PRB | Performance review body of the single european sky

Performance Review Body Monitoring Report

Belgium - 2022

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1 OVERVIEW

1.1 Contextual information

National performance plan adopted following Commission Decision (EU) 2024/350 of 13 December 2023

List of ACCs 1
Brussels ACC

No of airports in the scope of the performance plan:
- **≥80'K** 1
- **<80'K** 0

Exchange rate (1 EUR=)
2017: 1 EUR
2022: 1 EUR

Share of Union-wide:
- **traffic (TSUs) 2022** 1.9%
- **en route costs 2022** 3.5%

Share en route / terminal costs 2022 87% / 13%

En route charging zone(s)
Belgium-Luxembourg

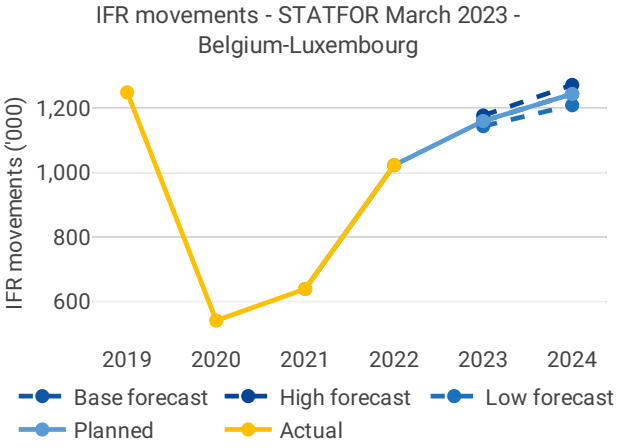
Terminal charging zone(s)
Belgium

Main ANSP
- skeyes

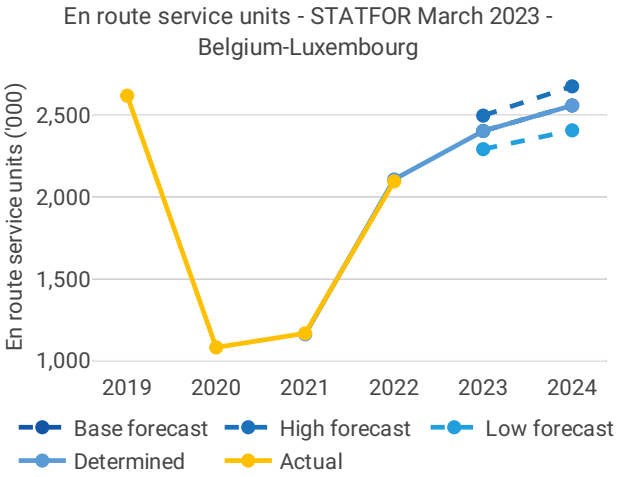
Other ANSPs
- MUAC

MET Providers
–

1.2 Traffic (En route traffic zone)

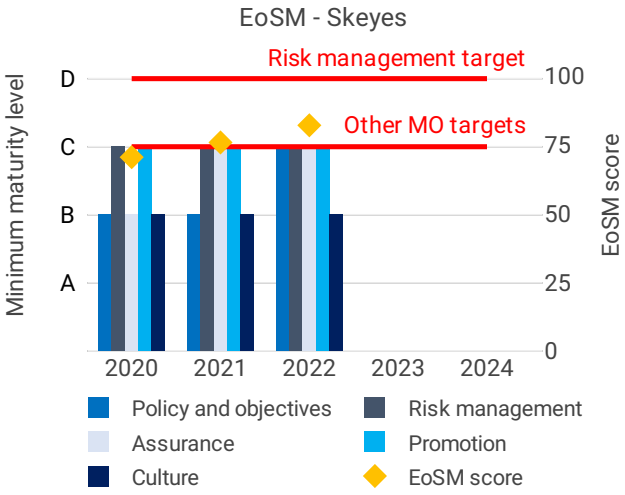


- The en route charging zone of Belgium-Luxembourg recorded 1,023K actual IFR movements in 2022, +60% compared to 2021 (639K).
- Actual 2022 IFR movements were -0.9% below the plan (1,033K).
- Actual 2022 IFR movements represent 82% of the actual 2019 level (1,249K).



- The en route charging zone of Belgium-Luxembourg recorded 2,096K actual en route service units in 2022, +80% compared to 2021 (1,167K).
- Actual 2022 service units were -0.5% above the plan (2,108K).
- Actual 2022 service units represent 80% of the actual 2019 level (2,620K).

1.3 Safety (Main ANSP)

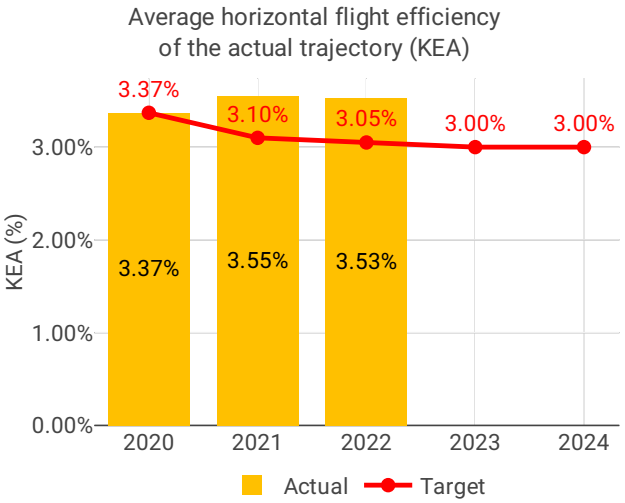


• In 2022, skeyes did not achieve its planned maturity level for safety culture but it improved for other management objectives, reaching the RP3 target for safety assurance. The ANSP, together with the NSA, established a Safety Development Plan with corrective actions focusing on improving safety culture to ensure the required RP3 target levels are met by 2024.

• The overall safety performance of skeyes was stable, the runway incursion rate was lower than in 2021 and remained below the Union-wide average.

• Skeyes could improve its safety management by implementing automated safety data recording systems.

1.4 Environment (Member State)



• Belgium achieved a KEA performance of 3.53% compared to its target of 3.05% and did not contribute positively to the Union-wide target. KEA performance is at similar levels to 2021.

• The NSA states that given the limited size of the Belgium-Luxembourg airspace, possibilities to improve the KPI are also limited.

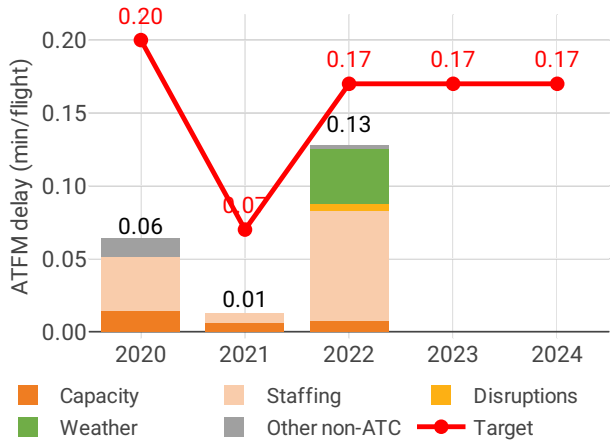
• Both KEP and SCR improved in comparison with 2021's performance.

• The share of CDO flights decreased by 12.76% compared to 2021.

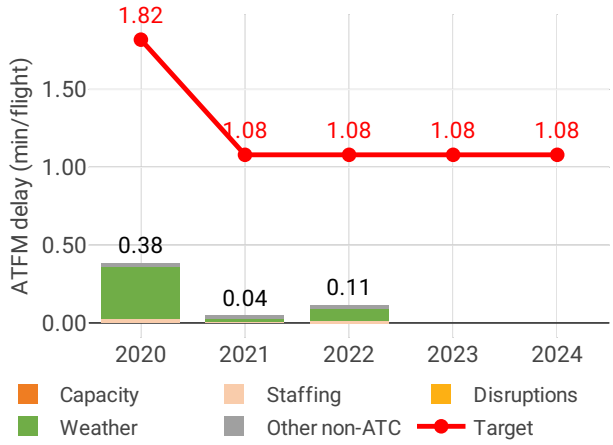
• During 2022, additional time in terminal airspace increased from 0.47 to 0.57 min/flight, while additional taxi out time increased from 1.28 to 1.53 min/flight.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



Average arrival ATFM delay per flight by delay groups



below 2019 levels.

