



Performance Review Body Monitoring Report

Switzerland - 2022

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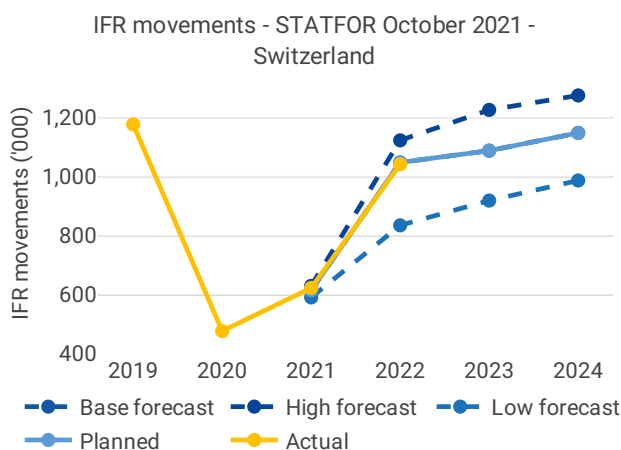
1 OVERVIEW

1.1 Contextual information

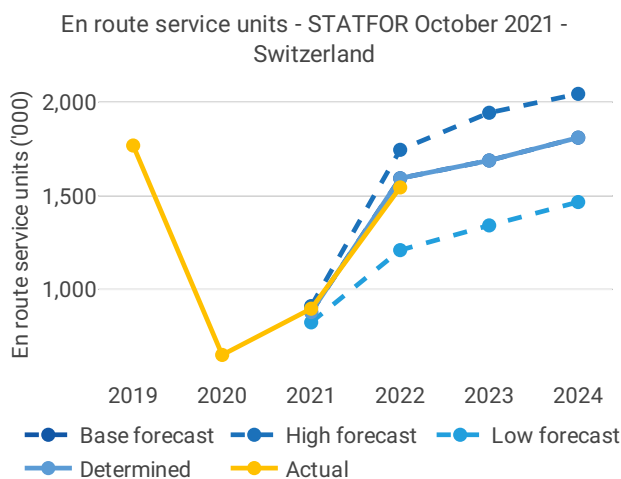
National performance plan adopted following Commission Decision (EU) 2023/178 of 14 December 2022

List of ACCs 2 Geneva ACC Zurich ACC	Exchange rate (1 EUR=) 2017: 1.11124 CHF 2022: 1.00492 CHF	Main ANSP • Skyguide
No of airports in the scope of the performance plan: • ≥80'K 2 • <80'K 0	Share of Union-wide: • traffic (TSUs) 2022 1.4% • en route costs 2022 2.7% Share en route / terminal costs 2022 66% / 34% En route charging zone(s) Switzerland Terminal charging zone(s) Switzerland	Other ANSPs — MET Providers • Office Fédéral de la Météorologie et de Climatologie MétéoSuisse

1.2 Traffic (En route traffic zone)



- Switzerland recorded 1,042K actual IFR movements in 2022, +67% compared to 2021 (623K).
- Actual 2022 IFR movements were -0.6% below the plan (1,048K).
- Actual 2022 IFR movements represent 89% of the actual 2019 level (1,177K).



- Switzerland recorded 1,545K actual en route service units in 2022, +72% compared to 2021 (897K).
- Actual 2022 service units were -3.1% below the plan (1,594K).
- Actual 2022 service units represent 87% of the actual 2019 level (1,769K).

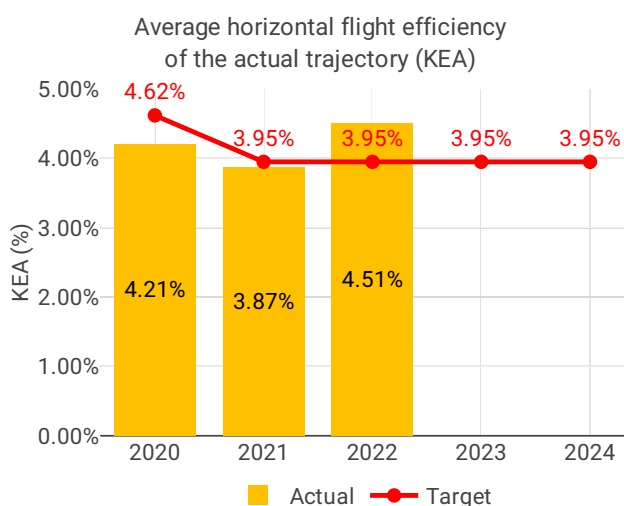
1.3 Safety (Main ANSP)



- Skyguide achieved the RP3 EoSM targets for all management objectives, except for safety risk management, which is in line with its planned maturity level. In 2022, the NSA reviewed Skyguide's safety management function and concluded that the ANSP should achieve all the EoSM targets before the end of RP3. Skyguide implemented specific measures in all safety management areas to maintain safety performance.

- In 2022, Switzerland recorded a lower rate of runway incursions, and marginally higher rate of separation minima infringements despite significant traffic increase.

1.4 Environment (Member State)



- Switzerland achieved a KEA performance of 4.51% compared to its target of 3.95% and did not contribute positively towards achieving the Union-wide target. KEA increased by 0.64 p.p. compared to 2021.

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

- Both SCR and KEP worsened in 2022.

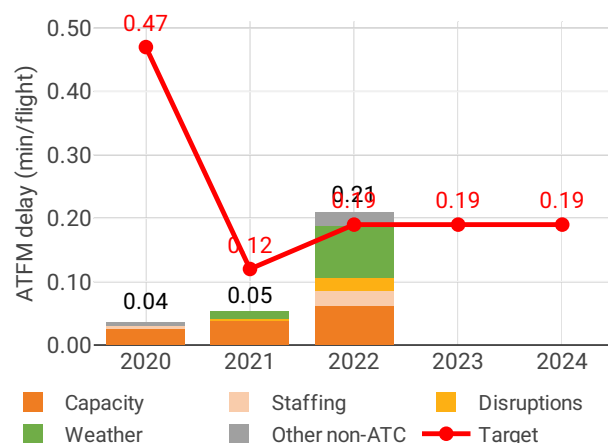
- The share of CDO flights decreased by 9.84% compared to 2021.

- During 2022, additional time in terminal airspace increased from 1.14 to 1.64 min/flight, while additional taxi out time increased from 1.84 to 2.22

min/flight.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups

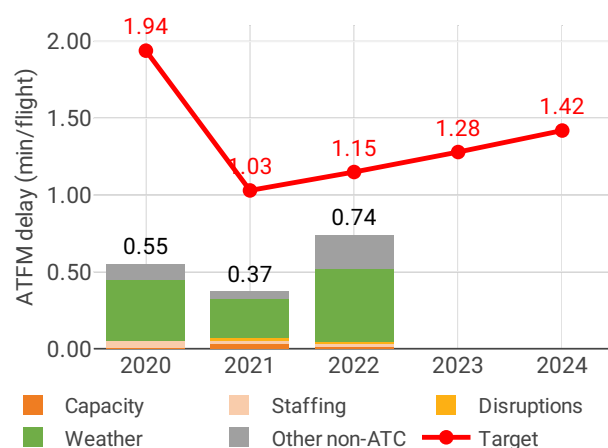


- Switzerland registered 0.34 minutes of average en route ATFM delay per flight during 2022, which has been adjusted to 0.21 during the post-ops adjustment process, thus not achieving the local target value of 0.19.

- The average number of IFR movements was 11% below 2019 levels in Switzerland in 2022.

- A decrease in the number of ATCOs in OPS is planned in both ACCs by the end of RP3. The actual value remained lower than the 2022 plan in Geneva ACC, while in Zurich ACC the actual value was above the 2022 plan.

Average arrival ATFM delay per flight by delay groups



- Given that ATC capacity appears to be a continuing issue in Switzerland, the planned number of ATCOs in OPS may need to be revised upwards.

- Delays were highest between May and September, mostly driven by adverse weather conditions and ATC Capacity issues.

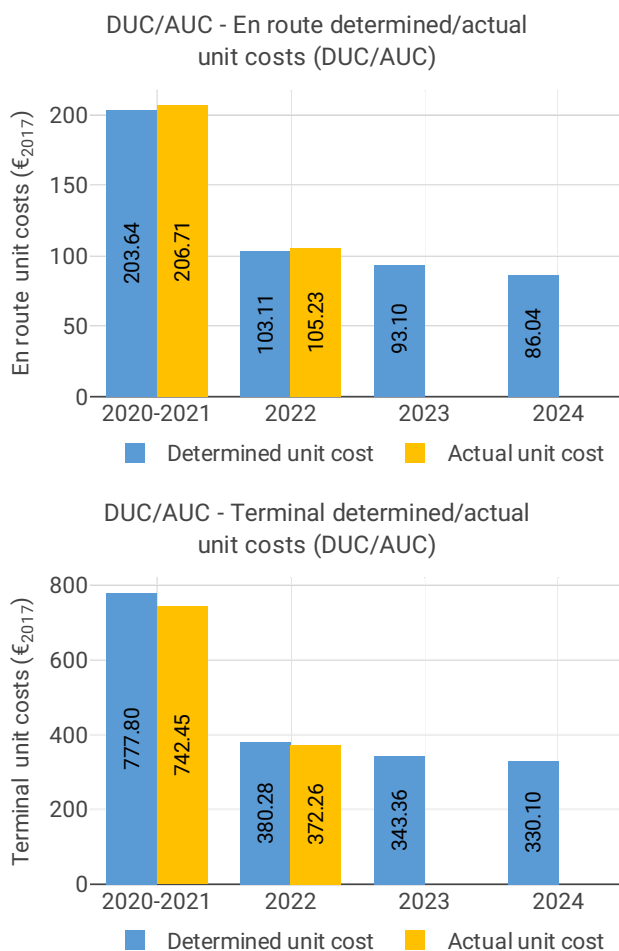
- The share of delayed flights with delays longer than 15 minutes in Switzerland increased by 1.81 p.p. compared to 2021 and was higher than 2019 values.

