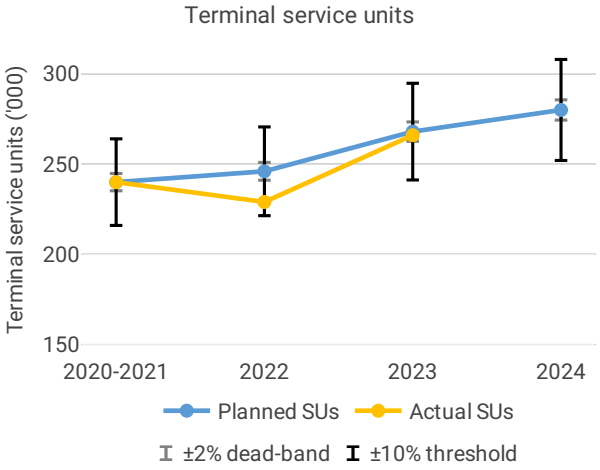
Ex-post, the overall RR taking into account the net loss from the en route activity mentioned above (-33.3 MCHF) and the actual RoE (+3.2 MCHF) amounts to -30.1 MCHF (-19.1% of the en route revenues). The resulting ex-post rate of return on equity is -54.1%.

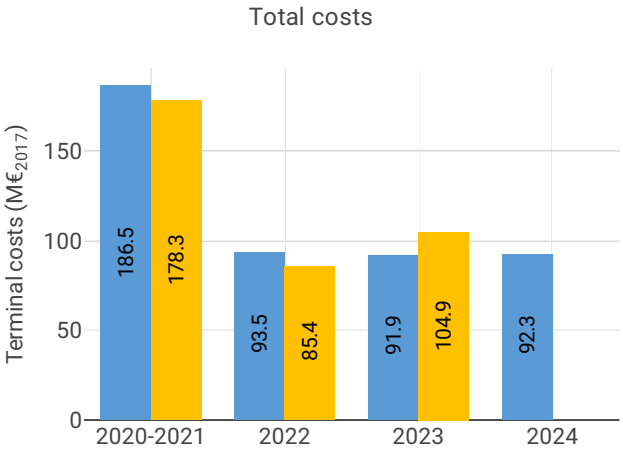
Note 1: Ex-post RR does not take into account the application of lower unit rates as per Art. 29.6 in 2022 (loss in revenues for Skyguide corresponds to -5.3 MCHF).

5.3 Terminal charging zone

5.3.1 Unit cost (KPI#1)

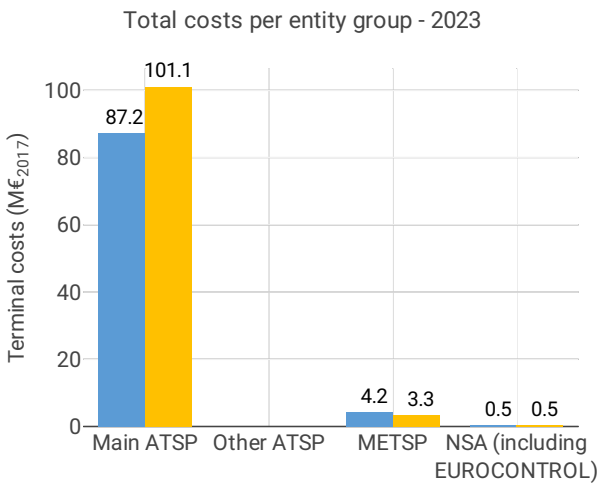


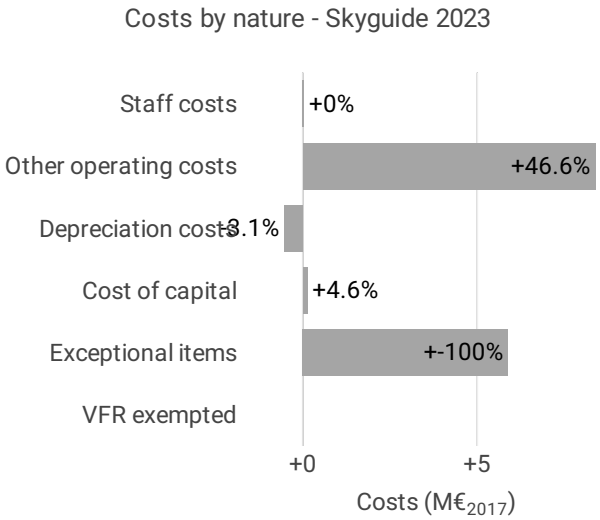




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	180	88	111	NA
Determined costs	188	95	94	95
Difference costs	-8	-6	17	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	0.3%	0.8%	0.9%
Determined inflation index	NA	101.7	102.5	103.4
Actual inflation rate	NA	2.7%	2.3%	NA
Actual inflation index	NA	104.6	107	NA
Difference inflation index (p.p.)	NA	+2.9	+4.5	NA





Focus on unit cost

AUC vs. DUC

In 2023, the terminal AUC was +14.7% (or +56 CHF2017, +50.4 €2017) higher than the planned DUC. This results from the combination of significantly higher than planned terminal costs in real terms (+14.1%, or +14.4 MCHF2017, +13.0 M€2017) and slightly lower than planned TNSUs (-0.5%).