• Belgium-Luxembourg registered 0.13 minutes of average en route ATFM delay per flight during 2022, thus achieving the local target value of 0.17.

• The average number of IFR movements was 18% below 2019 levels in Belgium-Luxembourg in 2022.

• In Brussels ACC, the number of ATCOs in OPS is planned to increase by 14% by the end of RP3, with the actual values remaining below the plan in 2022. In Maastricht ACC, a 9% increase in the number of ATCOs in OPS was planned by the end of RP3, but more ATCOs than anticipated have stopped working in OPS, thus not actual values remained below the plan in 2022.

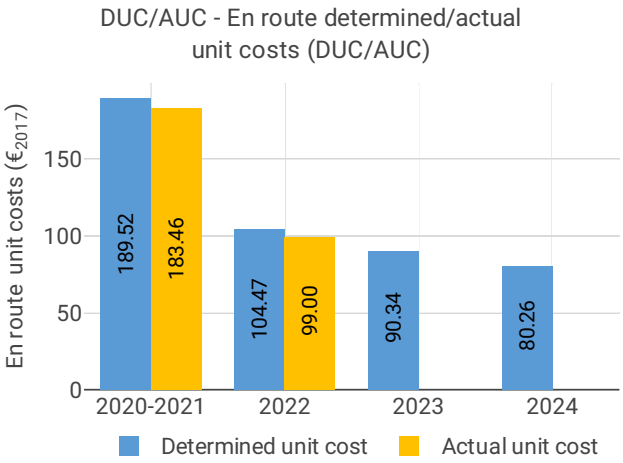
• Delays were highest between June and December, mostly driven by ATC staffing.

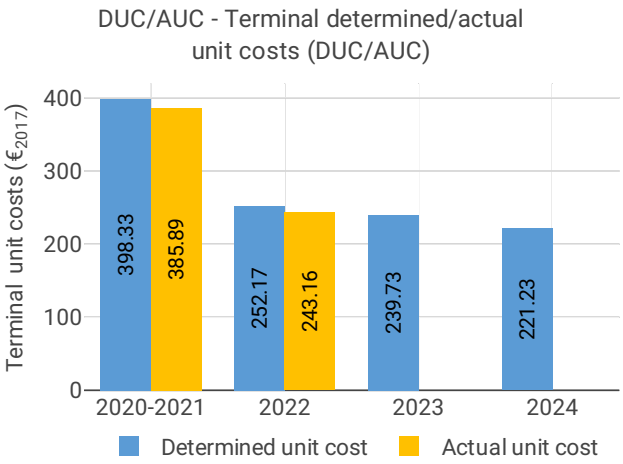
• The share of delayed flights with delays longer than 15 minutes in Belgium increased by 14.18 p.p. compared to 2021 and was lower than 2019 values.

• The yearly total of sector opening hours in Brussels ACC was 28,405 in 2022, showing a slight decrease compared to 2021. Sector opening hours are 2.5% below 2019 levels.

• Brussels ACC registered 17.98 IFR movements per one sector opening hour in 2022, being 17.5%

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





• The en route 2022 actual unit cost of Belgium-Luxembourg was 98.91 €2017, 5.3% lower than the determined unit cost (104.47 €2017).

• The terminal actual unit cost of Belgium was 243.16 €2017, 3.6% lower than the determined unit cost (252.17 €2017).

• The en route 2022 actual service units (2,096K) were in line with the determined service units (2,108K).

• The en route 2022 actual total costs were 13 M€2017 (-5.8%) lower compared to the determined, as all cost categories decreased.

• The decrease was mainly attributable to lower staff cost (-6.3 M€2017, or -4.0%) and other operating costs (-5.9 M€2017, or -12%). The reduced staff cost was due to lower staff costs in MUAC. The NSA explained that the lower other operating costs is a consequence of delayed investments.

• Skeyes spent 12.7 M€2017 in 2022 related to costs of investments, 2.5% less than determined (13.0 M€2017), due to some projects that have been delayed.

• The en route actual unit cost incurred by users of Belgium-Luxembourg in 2022 was 119.54€, while the terminal actual unit cost incurred by users was 236.58€ for Belgium and 243.25€ for Luxembourg.

2 SAFETY - BELGIUM

2.1 PRB monitoring

• In 2022, skeyes did not achieve its planned maturity level for safety culture but it improved for other management objectives, reaching the RP3 target for safety assurance. The ANSP, together with the NSA, established a Safety Development Plan with corrective actions focusing on improving safety culture to ensure the required RP3 target levels are met by 2024.

• The overall safety performance of skeyes was stable, the runway incursion rate was lower than in 2021 and remained below the Union-wide average.

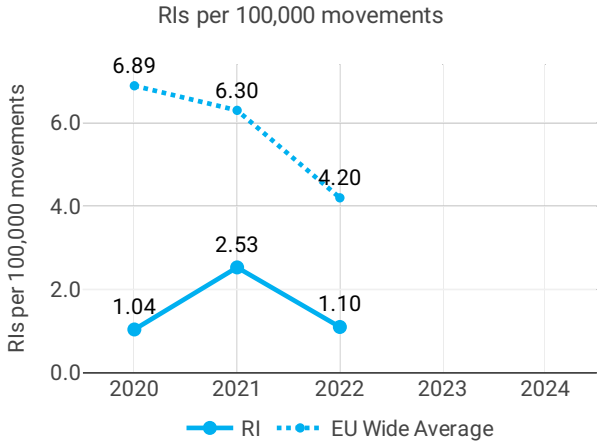
• Skeyes could improve its safety management by implementing automated safety data recording systems.

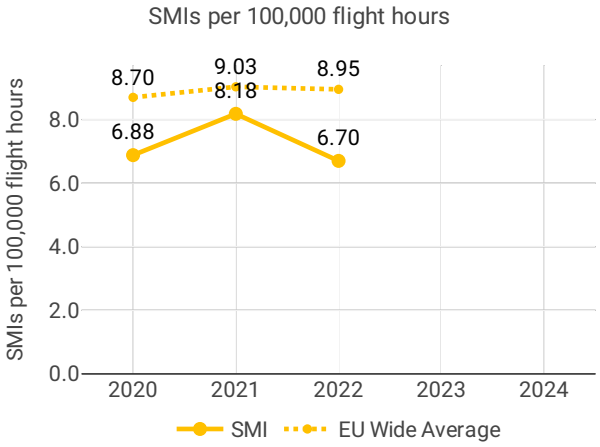
2.2 Effectiveness of Safety Management (EoSM) (KPI#1)

Focus on EoSM

Three out of five EoSM components of the ANSP meet the RP3 target level. Compared with 2021, in 2022 the “Safety Policy and Objectives” component was improved and consequently achieved the RP3 target. Two remaining components: “Safety Culture” and “Safety Risk Assessment” are below the RP3 target for three questions and are to be improved during RP3.

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





3 ENVIRONMENT - BELGIUM

3.1 PRB monitoring

• Belgium achieved a KEA performance of 3.53% compared to its target of 3.05% and did not contribute positively to the Union-wide target. KEA performance is at similar levels to 2021.

• The NSA states that given the limited size of the Belgium-Luxembourg airspace, possibilities to improve the KPI are also limited.

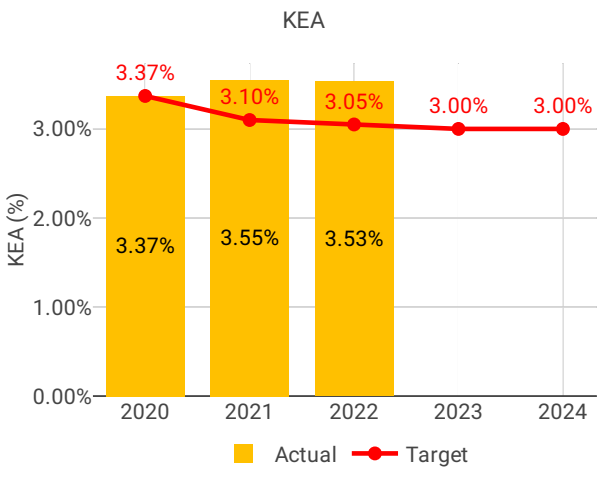
• Both KEP and SCR improved in comparison with 2021's performance.