- The yearly total of sector opening hours in Geneva ACC was 29,162 in 2022, showing a 27% increase compared to 2021. Sector opening hours

are 9.8% below 2019 levels. The yearly total of sector opening hours in Zurich ACC was 31,844 in 2022, showing a 38.4% increase compared to 2021. Sector opening hours are 10.2% below 2019 levels.

- Geneva ACC registered 19.93 IFR movements per one sector opening hour in 2022, being 5.5% below 2019 levels. Zurich ACC registered 22.83 IFR movements per one sector opening hour in 2022, being 1.5% below 2019 levels.

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



- The en route 2022 actual unit cost of Switzerland was 105.23 €2017, +2.1% higher than the determined unit cost (103.11 €2017). The terminal 2022 actual unit cost was 372.26 €2017, -2.1% lower than the determined unit cost (380.28 €2017).

- The en route 2022 actual service units (1,545K) were -3.1% lower than the determined service units (1,594K).

- In 2022, the en route actual total costs were slightly lower (-1.8 M€2017, or -1.1%) than determined. The decrease is driven by reduced staff cost (-17 M€2017, or -14%), the NSA explained that it is due to the reimbursement by pension fund, although partially offset by the provision for ATCO retirement age transition costs.

- However, the variations within cost categories were not transparent as it included the non-invoicing of the financing of the delegated airspace, that was initially determined as negative exceptional items. As mentioned last year, Switzerland should improve clarity in the reporting.

- Skyguide spent 41 M€2017 in 2022 related to costs of investments, -8.7% less than determined (45 M€2017), mainly due to lower net book value of fixed assets than planned.

- The en route actual unit cost incurred by users in 2022 was 107.89€, while the terminal actual unit cost incurred by users was 430.65€.

2 SAFETY - SWITZERLAND

2.1 PRB monitoring

- Skyguide achieved the RP3 EoSM targets for all management objectives, except for safety risk management, which is in line with its planned maturity level. In 2022, the NSA reviewed Skyguide's safety management function and concluded that the ANSP should achieve all the EoSM targets before the end of RP3. Skyguide implemented specific measures in all safety management areas to maintain safety performance.

- In 2022, Switzerland recorded a lower rate of runway incursions, and marginally higher rate of separation minima infringements despite significant traffic increase.

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



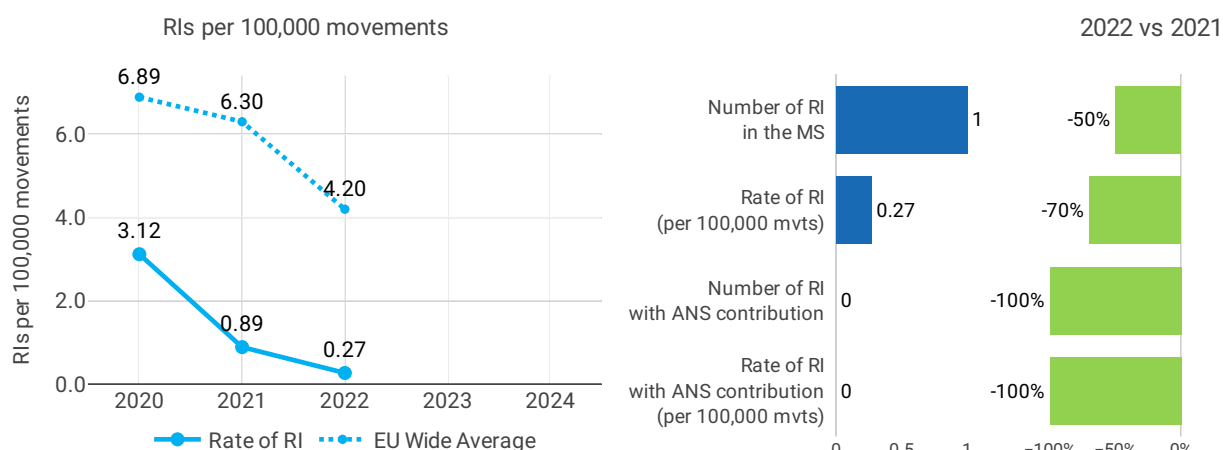
Focus on EoSM

Maturity levels have been maintained compared with 2021. 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 three questions during RP3.

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

2.3 Safety occurrences

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



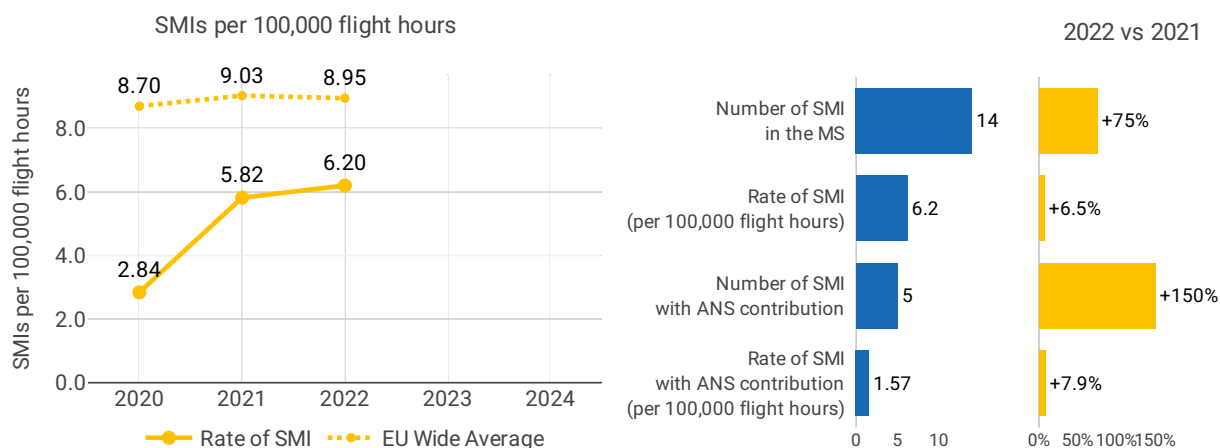
Rate of RIs per 100,000 airport movements - Switzerland

#	Airport name	APT movements	Number of RI	Rate RI per 100,000
1	Zürich	211,125	0	0.00
2	Geneva	163,666	0	0.00

Focus on runway incursions

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

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



Rate of SMI with ANS contribution per 100,000 flight hours

#	ANSP	Flight hours					Number of SMIs				
		2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	SKYGUIDE	150,242	137,471	318,606	NA	NA	0	2	5	NA	NA

#	ANSP	Rate of SMI per 100,000 flight hours					% variation in rate of SMIs				
		2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	SKYGUIDE	0.0	5.8	1.6	NA	NA	NA	0%	-73%	NA	NA

Focus on separation minima

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

2.3.3 Quality of occurrences reporting

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

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

2022	
For RIs	For SMIs
X	✓

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

3 ENVIRONMENT - SWITZERLAND

3.1 PRB monitoring

- Switzerland achieved a KEA performance of 4.51% compared to its target of 3.95% and did not contribute positively towards achieving the Union-wide target. KEA increased by 0.64 p.p. compared to 2021.

- The NSA states that most inefficiencies are due to the network impacted by ATC strikes or flight planning.
- Both SCR and KEP worsened in 2022.
- The share of CDO flights decreased by 9.84% compared to 2021.
- During 2022, additional time in terminal airspace increased from 1.14 to 1.64 min/flight, while additional taxi out time increased from 1.84 to 2.22 min/flight.

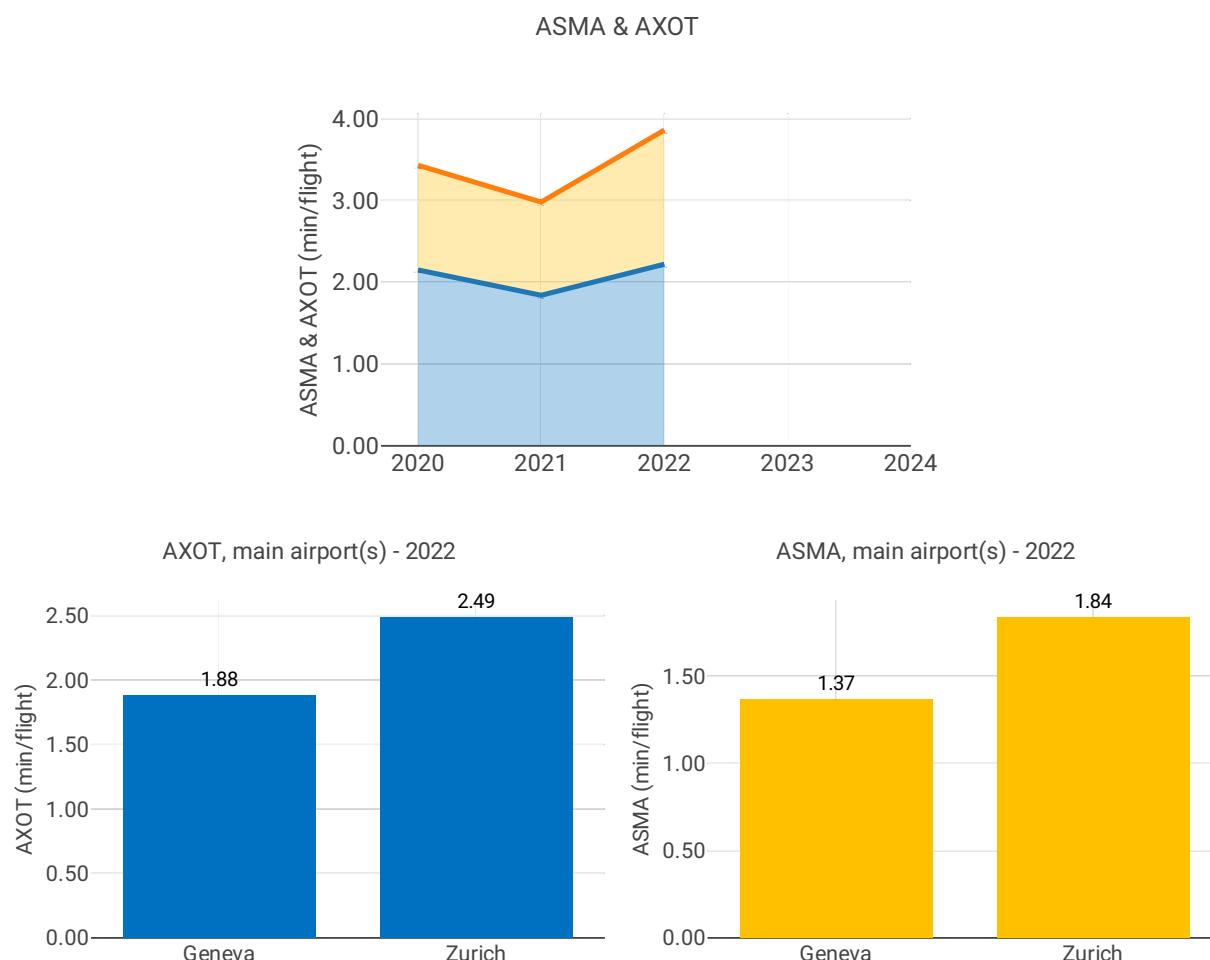
3.2 En route performance

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 2022 but remained under the SES average of 2.52 min/dep.