Terminal service units

The difference between actual and planned TNSUs (-0.5%) falls inside the ±2% dead band. Hence loss of terminal revenues is borne by the ANSPs .

Terminal costs by entity

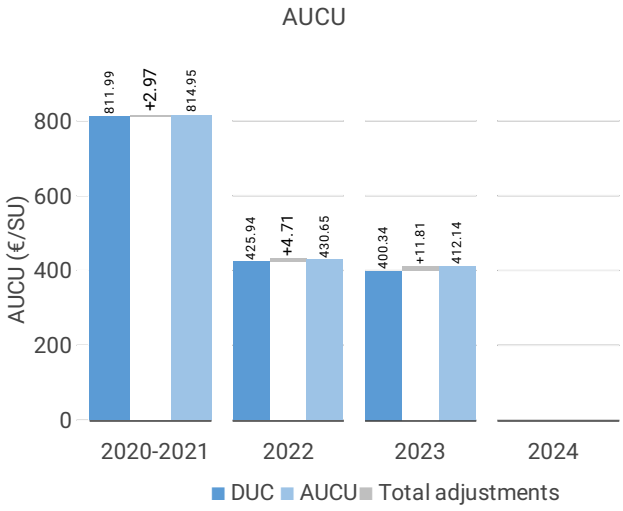
Actual real terminal costs are +14.1% (+13.0 M€2017) higher than planned. This is the result of higher costs for the main ANSP, Skyguide (+15.9%, or +13.9 M€2017) and lower costs for the MET service provider (-21.3%, or -0.9 M€2017).

Terminal costs for the main ANSP at charging zone level

Significantly higher than planned terminal costs in real terms for Skyguide in 2023 (+15.9%, or +13.9 M€2017). However, the differences by nature of costs are distorted by the fact that the Skyguide's costs include significant amounts linked to the additional costs caused by the change in the capitalisation rule in 2023 (+5.9 M€2017). However, in order for this amount not to be billed to airspace users, it has also been reported as negative exceptional item in the determined costs, but not in the actual costs (-100% of negative exceptional costs, or +5.9 M€2017). Other deviations result from:

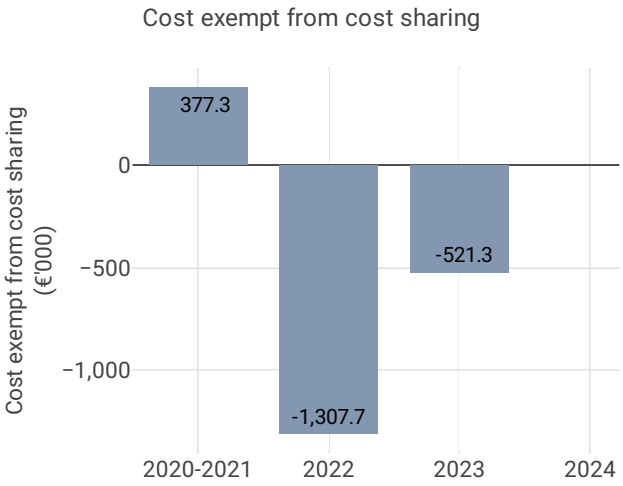
- Significantly higher other operating costs (+46.6%),due to higher purchased services and products than planned, primarily due to Skyguide's response to a 22% increase in technical incidents over the last three years. In the short term, Skyguide increased spending to enhance technical systems. Additionally, Skyguide faces compliance issues and substantial backlog in various areas, including technical systems and infrastructure, necessitating additional costs;
- Lower depreciation (-3.1%); and,
- Higher cost of capital (+4.6%), mainly due to a higher fixed asset base and equity ratio;