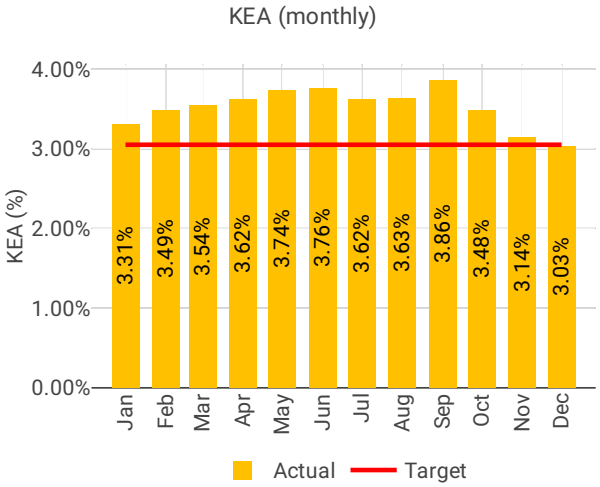
• The share of CDO flights decreased by 12.76% compared to 2021.

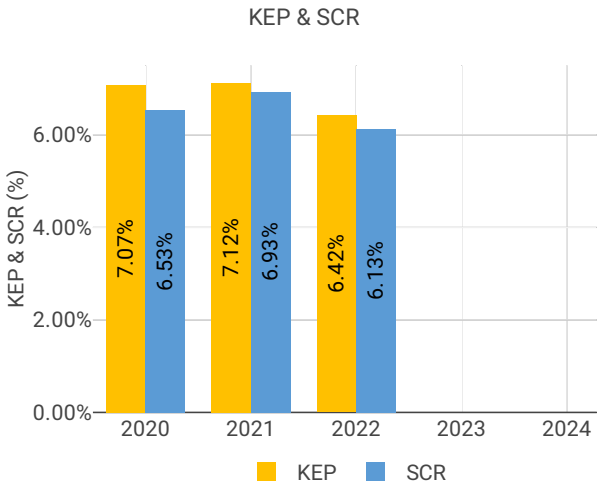
• During 2022, additional time in terminal airspace increased from 0.47 to 0.57 min/flight, while additional taxi out time increased from 1.28 to 1.53 min/flight.

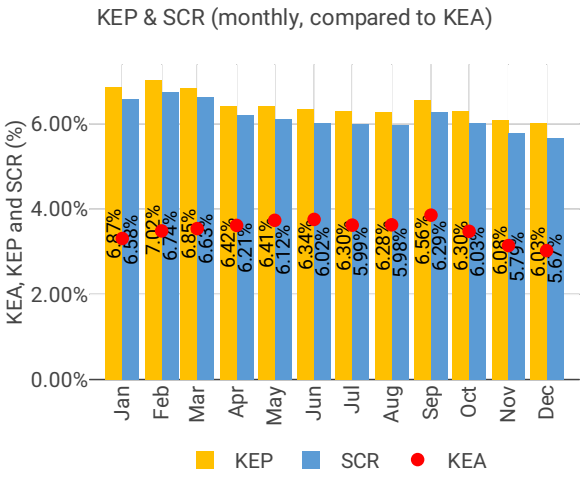
3.2 En route performance

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)



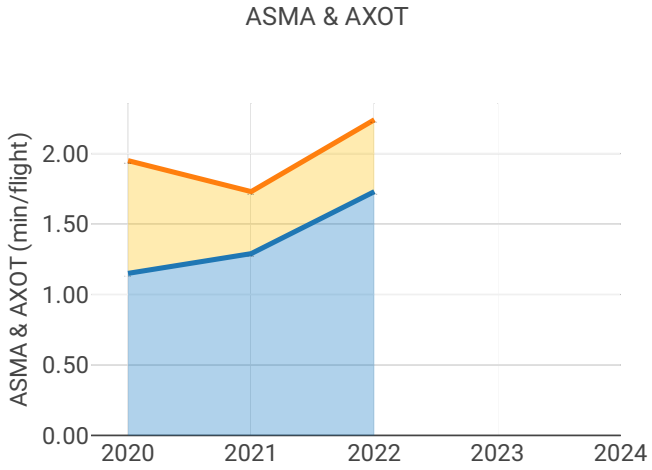


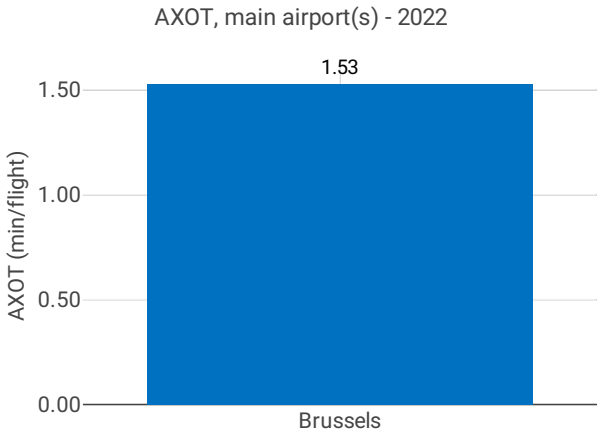


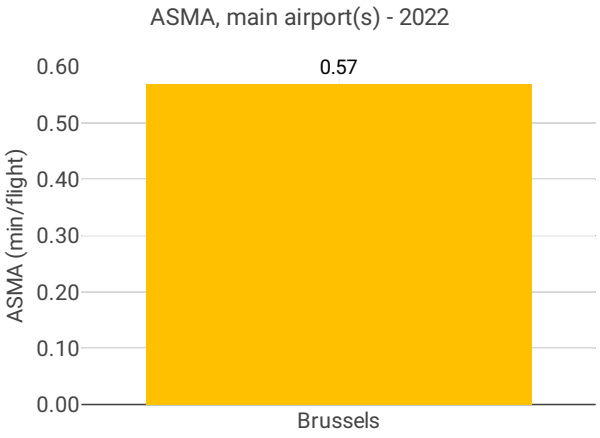


3.3 Terminal performance

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 Brussels (EBBR; 2019: 2.21 min/dep.; 2020: 1.36 min/dep.; 2021: 1.28 min/dep; 2022: 1.53 min/dep) increased in 2022 but remained well below the SES average of 2.52 min/dep.

According to the Belgian monitoring report:

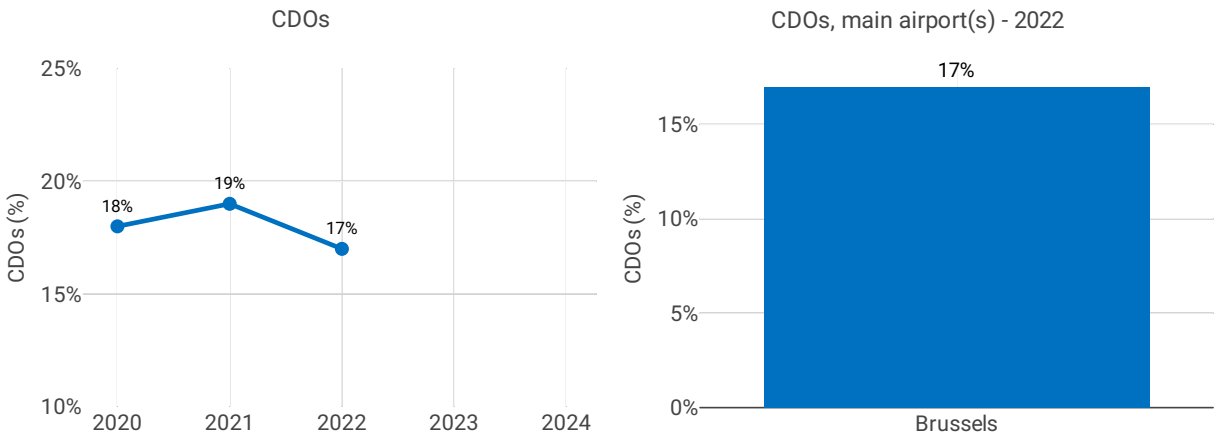
It is noted that some factors included in the Taxi-out time (for example: push-back time) influence this