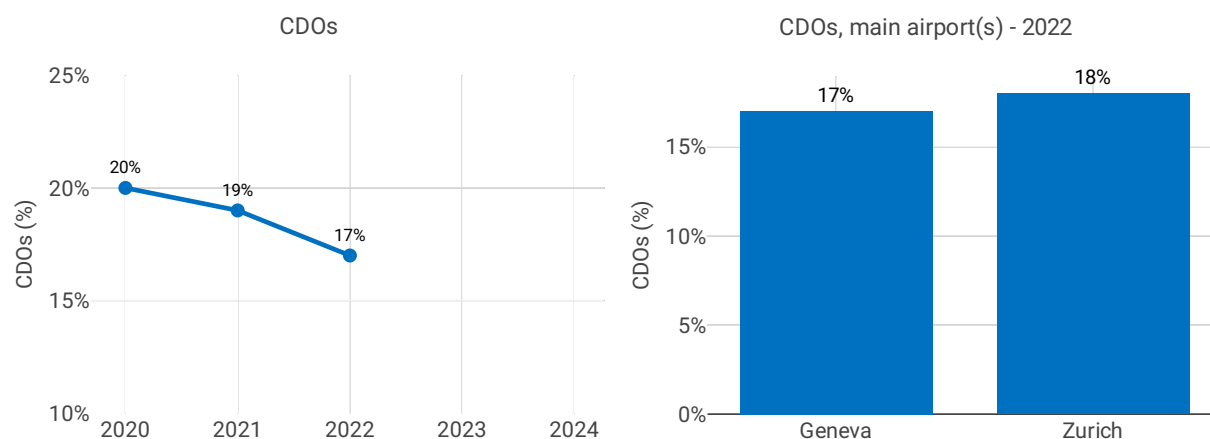
According to the Swiss monitoring report: *Ground efficiency suffered from traffic increased during summer 2022. Performance remains however above the one of 2020 in GVA. Further improvements will stem from CP1 Airport Operation Plan deployment. It should be noted that taxi-out time depends on weather conditions, especially when de-icing is required.*

ASMA

Additional times in the terminal area significantly increased at both airports exceeding the SES average for 2022 of 1.06 min/arr. Zurich (LSZH; 2019: 2.91 min/arr.; 2020: 1.28 min/arr.; 2021: 1.29 min/arr.; 2022: 1.84 min/arr) resulted in the third highest additional time among the SES monitored airports in 2022, 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 decreased in 2022 due to traffic increase. XMAN and Leading Optimised Runway Delivery (LORD) projects should help improving performance. ECTL is developing its indicator to differentiate structural and operational inefficiencies. On this basis, an analysis was performed by ECTL in 2022 for LSZH and discussed with operational experts.*

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



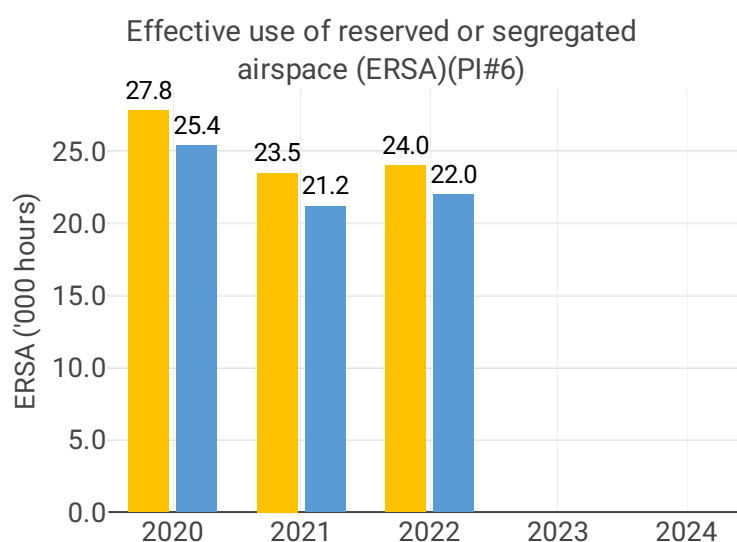
Focus CDOs

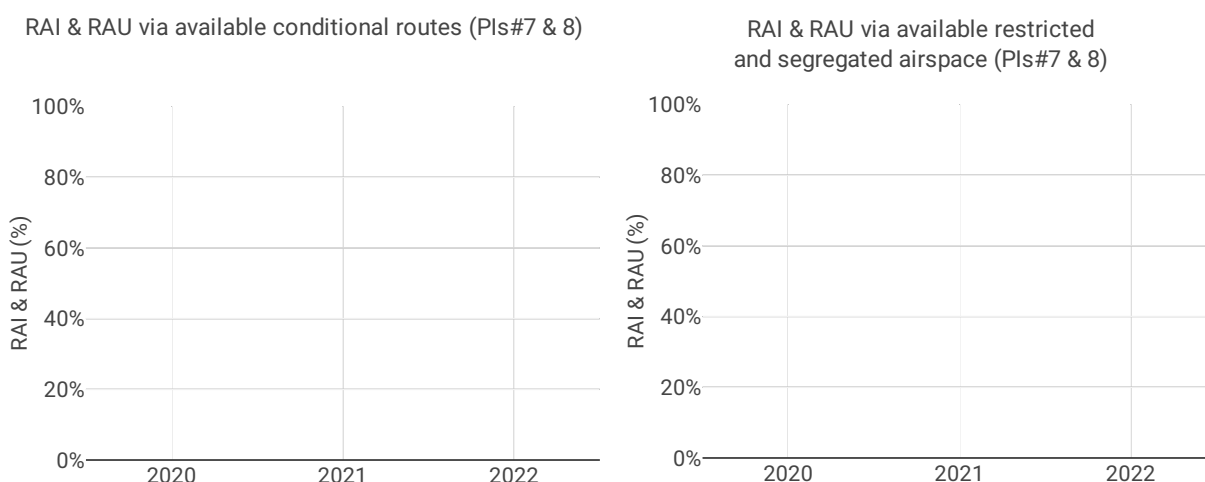
The shares of CDO flights have decreased by 1.6 and 2.1 percentage points for respectively Geneva and Zurich. Both airports have shares of CDO flights which are below the overall RP3 value in 2022 (29.0%). The two airports have a similar monthly evolution of the share of CDO flights with lower monthly values from April to September.

According to the Swiss monitoring report: *Vertical flight efficiency from Top of Descent decreased in 2022 due to traffic increase. CDOs can be flown only when traffic is reduced. Trials were performed with Swiss in 2020 that could only be debriefed in 2022. They show interesting room for improvement. FABEC workshops were organized in 2021 and 2022 on Vertical Flight Efficiency bringing a lot of food for thoughts. Discussions with Swiss are on-going to optimize descent profile. - Skyguide was audited beginning of 2023 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 Name	Airport level														
	Additional taxi-out time (PI#3)					Additional ASMA time (PI#4)					Share of arrivals applying CDO (PI#5)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Geneva	2.06	1.71	1.88	NA	NA	1.27	0.95	1.37	NA	NA	NA	19%	17%	NA	NA
Zurich	2.23	1.93	2.49	NA	NA	1.28	1.29	1.84	NA	NA	NA	20%	18%	NA	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

See remark PI#7 (same as above).

4 CAPACITY - SWITZERLAND

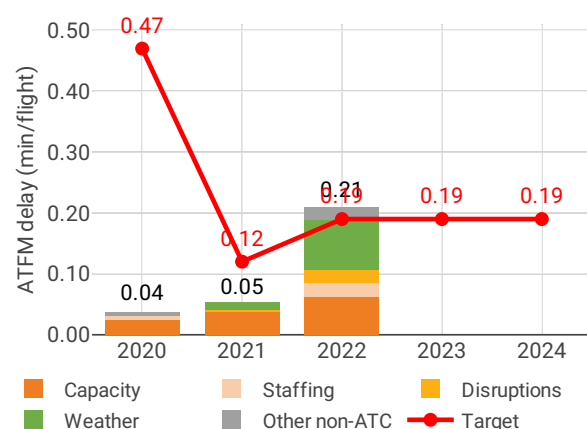
4.1 PRB monitoring

- Switzerland registered 0.34 minutes of average en route ATFM delay per flight during 2022, which has been adjusted to 0.21 during the post-ops adjustment process, thus not achieving the local target value of 0.19.
- The average number of IFR movements was 11% below 2019 levels in Switzerland in 2022.
- A decrease in the number of ATCOs in OPS is planned in both ACCs by the end of RP3. The actual value remained lower than the 2022 plan in Geneva ACC, while in Zurich ACC the actual value was above the 2022 plan.
- Given that ATC capacity appears to be a continuing issue in Switzerland, the planned number of ATCOs in OPS may need to be revised upwards.
- Delays were highest between May and September, mostly driven by adverse weather conditions and ATC Capacity issues.
- The share of delayed flights with delays longer than 15 minutes in Switzerland increased by 1.81 p.p. compared to 2021 and was higher than 2019 values.
- The yearly total of sector opening hours in Geneva ACC was 29,162 in 2022, showing a 27% increase compared to 2021. Sector opening hours are 9.8% below 2019 levels. The yearly total of sector opening hours in Zurich ACC was 31,844 in 2022, showing a 38.4% increase compared to 2021. Sector opening hours are 10.2% below 2019 levels.
- Geneva ACC registered 19.93 IFR movements per one sector opening hour in 2022, being 5.5% below 2019 levels. Zurich ACC registered 22.83 IFR movements per one sector opening hour in 2022, being 1.5% below 2019 levels.