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



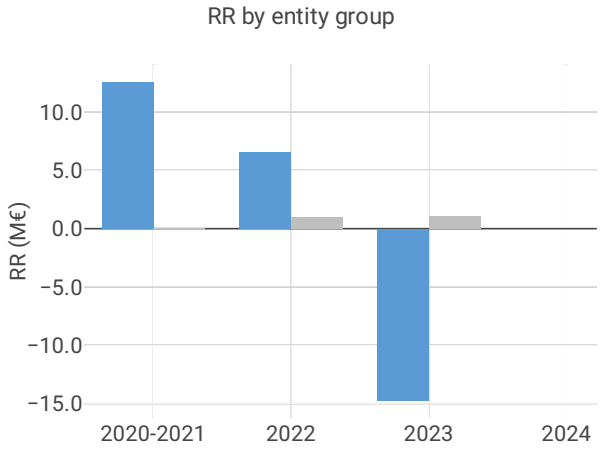
AUCU components (€/SU) – 2023

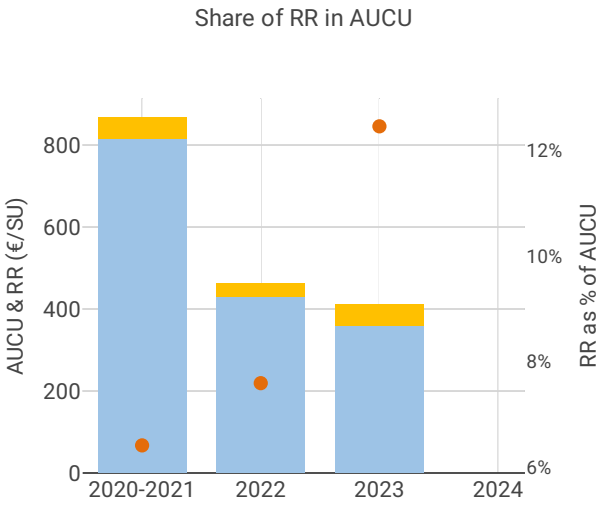
Components of the AUCU in 2023	€/SU
DUC	**400.34**
Inflation adjustment	13.66
Cost exempt from cost-sharing	-1.96
Traffic risk sharing adjustment	0.00
Traffic adj. (costs not TRS)	0.10
Finantial incentives	0.00
Modulation of charges	0.00
Cross-financing	0.00
Other revenues	0.00
Application of lower unit rate	0.00
Total adjustments	11.81
AUCU	**412.14**
AUCU vs. DUC	**+2.9%**

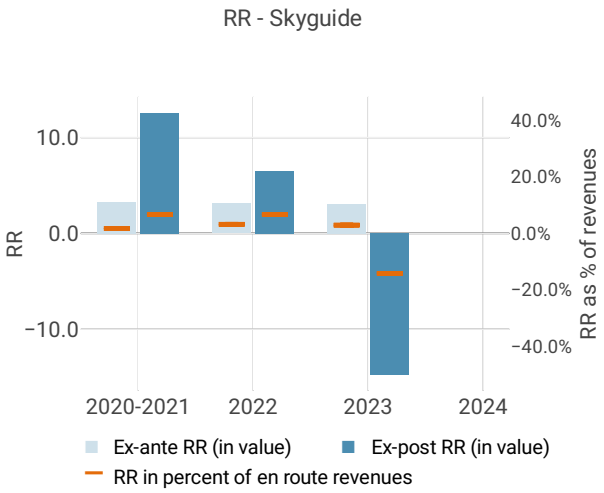


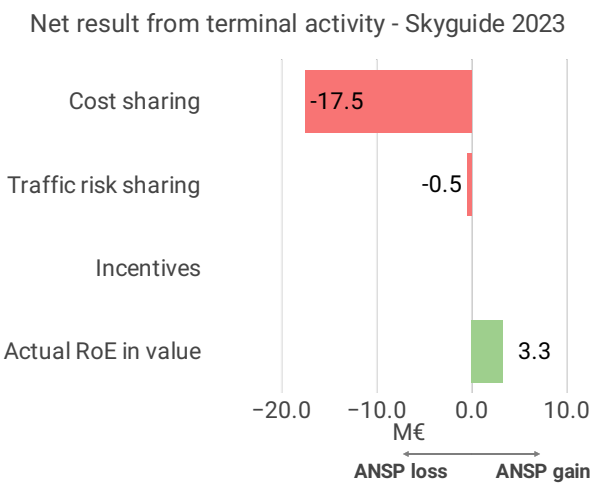
Cost exempt from cost sharing by item - 2023	€'000	€/SU
New and existing investments	-521.3	-1.96
Competent authorities and qualified entities costs	0.0	0.00
Eurocontrol costs	0.0	0.00
Pension costs	0.0	0.00
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**-521.3**	**-1.96**

5.3.3 Regulatory result (RR)









Focus on regulatory result

Skyguide net gain on activity in the Switzerland terminal charging zone in the year 2023

Skyguide reported a net loss of -17.5 MCHF, as a combination of a loss of -17.0 MCHF arising from the cost sharing mechanism, with a loss of -0.5 MCHF arising from the traffic risk sharing mechanism.

Skyguide overall regulatory results (RR) for the terminal activity

Ex-post, the overall RR taking into account the net loss from the terminal activity mentioned above (-17.5 MCHF) and the actual RoE (+3.2 MCHF) amounts to -14.3 MCHF (-14.1% of the terminal revenues). The resulting ex-post rate of return on equity is -26.4%.