*indicator but are beyond control of ANSP. A-CDM is implemented for many years, and continuously being improved. Latest improvements were focused on incorporating de-icing (and hence reducing taxi times). Taxi-out time includes – for example – push-back time. Those (and other) factors – influencing the indicator – are beyond control of ANSP.*Improvement of A-CDM is also part of Stargate (EU Green Deal Project for more sustainable aviation). Within this framework, skeyes will provide support to Brussels Airport in developing e-learning modules to create awareness and better understanding of the concept for the airport stakeholders and the fellow airports. The Lighthouse will also enhance reporting and monitoring of KPIs within A-CDM towards more efficient and, thus, more sustainable operations.*The monitoring report also mentions:* The additional taxi-out time is computed by EUROCONTROL/PRU and can be retrieved on the SES e-dashboard (https://www.eurocontrol.int/prudata/dashboard/data/) but the indicator is not available for all airports. However, the methodology defined by PRU is still under discussion because it remains unclear what the time difference from year to year indicates, or the meaningfulness of an airport A versus airport B comparison, in particular when focussing on the ANSP influence on the performance*.

ASMA

Additional ASMA times at Brussels slightly increased in 2022 (EBBR; 2019: 1 min/arr.; 2020: 0.89 min/arr.; 2021: 0.47 min/arr.; 2022: 0.57 min/arr.)
According to the Belgian monitoring report: *ASMA is considered to be intended primarily to capture terminal holdings. Within EBBR, stacking aircraft in holding to absorb delays (similar to EGLL) is seldomly applied. Within a radius of 30 NM around EBBR, radar vectoring is most often applied. Depending on the traffic demand, shorter or longer trajectories are being flown (-> sequencing). However radar vectoring has the advantage that shortest routes can be issued, hence leading to 'best possible' ASMA values, while of course taking into account applicable restrictions (e.g. noise abatement).*Purely for the sake of ASMA, the current working methods (vectoring), probably leave very limited room for improvement. The real challenge is improving predictability in the arrival process (vectoring -> increased use of fixed routings), without deteriorating ASMA. In this context, in summer 2022, skeyes has organized a trail period of increased use of RNP approach at EBBR. Within this period skeyes has promoted RNP APCH with the incentive to fly the full procedure, in order to optimize the vertical as well as horizontal flight efficiency of incoming traffic. Based on lessons learned during the first trial period, skeyes plans to organize RNP trials 2.0, in summer/autumn 2023. These initiatives are part of the Stargate project (EU Green Deal Project for more sustainable aviation).The monitoring report also mentions: *The additional time in terminal airspace (ASMA) is computed by EUROCONTROL/PRU and can be retrieved on the SES e-dashboard (https://www.eurocontrol.int/prudata/dashboard/data/). However, the methodology defined by PRU is still under discussion. FABEC trials showed that changes of the ambient air temperature alone can significantly infuence the measured performance.*

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



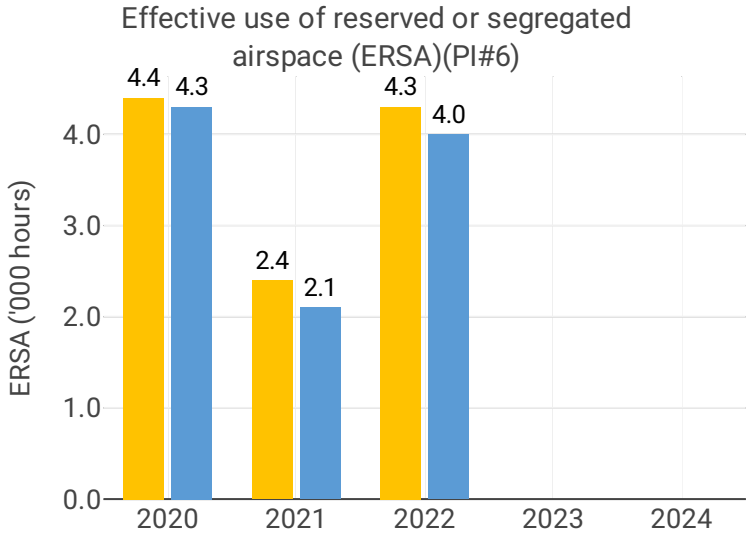
Focus CDOs

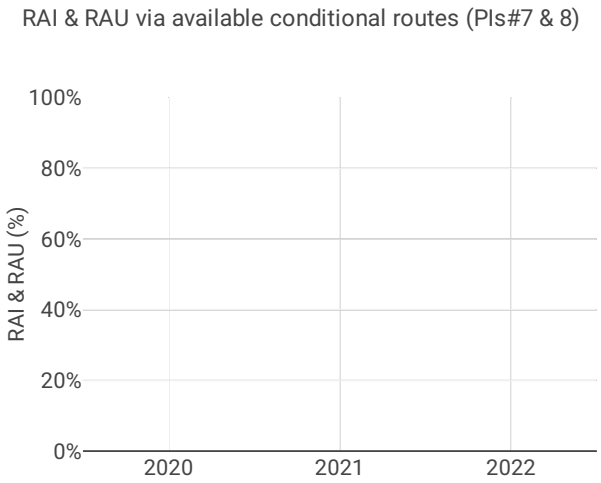
The share of CDO flights for Brussels is 17.1% which is a decrease of 2.5 percentage points but still quite low compared to other airports with similar traffic numbers and the overall RP3 value in 2022 (29.0%).According to the Belgian monitoring report: *skeyes has been running several initiatives/projects to improve the facilitation of CDOs at EBBR. This includes implementation of PBN procedures, promotion of RNP (Required Navigation Performance) procedures (in the framework of Stargate project – see 2.2.2.(d)) and operational demonstration of ISGS (Increased Second Glide Slope) at Brussels airport (in the framework of HERON project, currently in its planning phase; demonstrations are planned to take place in 2024). Besides, skeyes maintains a collaboration with main OPS stakeholders at EBBR (ATC/airport/airlines) through CEM (Collaborative Environmental Management) platform to further reduce the environmental impact of airport operations.*

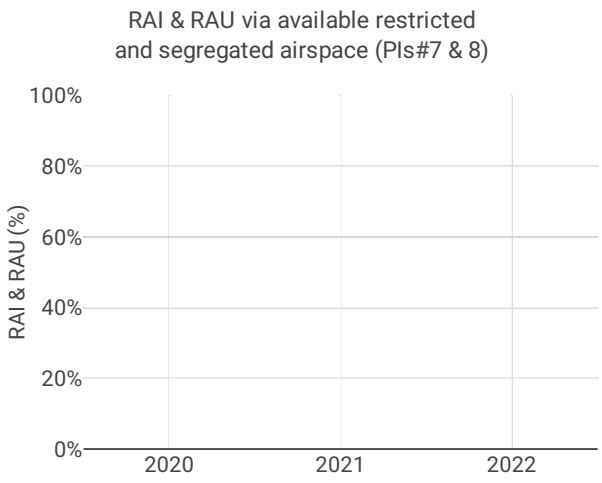
Airport level

	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
Brussels	1.36	1.28	1.53	NA	NA	0.89	0.47	0.57	NA	NA	18%	20%	17%	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.

Information related to Russia's war of aggression against Ukraine

No general answer possible here as it depends a lot of the geographical position of the different States and their related political-military status (e.g. within or outside an alliance), decisions and military means. To mitigate the impact of the Ukraine crisis related operations, Military were actively involved within the EACCC (European Aviation Crisis Coordination Cell) and NM processes at tactical level.