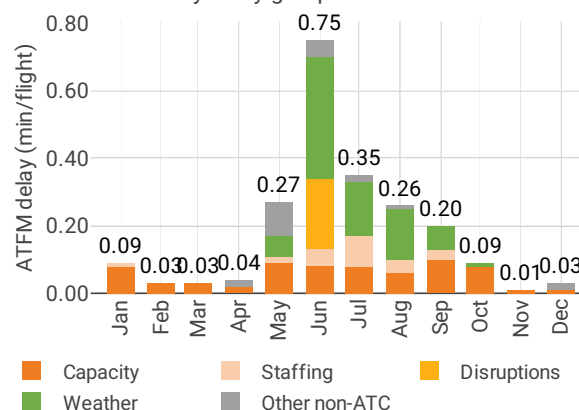
4.2 En route performance

4.2.1 En route ATFM delay (KPI#1)

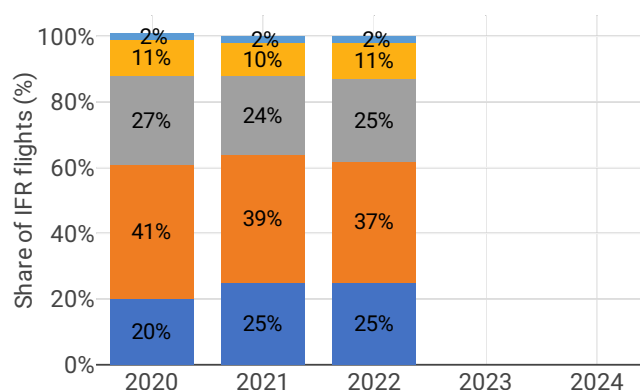
Average en route ATFM delay per flight by delay groups



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



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



Focus on en route ATFM delay

Summary of capacity performance

Switzerland did not achieve the required en route capacity performance in 2022. There were 1 042k flights in the airspace of Switzerland, with 242k minutes of ATFM en route delay attributed to Skyguide after the NM post operations delay attribution process.

There were an additional 111k minutes of en route ATFM delay originating from Skyguide that were re-attributed to DFS (>49k) and DSNA (>61k) via the NM post operations delay attribution process, according to the NMB agreement for eNM/S22 measures, to ameliorate capacity shortfalls in both Karlsruhe UAC and Reims ACC.

NSA's assessment of capacity performance

2022 en route capacity target set in the Swiss National performance plan was just not met for 2022 (total ATFM-Delay per flight : 0.21 min/fl., 0.02 min. above the target). The delay in 2022 was mainly caused by severe adverse weather conditions above the Alps, limited ATC capacity and to a lesser extent, staffing. High uncertainty on traffic recovery over medium term horizon (2-3 months), new traffic patterns and increased volatility had also an aggravating impact during the Summer period.

In 2022, Skyguide just missed its total en-route ATFM delay per flight. The main cause of delays were Weather (45%), ATC-Capacity (32%), Staffing (8%), Equipment (ATC) (7%), Other (6%) and Special Event (1%).

Before applying the post-ops adjustment process, the total en-route ATFM delay per flight reached 0.34 min / flight whereas the CRSTMP En-route ATFM delay per flight reached 0.15 min / flight as shown in the

Capacity Report of the FABEC. After applying the post-ops adjustment process and re-attributing respectively 61 357 min to DSNA and 49 178 min to DFS according to the NM data, skyguide reached 0.21 for the total en-route ATFM delay per flight and 0.11 for the CRSTMP part.

The main cause of delay was weather. As Skyguide is in charge of air traffic control in the centre of the Alps, it is a lot more subject to strong adverse weather conditions than the major part of all the other ANSPs.

As a basis for comparison, the NM includes approximately 15% of delay due to Weather in its delay forecast. The fact that heavy CB situation begins to occur in May until September is obviously an aggravating factor as it happens exactly at the same time as the yearly peak of traffic demand, which has a tremendous impact on delays.

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/PMG (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/PMG, to the FABEC Council for such appropriate measures, after consultation with the AFG/PMG. 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 FPC is also responsible for the management of the Capacity KPA financial incentive schemes. This monitoring process is described in the FABEC FPC States Performance Process description, regularly updated.

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 dashboards which enable to closely monitor the performance evolution.

Capacity planning

A NOP Recovery Plan process was initiated and launched by the Network Manager and its first edition was published on 30 April 2020, as European traffic began a slow recovery from its lowest point of just 2,099 flights across the network on 12 April 2020.

Since then a weekly Rolling NOP, published every Friday has been introduced through which NM coordinates with all partners to ensure capacity is available at ACCs and in the airspace they manage, and on the ground at airports, to meet the expected traffic demand from the airlines on each day of the next six weeks enabling to coordinate all operational stakeholders throughout the pandemic to ensure that network actors can plan their recovery effectively based on predicted traffic levels.

On 6th May 2022, a first version of the new 2022-2026 NOP has been released (still based on the STATFOR forecast published in October 2021 as STATFOR has postponed the publication of its new forecast to October 2022). It included the capacity planning for skyguide with the latest available capacity information and remedial measures for all ACCs concerned by capacity issues.

Skyguide is of course part of this process and contributes to the provision for a consolidated European network view of the evolution of the air traffic, enabling the planning of the service delivered in the recovery phase to match the expected air traffic demand in a safe, efficient and coordinated manner. However, the 10% capacity buffer requested by the NM, the recommendation for zero delay and the continuous optimistic traffic forecast selected have naturally an adverse impact on ANSPs finance.

Skyguide implemented the cross-border airspace restructuring with Reims ACC and Basel APP, improved ATFCM procedures and STAM as well as the CDM procedures for Airspace requests level 2 and 3 (ASM - ATFCM), its optimized sector opening scheme to match the traffic demand, network weather mitigation

measures, the FABEC airspace structure and implemented the FRA CH.

In parallel, Skyguide continued to develop its top priority programme: the Virtual Centre; in addition, Crystal, the traffic and complexity prediction tool is continuously improved.

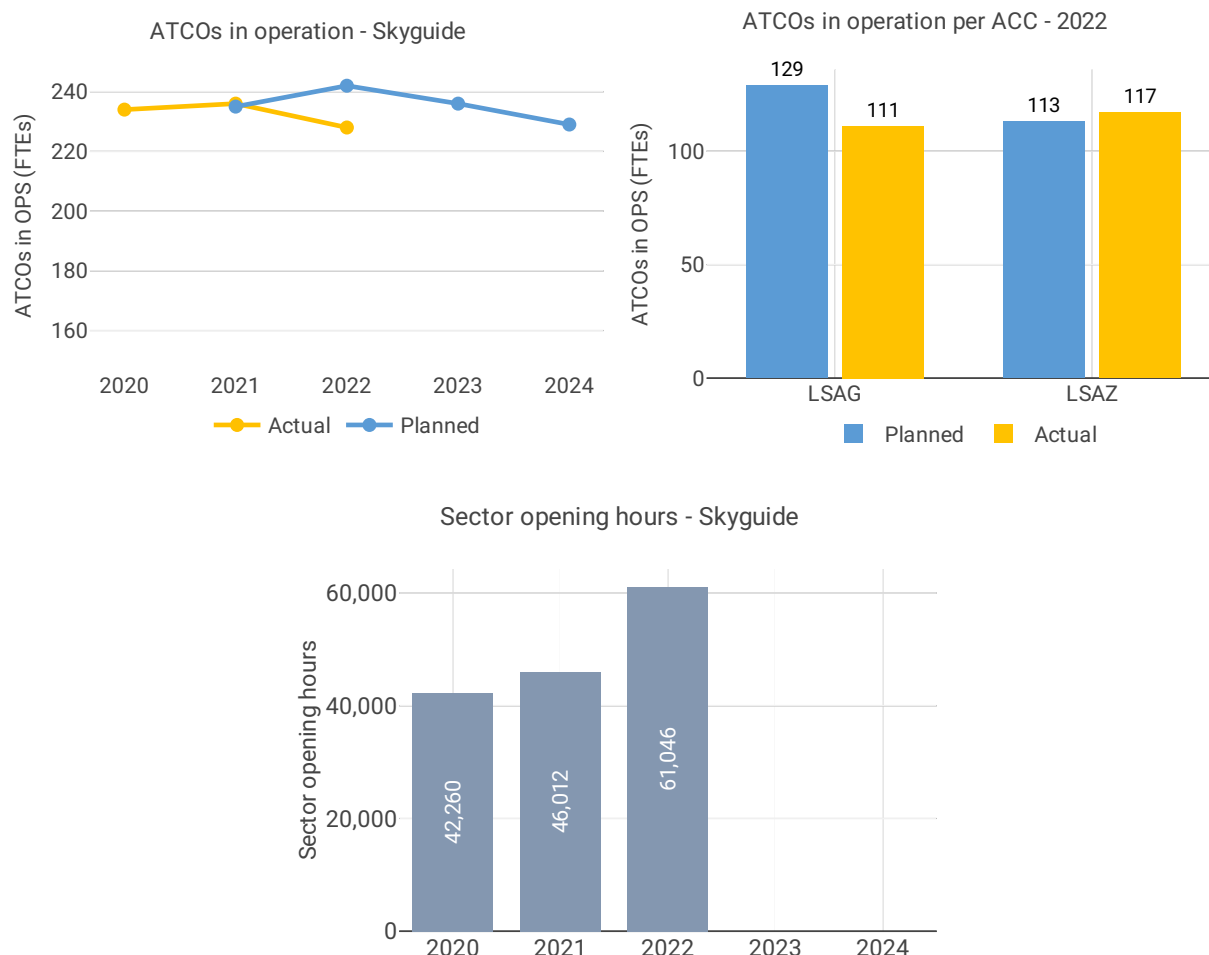
Application of Corrective Measures for Capacity (if applicable)

A CAPAN (Capacity analysis) study has been planned in both ACCs, starting at the end of 2022, results will be available at the end of Summer 2023, and capacity should be increased before Summer 2024.

Short-term ATFCM measures and what-if scenarios: in 2023, Skyguide implemented fully coordinated flow based measures between both centres Geneva and Zurich. It allows to diminish delay avoiding regulations when we observe excess of demand over short-period of time and allows to increase flight efficiency when we have a capacity surplus and we can relieve RAD constraints (offering greener trajectories).

Increase usage of CPDLC: the use of CPDLC is particularly scrutinized, simulations have been led to quantify the possible benefits. Within the course of 2023, analyses will be led to determine to which extent some of the CPDLC performance enhancement impacts could be harvested through an increase of sector capacity. Finally, Skyguide will launch a trial in Summer 2023 with a new tool to detect more precisely the impact of adverse weather conditions on the required temporary decrease of sector capacity.

4.2.2 Other indicators

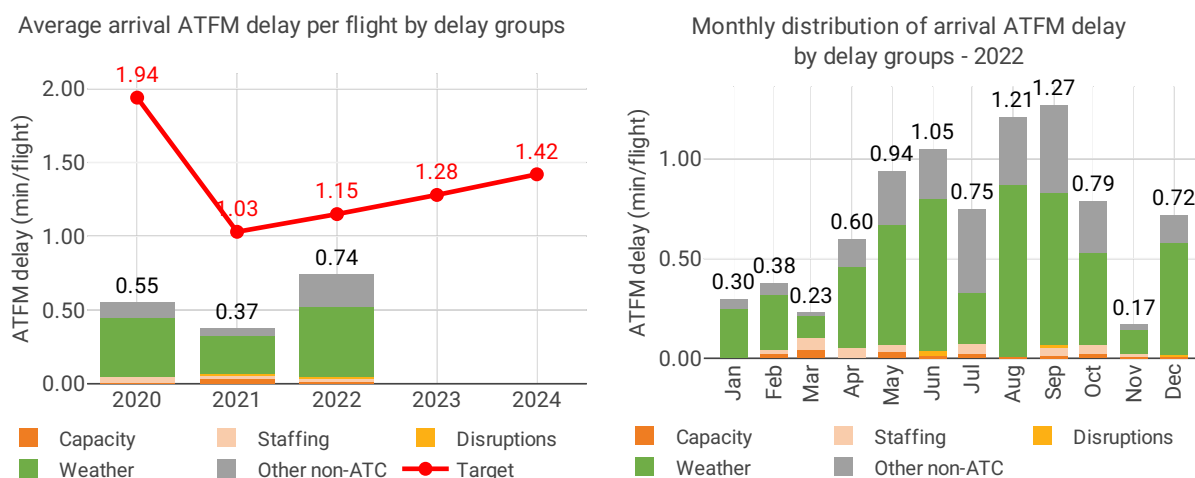


Focus on ATCOs in operations

N/A

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 2022 at these two airports was still 18% lower than in 2019, but recovered 69% with respect to 2021.

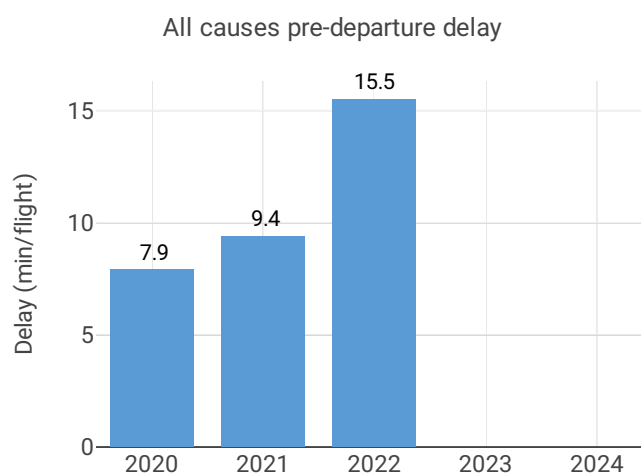
Average arrival ATFM delays in 2022 was 0.74 min/arr, compared to 0.37 min/arr in 2021. ATFM slot adherence has improved (2022: 95.6%; 2021: 94.8%).

ATFM delays at both Swiss increased significantly in 2022. At Zurich (LSZH: 2019: 1.99 min/arr.; 2020: 0.60 min/arr.; 2021: 0.51 min/arr.; 2022: 0.93 min/arr.) 66% of these delays were attributed to weather and 30% to aerodrome capacity issues. At Geneva (LSGG: 2019: 1.04 min/arr.; 2020: 0.49 min/arr.; 2021: 0.19 min/arr.; 2022: 0.48 min/arr.) 42% of the delays were attributed to Aerodrome Capacity issues, 36% to Weather, and 13% to ATC staffing issues.

According to the Swiss monitoring report: *2022 delays were mostly due to non CRSTMP causes.*3. Arrival ATFM Delay – National TargetThe national target on arrival ATFM delay in 2022 was met.

These airports showed adherence above 94% and the national average was 95,6%, a small improvement with respect to the performance in 2021 (94.8%). With regard to the 4.4% of flights that did not adhere, 2.9% was early and 1.5% was late.

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



Airport level

Airport name	Avg arrival ATFM delay (KPI#2)					Slot adherence (PI#1)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Geneva	0.49	0.19	0.48	NA	NA	94.7%	93.1%	94.0%	NA%	NA%
Zurich	0.60	0.51	0.93	NA	NA	94.4%	96.0%	96.7%	NA%	NA%

Airport name	ATC pre departure delay (PI#2)					All causes pre departure delay (PI#3)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Geneva	0.24	0.13	0.32	NA	NA	8.5	9.0	15.1	NA	NA
Zurich	0.48	0.39	0.71	NA	NA	7.5	9.7	15.8	NA	NA

Focus on performance indicators at airport level

ATFM slot adherence

The performance at Zurich has deteriorated (LSZH; 2019: 1.63 min/dep.; 2020: 0.52 min/dep.; 2021: 0.39 min/dep.; 2022: 0.71 min/dep.) but it was still better than in 2019. The improvement of the quality of the data reporting at Geneva in 2022 allowed for the calculation of this indicator, showing also a result slightly better than in 2019 (LSGG: 2019: 0.36 min/dep.; 2022: 0.32 min/dep.)

According to the Swiss monitoring report: *2022 actual performance is worse than 2020 or 2021, which is fully in line with traffic increase at the airport, compared with a very low level of traffic in 2020, and a rather low level in 2021. In 2022, 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 2022 in relation to this PI.*

ATC pre-departure delay

The total (all causes) delay in the actual off block time at both Geneva and Zurich increased again in 2022 (LSZH: 2020: 7.55 min/dep.; 2021: 9.66 min/dep.; 2022: 15.82 min/dep.; LSGG: 2020: 8.46 min/dep.; 2021: 9.03 min/dep.; 2022: 15.12 min/dep.). The highest delays per flight at these airports were observed in Summer and in December.

According to the Swiss monitoring report: *With the increase of traffic at airports, the indicator 'average time of all cause departure delay per flight' deteriorated in 2022 compared with 2021. At ANSP level, we are not in a position to explain all delays reasons, and more particularly the non-ATFM delays.*

All causes pre-departure delay

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

5 COST-EFFICIENCY - SWITZERLAND

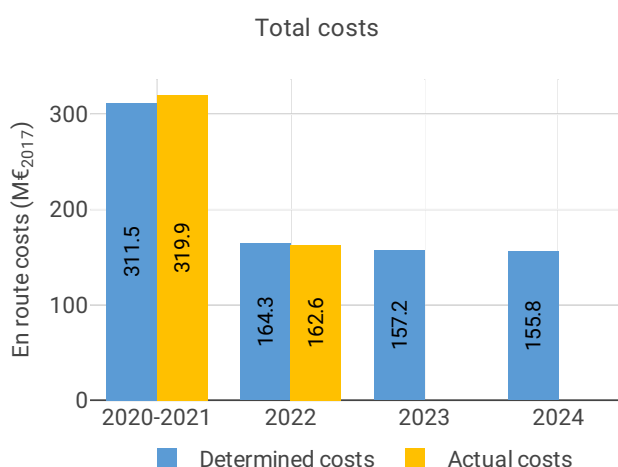
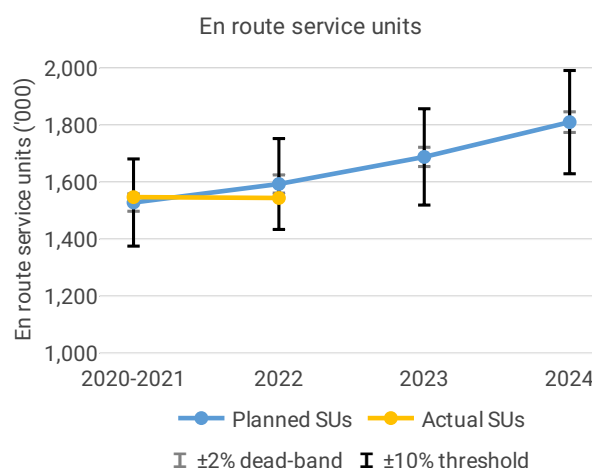
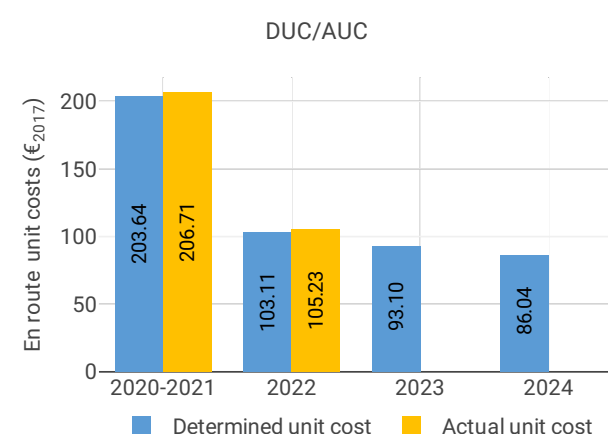
5.1 PRB monitoring

- The en route 2022 actual unit cost of Switzerland was 105.23 €2017, +2.1% higher than the determined unit cost (103.11 €2017). The terminal 2022 actual unit cost was 372.26 €2017, -2.1% lower than the determined unit cost (380.28 €2017).
- The en route 2022 actual service units (1,545K) were -3.1% lower than the determined service units (1,594K).
- In 2022, the en route actual total costs were slightly lower (-1.8 M€2017, or -1.1%) than determined. The decrease is driven by reduced staff cost (-17 M€2017, or -14%), the NSA explained that it is due to the reimbursement by pension fund, although partially offset by the provision for ATCO retirement age transition costs.
- However, the variations within cost categories were not transparent as it included the non-invoicing of the financing of the delegated airspace, that was initially determined as negative exceptional items. As mentioned last year, Switzerland should improve clarity in the reporting.