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

Since January 2022, Belgium implemented the R-UUP process, while in March 2022 a trial started to adapt the AUP booking principles coordinated between civ and Mil, resulting in a more stable network for the airline users and ANSPs without impacting too much the flexibility of the military.
ATM-Portal will be used to propose improved routings to aircraft operators in pre-tract. The tool takes into account the expected airspace availability.
The BB-AUP was introduced in the Belgian Airspace

Initiatives implemented or planned to improve PI#7

Please refer to the report of the BEL FUA WG on the results of the BB-AUP trial

Initiatives implemented or planned to improve PI#8

Please refer to the report of the BEL FUA WG on the results of the BB-AUP trial

4 CAPACITY - BELGIUM

4.1 PRB monitoring

• Belgium-Luxembourg registered 0.13 minutes of average en route ATFM delay per flight during 2022, thus achieving the local target value of 0.17.

• The average number of IFR movements was 18% below 2019 levels in Belgium-Luxembourg in 2022.

• In Brussels ACC, the number of ATCOs in OPS is planned to increase by 14% by the end of RP3, with the actual values remaining below the plan in 2022. In Maastricht ACC, a 9% increase in the number of ATCOs in OPS was planned by the end of RP3, but more ATCOs than anticipated have stopped working in OPS, thus not actual values remained below the plan in 2022.

• Delays were highest between June and December, mostly driven by ATC staffing.

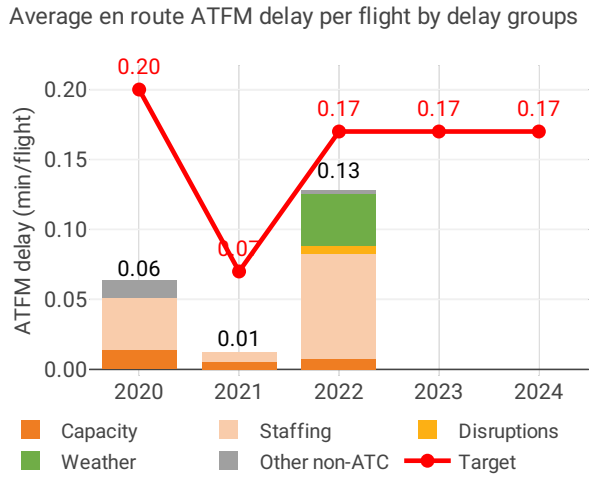
• The share of delayed flights with delays longer than 15 minutes in Belgium increased by 14.18 p.p. compared to 2021 and was lower than 2019 values.

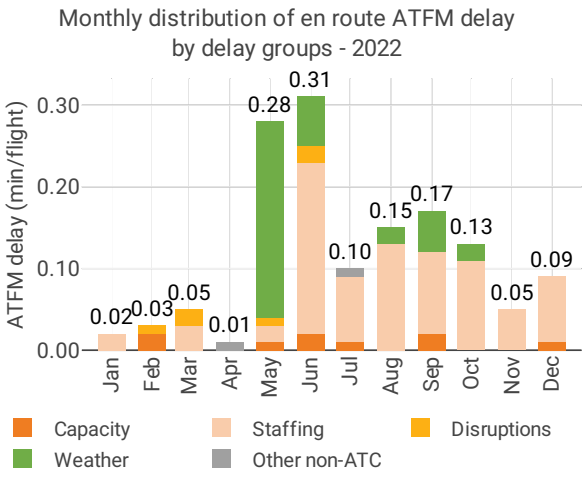
• The yearly total of sector opening hours in Brussels ACC was 28,405 in 2022, showing a slight decrease compared to 2021. Sector opening hours are 2.5% below 2019 levels.

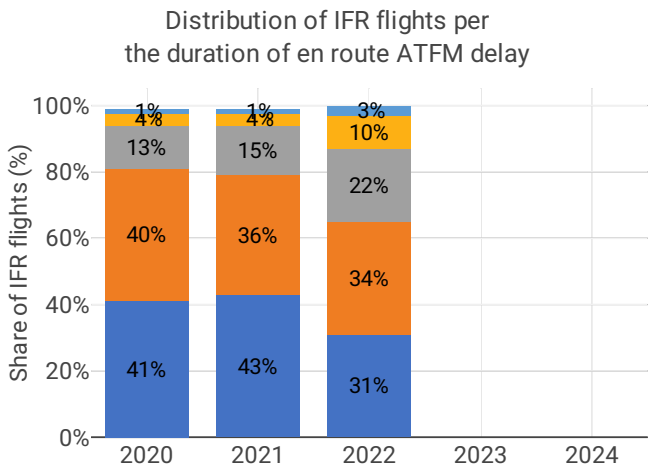
• Brussels ACC registered 17.98 IFR movements per one sector opening hour in 2022, being 17.5% below 2019 levels.

4.2 En route performance

4.2.1 En route ATFM delay (KPI#1)







Focus on en route ATFM delay

Summary of capacity performance

Belgium & Luxembourg achieved the required en route capacity performance in 2022. There were 1 038k flights handled in the airspace of Belgium and Luxembourg (both Brussels ACC and the Brussels sectors in MUAC). There were 131k minutes of en route ATFM delay attributed to ANSPs in Belgium and Luxembourg airspace.

NSA's assessment of capacity performance

Both en route and Terminal capacity targets were achieved.

Monitoring process for capacity performance

For skeyes, capacity monitoring is executed via the process as described in the manual of the NSA. Relevant data are collected from skyes, FABEC and other entities (Eurocontrol dashboard). If occuring delays a justification can be requested from skeyes, with potential corrective action request afterwards.
MUAC reports its en-route capacity performance to the states through the MUAC Finance and Performance committee. The performance data is also monitored on a monthly basis through the AFG/PMG (ANSP FABEC Group / Performance Management Group) capacity report. This report is based on MUAC data and available PRU data, which is consolidated and analysed and the results compared to the reference and indicative values.
Even though the FABEC states now have national performance plans, 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 FABEC target set and reference or indicative values and on the results and analysis of the en- route capacity achievement.
In case the 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 FAB, 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.
This monitoring process is described in the FABEC FPC States Performance Process description, which is regularly updated.

Capacity planning

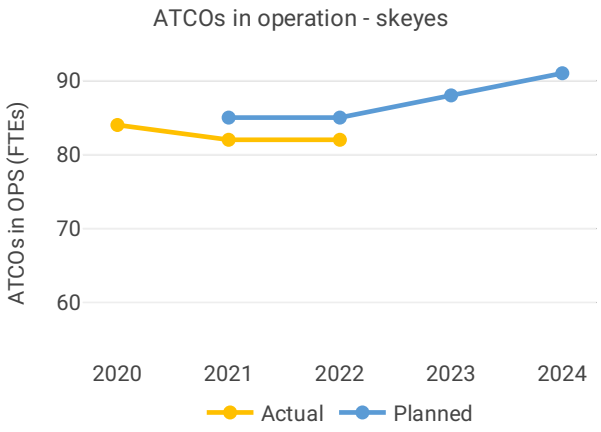
Initial Network Operation Plan 2020 launched in Winter 2019/2020 has been overwhelmed by the COVID-19 pandemic and the massive drop of traffic.
A new NOP Recovery Plan process initiated and launched by the Network Manager and its first edition was published on 30 April 2020, as European traffic began 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.