- Skyguide spent 41 M€2017 in 2022 related to costs of investments, -8.7% less than determined (45 M€2017), mainly due to lower net book value of fixed assets than planned.
- The en route actual unit cost incurred by users in 2022 was 107.89€, while the terminal actual unit cost incurred by users was 430.65€.

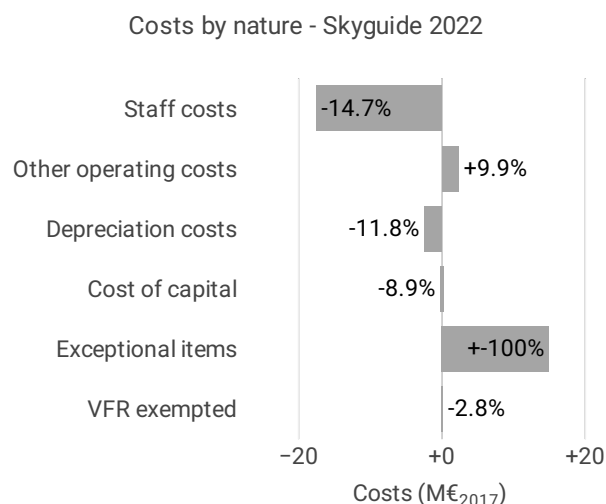
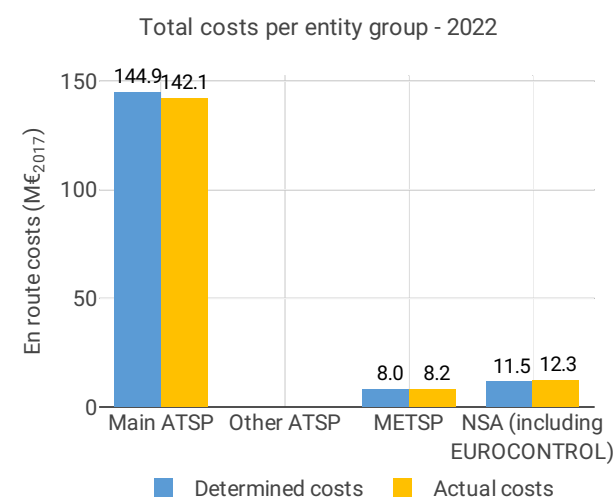
5.2 En route charging zone

5.2.1 Unit cost (KPI#1)



Actual and determined data				
Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	324	168	NA	NA
Determined costs	315	166	160	160
Difference costs	9	2	NA	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%	NA	NA
Actual inflation index	NA	104.6	NA	NA
Difference inflation index (p.p.)	NA	+2.9	NA	NA



Focus on unit cost

AUC vs. DUC

In 2022, the en route AUC was +2.1% (or +2.36 CHF2017, +2.12 €2017) higher than the planned DUC. This results from the combination of lower than planned TSUs (-3.1%) and lower than planned en route costs in real terms (-1.1%, or -2.0 MCHF2017, -1.8 M€2017). It should be noted that actual inflation index in 2022 was +2.9 p.p. higher than planned.

En route service units

The difference between actual and planned TSUs (-3.1%) falls outside the $\pm 2\%$ dead band, but does not exceed the $\pm 10\%$ threshold foreseen in the traffic risk sharing mechanism. The resulting loss of en route revenues is therefore shared between the ANSP and the airspace users, with the ANSP (Skyguide) bearing a loss of -3.3 M€2017.

En route costs by entity

Actual real en route costs are -1.1% (-1.8 M€2017) lower than planned. This is the result of lower costs for the main ANSP, Skyguide (-1.9%, or -2.8 M€2017) and higher costs for the MET service provider (+2.7%, or +0.2 M€2017), and the NSA/EUROCONTROL (+6.8%, or +0.8 M€2017).

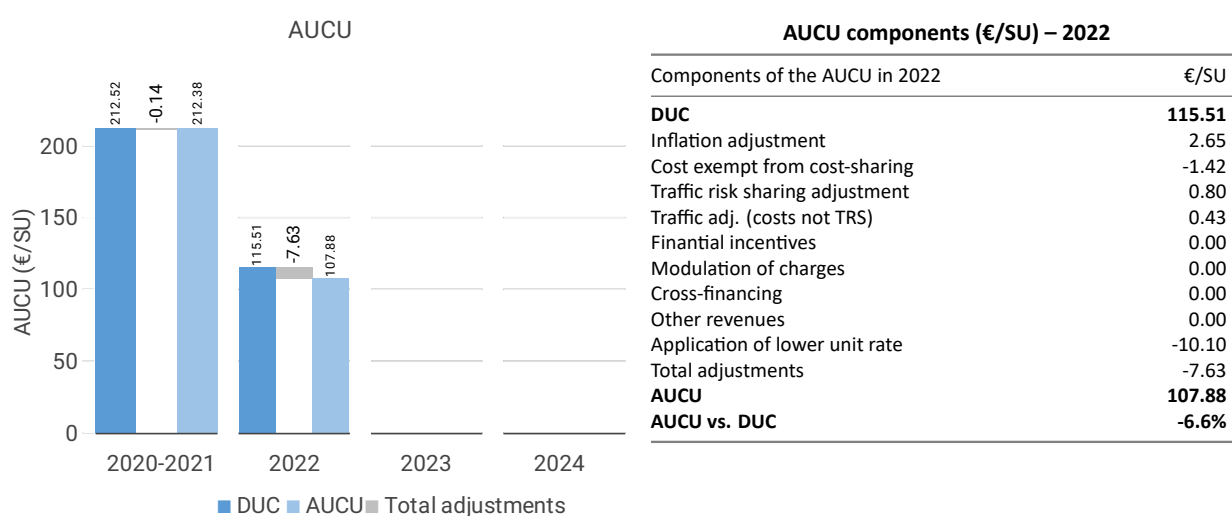
En route costs for the main ANSP at charging zone level

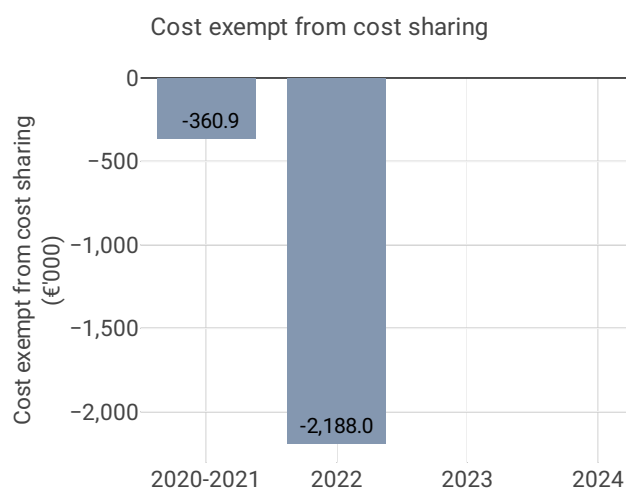
Actual en route costs in real terms are lower than planned for Skyguide in 2022 (-1.9%, or -2.8 M€2017). However, the differences by nature of costs are distorted by two factors:

- The overall reported costs in each cost item are netted by the financing of the services provided by Skyguide outside the Swiss FIR;
- Skyguide's costs include significant amounts linked to the additional costs caused by the change in the capitalisation rule in 2022 (+14.9 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 +14.9 M€2017).

- the significant difference in staff costs (which is overall of -€17.5 M€2017 or -14.7%), can be mainly explained by the evolution of the FTEs and salary assumptions, but it is also due to a reimbursement from the pension fund, although partially offset by the provision for ATCO retirement age transition costs.

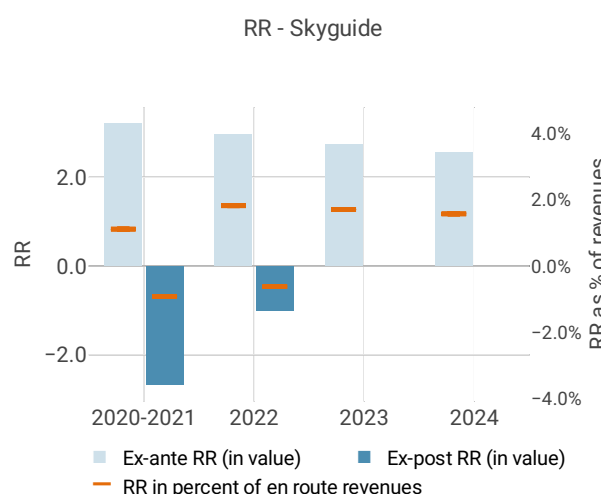
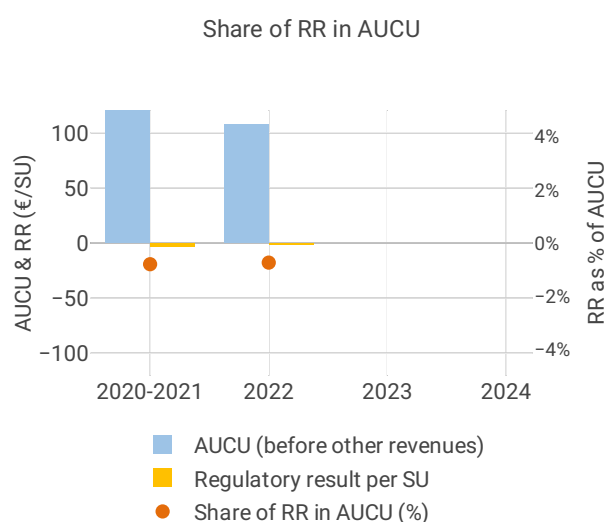
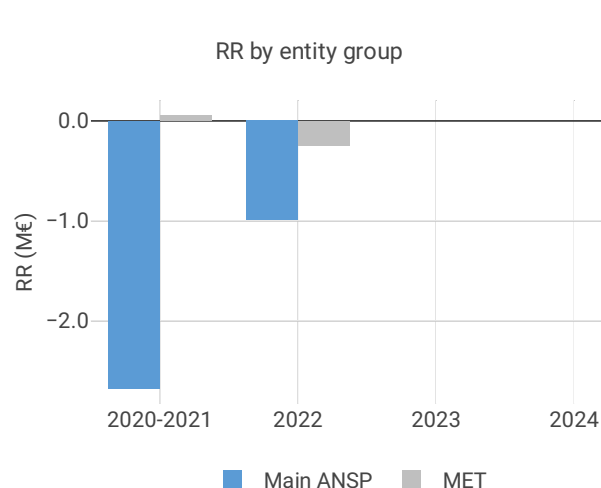
5.2.2 Actual unit cost incurred by the users (AUCU) (PI#1)



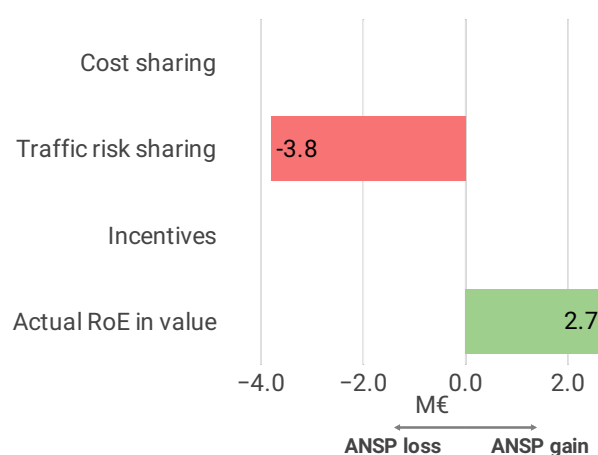


Cost exempt from cost sharing by item - 2022	€'000	€/SU
New and existing investments	-3,055.8	-1.98
Competent authorities and qualified entities costs	0.0	0.00
Eurocontrol costs	867.8	0.56
Pension costs	0.0	0.00
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	-2,188.0	-1.42

5.2.3 Regulatory result (RR)



Net result from en route activity - Skyguide 2022



Focus on regulatory result

Skyguide net gain on activity in the Switzerland en route charging zone in the year 2022

Skyguide reported a net loss of -3.8 MCHF, as a combination of a gain of +0.04 MCHF arising from the cost sharing mechanism, with a loss of -3.8 MCHF arising from the traffic risk sharing mechanism.

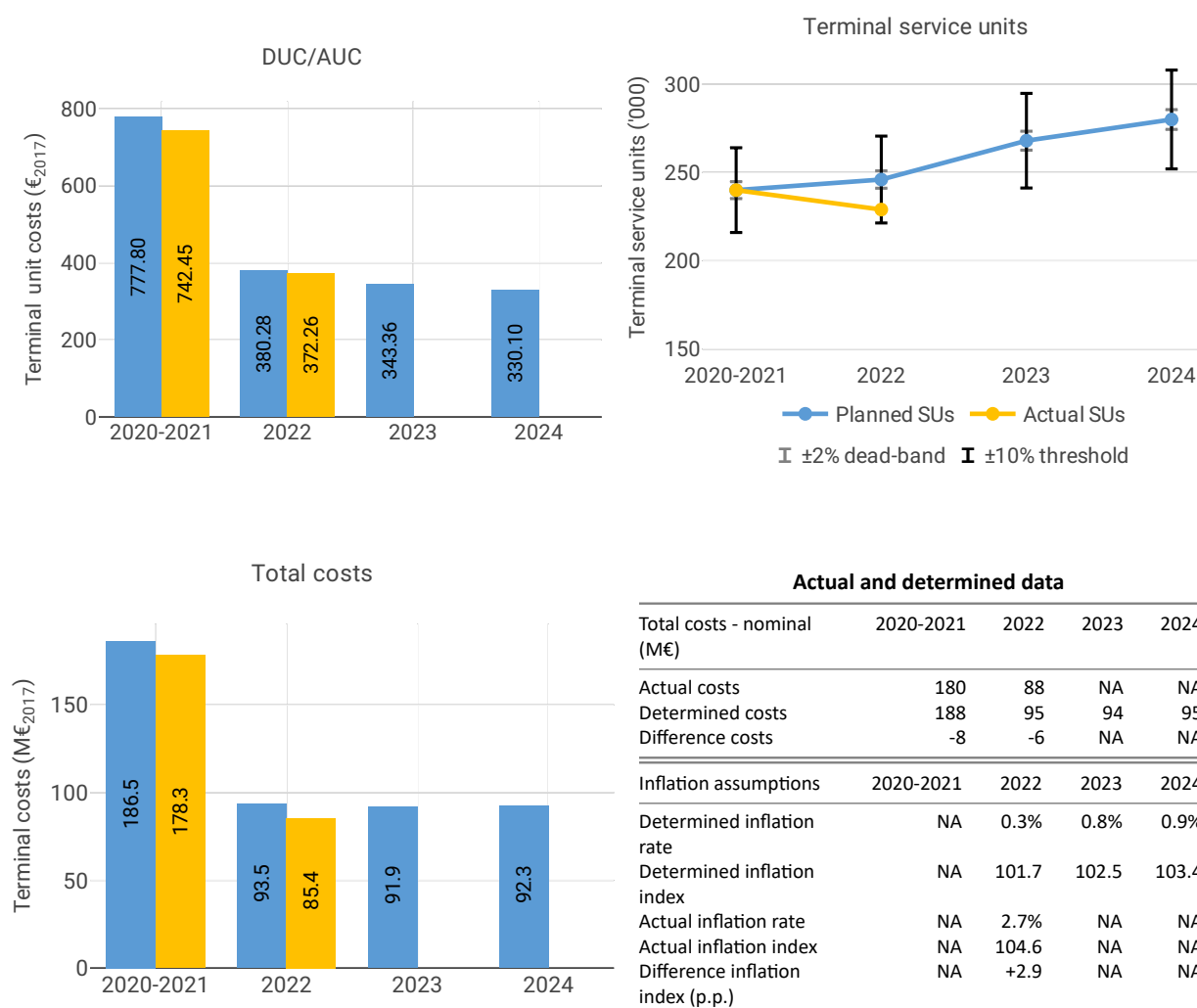
Skyguide overall regulatory results (RR) for the en route activity

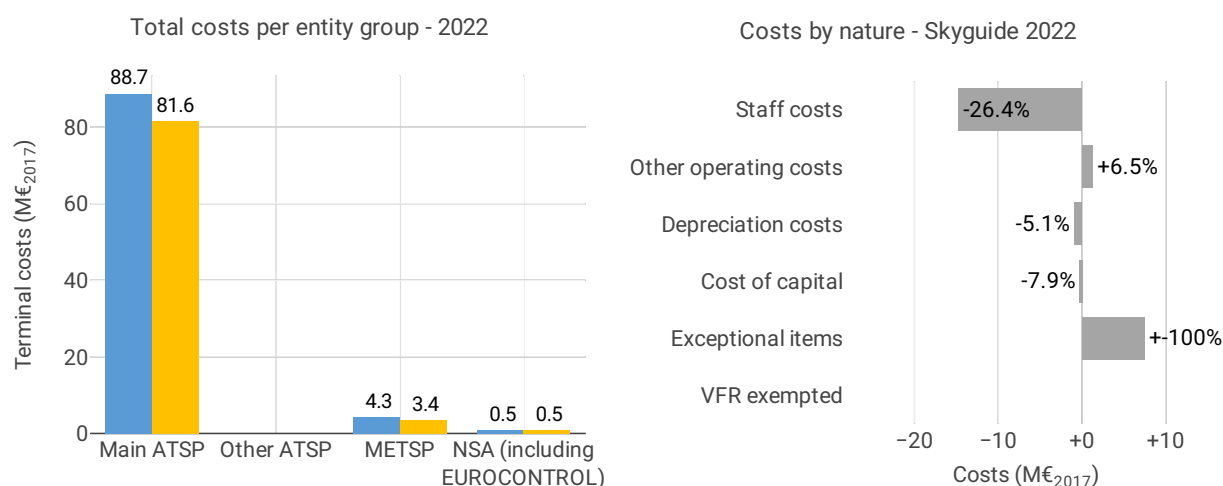
Ex-post, the overall RR taking into account the net loss from the en route activity mentioned above (-3.8 MCHF) and the actual RoE (+2.8 MCHF) amounts to -1.0 MCHF (-0.6% of the en route revenues). The resulting ex-post rate of return on equity is -2.4%. See also **Note 1** above.

Note 1: Ex-post RR does not take into account the application of the lower unit rate as per Art. 29.6 in 2022. This application generated losses of -15.7 MCHF for entities providing services in the en route charging zone (-5.3 MCHF for skyguide and -10.3 MCHF for MET SP).

5.3 Terminal charging zone

5.3.1 Unit cost (KPI#1)





Focus on unit cost

AUC vs. DUC

In 2022, the terminal AUC was -2.1% (or -8.91 CHF₂₀₁₇, -8.02 €₂₀₁₇) lower than the planned DUC. This results from the combination of significantly lower than planned terminal costs in real terms (-8.6%, or -8.9 MCHF₂₀₁₇, -8.0 M€₂₀₁₇) and significantly lower than planned TNSUs (-6.6%). It should be noted that actual inflation index in 2022 was +2.9 p.p. higher than planned.

Terminal service units

The difference between actual and planned TNSUs (-6.6%) falls outside the $\pm 2\%$ dead band, but does not exceed the $\pm 10\%$ threshold foreseen in the traffic risk sharing mechanism. The resulting loss of terminal revenues is therefore shared between the ANSP and the airspace users, with the ANSP (Skyguide) bearing a loss of -2.9 M€₂₀₁₇.