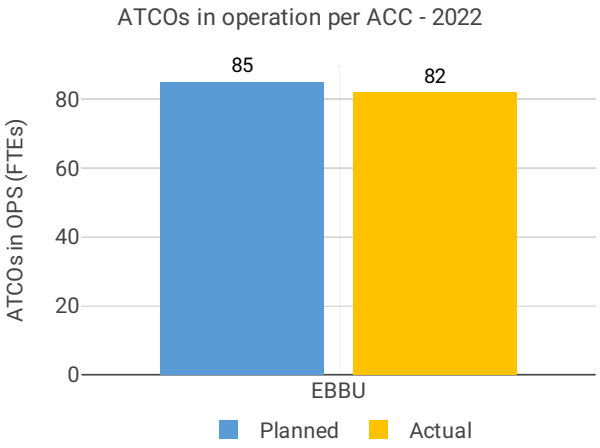
Application of Corrective Measures for Capacity (if applicable)

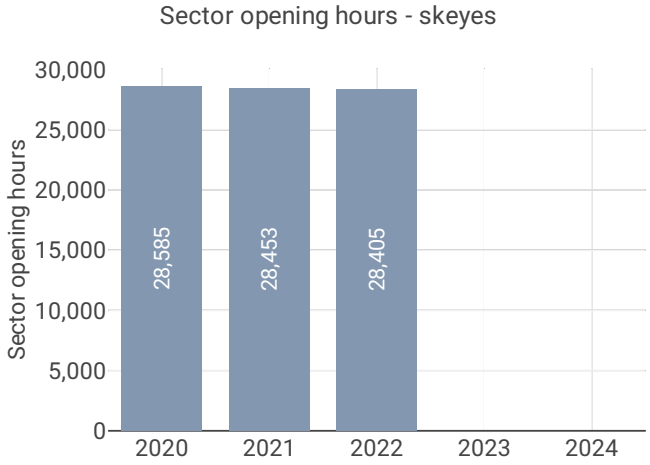
skeyes: Brussels ACC has a capacity gap in 2023 and 2024.
In the LSSIP 2022. skeyes developed various initiatives to fill the gap :
- recruitment of new ATCO at the maximum training capacity
- TCAST in 2023
- segregation of traffic flows between EBBR (Brussels) and EBCI (Charleroi)
- upgrade of ATM system

The NSA considers that the actions taken will be sufficient to remedy the situation.

4.2.2 Other indicators







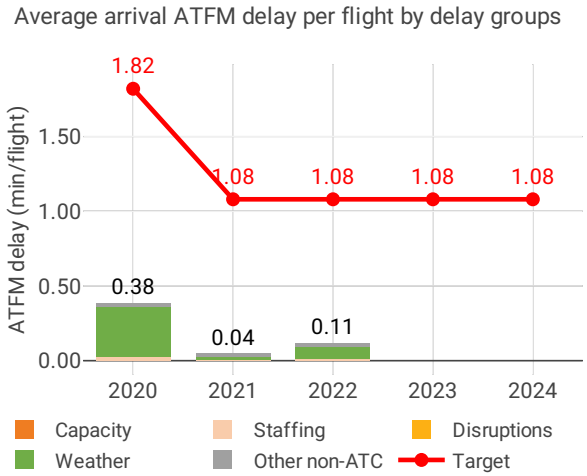
Focus on ATCOs in operations

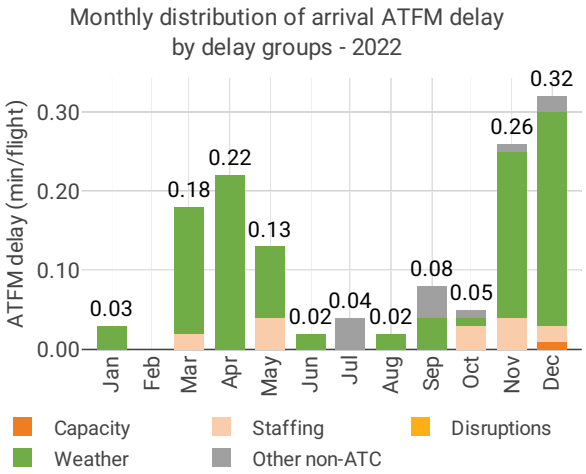
Comments regarding ATCO in OPS
MUAC: more ATCOs than anticipated have stopped working in OPS.

Regarding ATCO planning, the Belgian NSAs and ANSPs, together with their FABEC-colleagues, question if ATCO planning figures are legally required by the performance regulation to be included in the Performance Monitoring for RP3, as it is not a prescribed indicator. In addition, we question if this is the right level of detail to be monitored by the EC. Technically the plans are and will always be subject to change, creating the unnecessary burden of tracking, supervising and explaining the figures within the SES performance scheme domain.
However, ATCO hiring and assigment is one of the major driver for current capacity and staffing issues solving. ACE figures are provided and can be referred to. Nevertheless, we consider that they cannot be considered as a commitment where planning figures are requested, due to the high level of uncertainties related to such ATCO recruitement plans management. These figures, even when provided on annual basis, can only be regarded as snapshot information, i.e. a situation at one point in time which does not guarantee a realistic view throughout the entire duration of RP3.
There are many factors with a high level of uncertainty that have an impact on the ATCO planning: first of all, the Labour Law and the Collective Labour Agreement in place in an ANSP play a major role in the availability of ATCOs to fulfill the ops needs. Then, there are classical uncertainty factors of general staff planning like the actual rate of retirement, the absence rate of employees, as well as maternity and parent leave. Moreover, ATCOs mobility has become a severe issue recently, leading to high rate of unforeseen leaves.Another factor which cannot be significantly mitigated further impacting the availability of ATCOs is the number of suitable applicants, the failure rate of the theoretical training at the academies and the success rate during the on-the-job training phases of trainees. The final retirement age is firmly set by law, but in many countries employees may go earlier. ANSPs can only assume a certain amount of people opting out/in. It is common culture now that companies offer varying working hours to enable employees to adjust their work to different phases of their life. Again, ANSPs can only assume a certain amount of people opting in/out. On top of all that, future social agreements will significantly determine the ATCO availability per person and by that the total available FTE per ANSP. Before the planned ATCO FTE can be reported in an harmonised and consistent way, a revised specification for information disclosure is required, clearly describing how to count ATCOs partially working in projects (another uncertainty factor) and (very important) standardising the assumptions for the uncertainties mentioned above.

4.3 Terminal performance

4.3.1 Arrival ATFM delay (KPI#2)





Focus on arrival ATFM delay

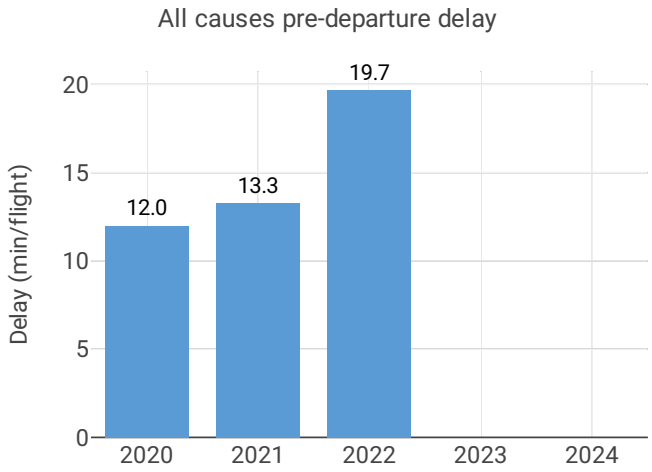
Belgium identifies only Brussels airport as subject to RP3 monitoring.
The Airport Operator Data Flow is fully established and the monitoring of pre-departure delays can be performed. The data quality of the pre-departure delay reporting, which did not allow the calculation of the ATC pre-departure delay in the previous years, has improved allowing the calculation of this indicator in 2022.
Traffic levels in 2022 were still 24% less than in 2019 at Brussels airport, despite the 53% increase with

respect to 2021.
Average arrival ATFM delays in 2022 was 0.11 min/arr, compared to 0.04 min/arr in 2021.
ATFM slot adherence has slightly deteriorated (2022: 95.5%; 2021: 96.6%)

ATFM arrival delays at Brussels have increased in 2022 but remain very low (EBBR; 2019: 0.90 min/arr; 2020: 0.38 min/arr; 2021: 0.04 min/arr; 2022: 0.11 min/arr). Most of these delays were attributed to weather (77%) followed by ATC staffing (11%) and special events (6%)3. Arrival ATFM Delay – National TargetThe national target on arrival ATFM delay in 2022 was met.