Terminal costs by entity

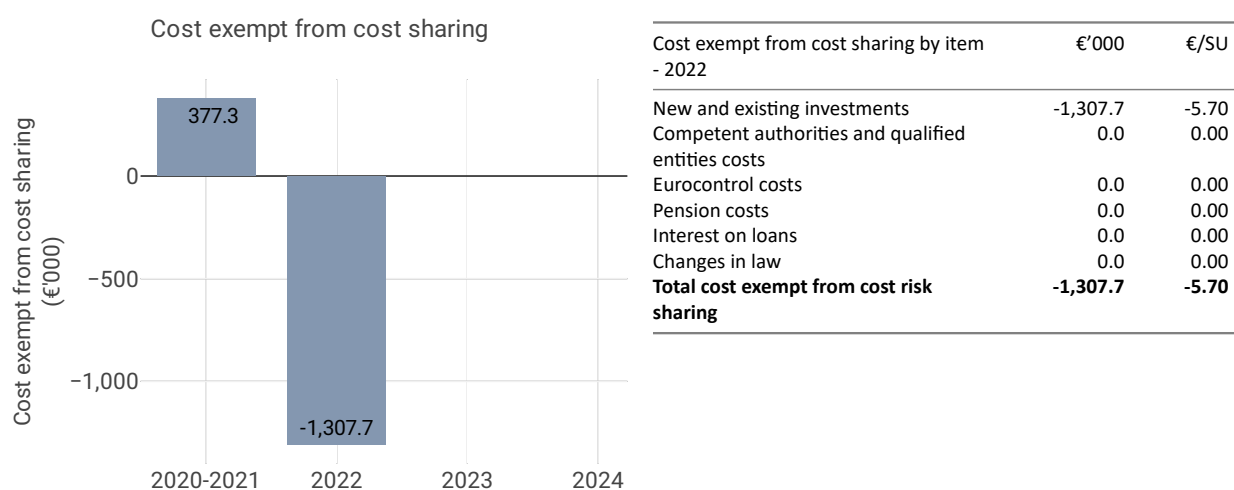
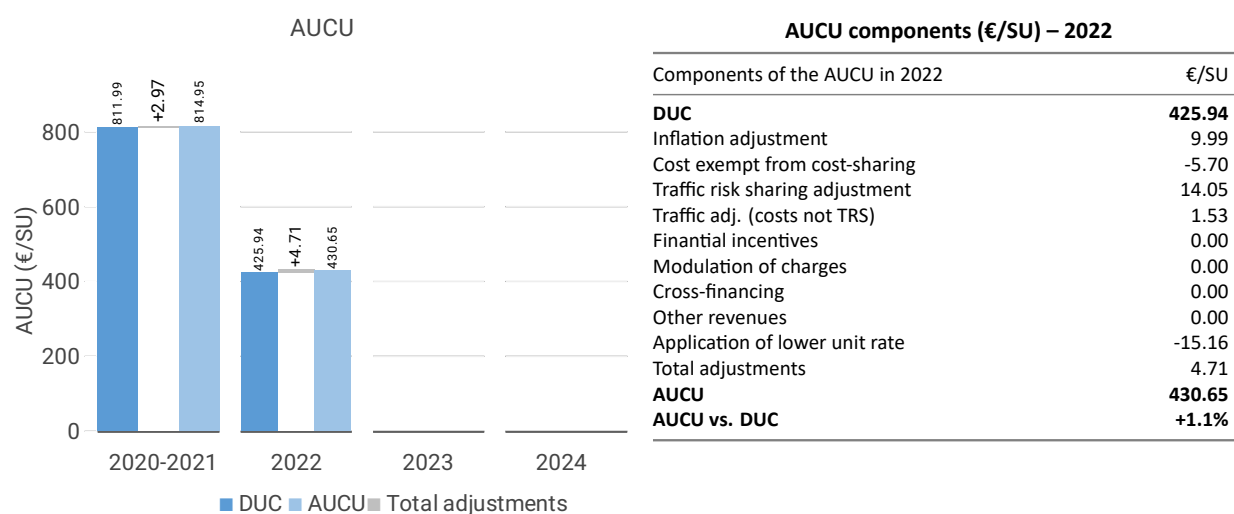
Actual real terminal costs are -8.6% (-8.0 M€₂₀₁₇) lower than planned. This is the result of lower costs for the main ANSP, Skyguide (-8.1%, or -7.2 M€₂₀₁₇) and the MET service provider (-20.2%, or -0.9 M€₂₀₁₇).

Terminal costs for the main ANSP at charging zone level

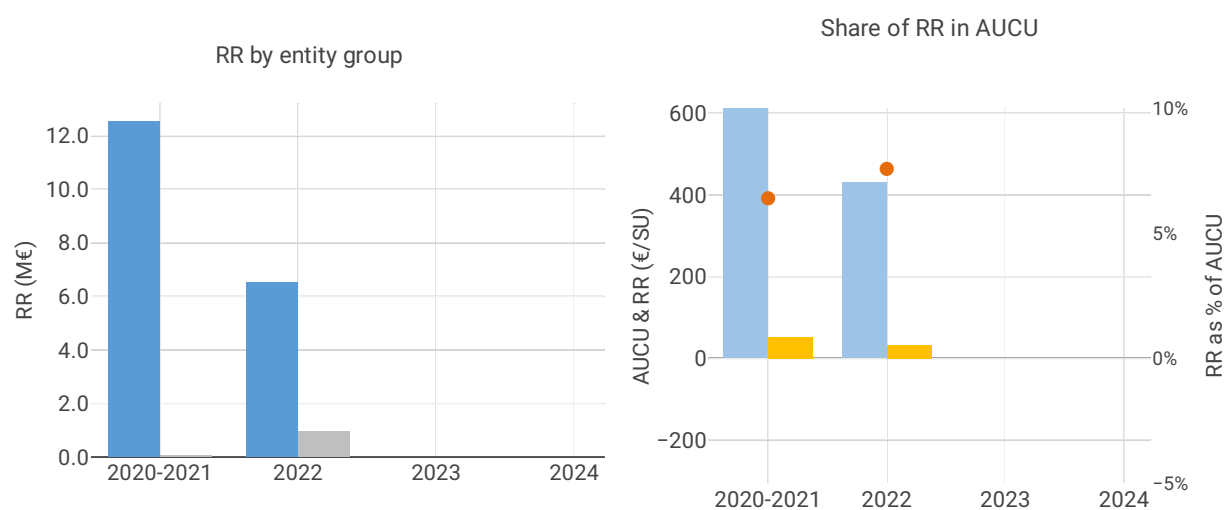
Actual terminal costs in real terms are lower than planned for Skyguide in 2022 (-8.1%, or -7.2 M€₂₀₁₇). However, the differences by nature of costs are distorted by the presentation of the additional costs caused by the change in the capitalisation rule in 2022 (+7.4 M€₂₀₁₇). Indeed, in order for these amounts not to be billed to airspace users, they have also been reported as negative exceptional items in the determined costs, but not in the actual costs (-100% of negative exceptional costs, or +7.4 M€₂₀₁₇).

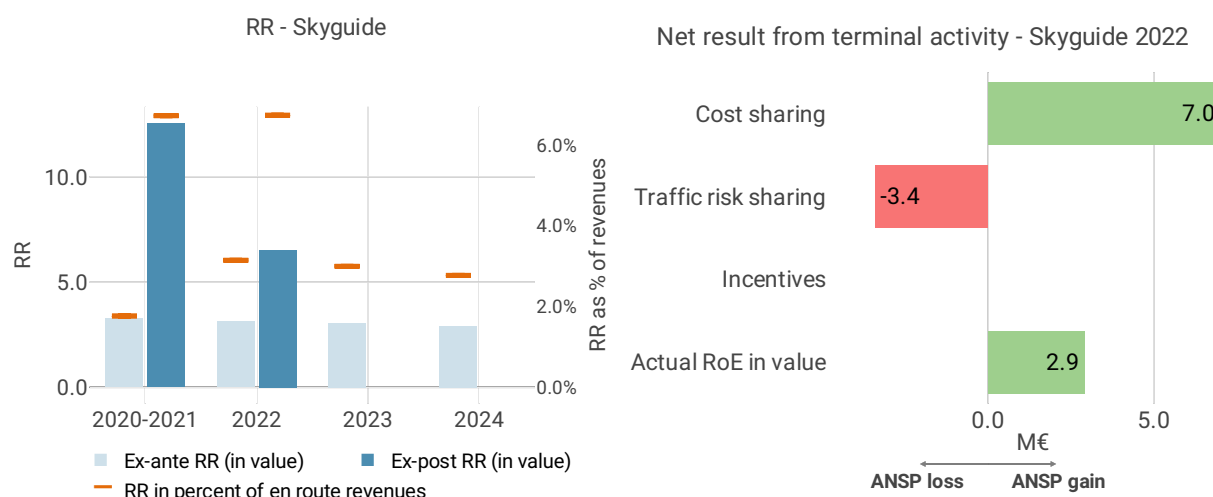
- the significant difference in staff costs (which is overall of -14.7 M€₂₀₁₇ or -26.4%), can be mainly explained by the evolution of the FTEs and salary assumptions, but it is also due to a reimbursement from the pension fund, although partially offset by the provision for ATCO retirement age transition costs.

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



5.3.3 Regulatory result (RR)





Focus on regulatory result

Skyguide net gain on activity in the Switzerland terminal charging zone in the year 2022

Skyguide reported a net gain of +3.6 MCHF, as a combination of a gain of +7.0 MCHF arising from the cost sharing mechanism, with a loss of -3.4 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 gain from the terminal activity mentioned above (+3.6 MCHF) and the actual RoE (+3.0 MCHF) amounts to +6.6 MCHF (6.7% of the terminal revenues). The resulting ex-post rate of return on equity is 14.6%, which is higher than the 12.9% planned in the PP. See also **Note 1** above.

Note 1: Ex-post RR does not take into account the application of the lower unit rate as per Art. 29.6 in 2022. This application generated losses of -3.5 MCHF for entities providing services in the terminal charging zone (-0.8 MCHF for skyguide and -2.7 MCHF for MET SP).