Brussels ATFM slot compliance in 2022 was 95.5%
With regard to the 4.5% of flights that did not adhere, 3.1% was early, 1.4% was late.
The Belgian monitoring report highlights that *national level and main national individual airports involved are above the 80% threshold of compliance.*

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
Brussels	0.38	0.04	0.11	NA	97.4%	96.6%	95.5%	NA%

	ATC pre departure delay (PI#2)				All causes pre departure delay (PI#3)			
Airport name	2020	2021	2022	2023	2020	2021	2022	2023
Brussels	0.35	0.45	0.57	NA	13.9	15.3	20.6	NA

Focus on performance indicators at airport level

ATFM slot adherence

ATC pre-departure delay at Brussels (EBBR: 2022: 0.57 min/dep) is still below the pre-pandemic value (0.78 min/dep)

ATC pre-departure delay

The total (all causes) delay in the actual off block time at Brussels increased in 2022 (EBBR: 2020: 13.88 min/dep.; 2021: 15.29 min/dep.; 2022: 20.59 min/dep.)
The highest delays per flight were observed in June-July.
According to the Belgian monitoring report: *Skeyes focusses its effort on the reduction of ATFM delays which are directly under the control of ANSP.*
All cause departure delay is very generic and ATFM delay is only a small contributor. Departure delay can be generated by ATFM en-route delay (not only local airport, but the complete Network) but also reactionary and turnaround delay, technical issues with the aircraft, airport operations, problems with passengers and

or luggage, etc. In other words, it is not always possible to address a specific reason as this delay is quite generic.

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-EFFIENCY - BELGIUM

5.1 PRB monitoring

• The en route 2022 actual unit cost of Belgium-Luxembourg was 98.91 €2017, 5.3% lower than the determined unit cost (104.47 €2017).

• The terminal actual unit cost of Belgium was 243.16 €2017, 3.6% lower than the determined unit cost (252.17 €2017).

• The en route 2022 actual service units (2,096K) were in line with the determined service units (2,108K).

• The en route 2022 actual total costs were 13 M€2017 (-5.8%) lower compared to the determined, as all cost categories decreased.

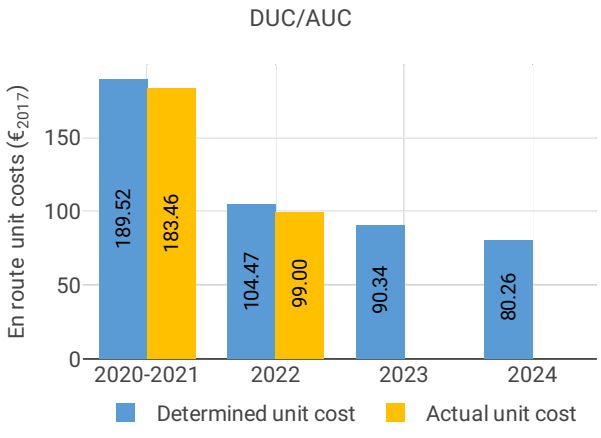
• The decrease was mainly attributable to lower staff cost (-6.3 M€2017, or -4.0%) and other operating costs (-5.9 M€2017, or -12%). The reduced staff cost was due to lower staff costs in MUAC. The NSA explained that the lower other operating costs is a consequence of delayed investments.

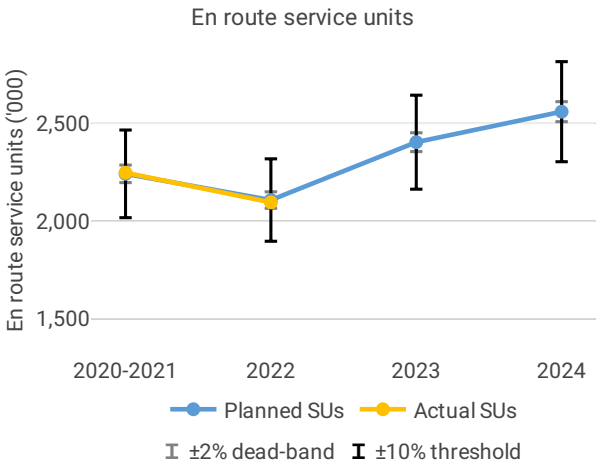
• Skeyes spent 12.7 M€2017 in 2022 related to costs of investments, 2.5% less than determined (13.0 M€2017), due to some projects that have been delayed.

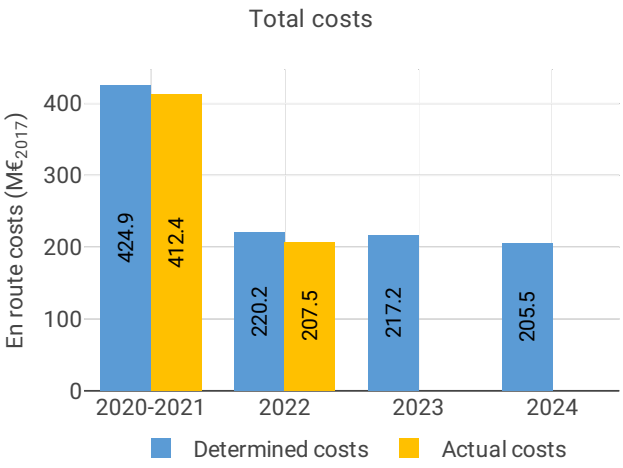
• The en route actual unit cost incurred by users of Belgium-Luxembourg in 2022 was 119.54€, while the terminal actual unit cost incurred by users was 236.58€ for Belgium and 243.25€ for Luxembourg.

5.2 En route charging zone

5.2.1 Unit cost (KPI#1)

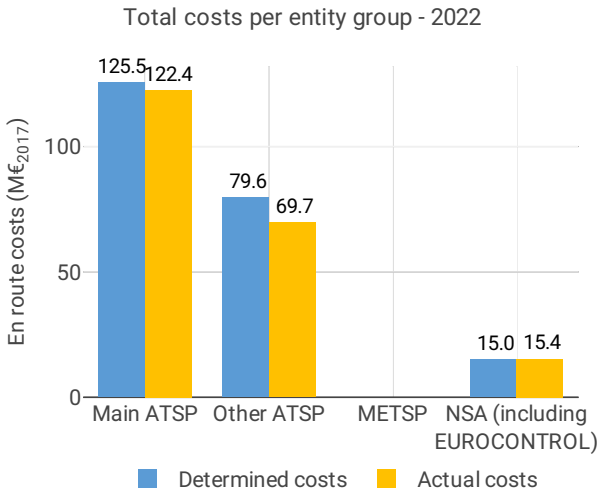


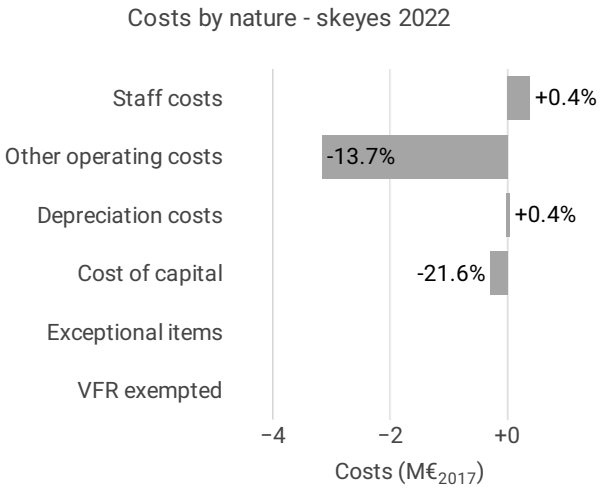




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	432	240	NA	NA
Determined costs	442	250	262	252
Difference costs	-10	-10	NA	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	7.8%	4.7%	2.1%
Determined inflation index	NA	115.6	123.9	126.5
Actual inflation rate	NA	10.3%	NA	NA
Actual inflation index	NA	118.3	NA	NA
Difference inflation index (p.p.)	NA	+2.7	NA	NA





Focus on unit cost

AUC vs. DUC

In 2022, the en route AUC was -5.3% (or -5.56 €2017) lower than the planned DUC. This results from the combination of significantly lower than planned en route costs in real terms (-5.8%, or -12.8 M€2017) and slightly lower than planned TSUs (-0.5%). It should be noted that actual inflation index in 2022 was +2.7 p.p. higher than planned.

En route service units

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

En route costs by entity

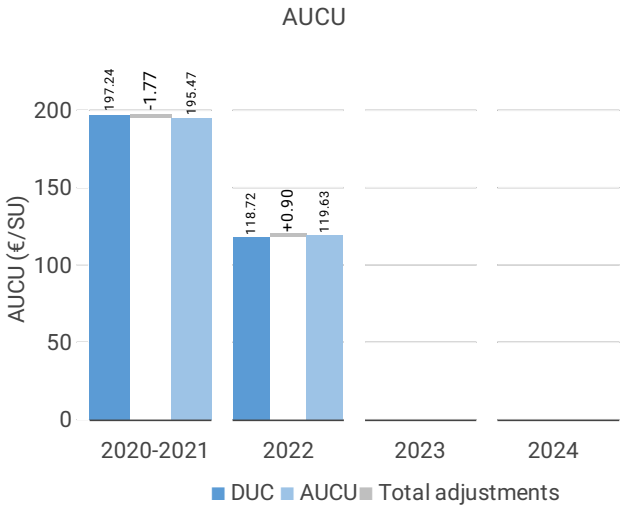
Actual real en route costs are -5.8% (-12.8 M€2017) lower than planned. This is the result of lower costs for the other ANSPs (ANA and MUAC, -12.5%, or -10.0 M€2017) and the main ANSP, skeyes (-2.4%, or -3.0 M€2017), while the NSA/EUROCONTROL costs are higher (+1.1%, or +0.2 M€2017) than planned.

En route costs for the main ANSP at charging zone level

Lower than planned en route costs in real terms for skeyes in 2022 (-2.4%, or -3.0 M€2017) result from:
- Slightly higher staff costs (+0.4%) in real terms, but in nominal terms the staff costs are higher than planned (+2.7%) mainly due to the Belgium automatic mandatory salary indexation of salaries based on the actual inflation (10.3%) which was higher that the planned (7.8%);
- Significantly lower other operating costs (-13.7%), due to delay of certain projects, which has negatively impacted the involvement of external support and license costs.

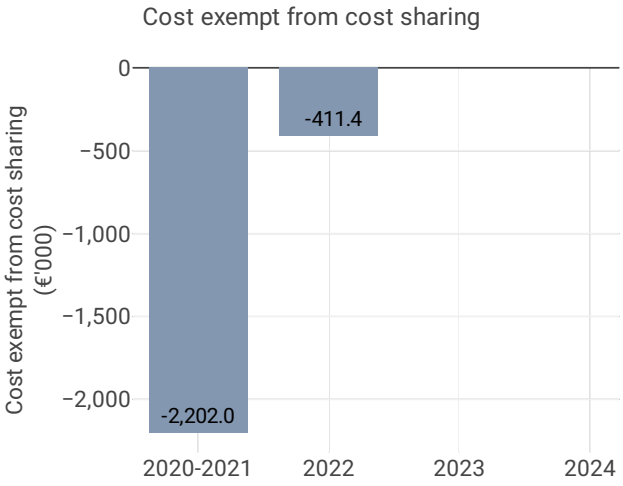
- Slightly higher depreciation (+0.4%),
- Significantly lower cost of capital (-21.6%), mainly due to a lower fixed asset base.

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



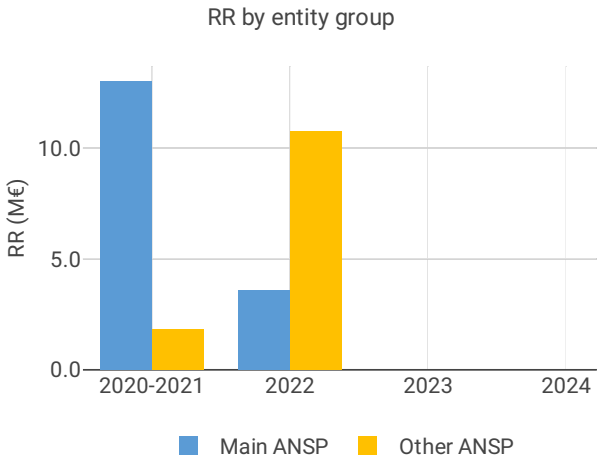
AUCU components (€/SU) – 2022

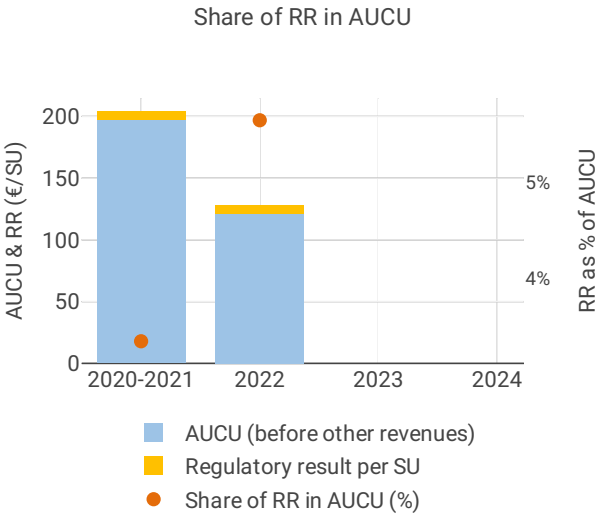
Components of the AUCU in 2022	€/SU
DUC	**118.72**
Inflation adjustment	2.46
Cost exempt from cost-sharing	-0.20
Traffic risk sharing adjustment	0.00
Traffic adj. (costs not TRS)	0.06
Finantial incentives	0.00
Modulation of charges	0.00
Cross-financing	0.00
Other revenues	-1.42
Application of lower unit rate	0.00
Total adjustments	0.90
AUCU	**119.63**
AUCU vs. DUC	**+0.8%**

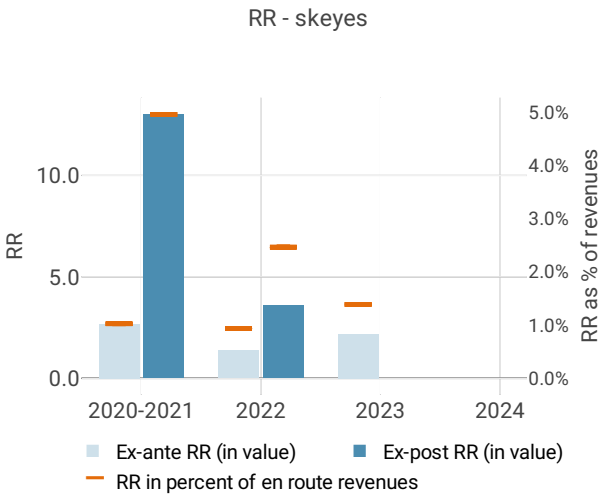


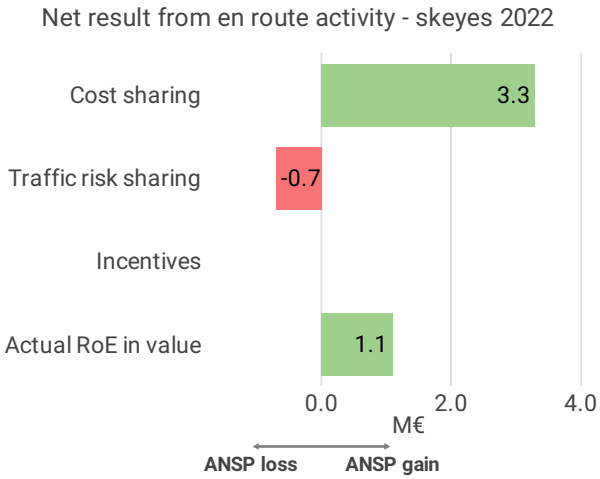
Cost exempt from cost sharing by item - 2022	€'000	€/SU
New and existing investments	-729.9	-0.35
Competent authorities and qualified entities costs	-27.4	-0.01
Eurocontrol costs	376.2	0.18
Pension costs	-30.3	-0.01
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**-411.4**	**-0.20**

5.2.3 Regulatory result (RR)









Focus on regulatory result

skeyes net gain on activity in the Belgium-Luxembourg en route charging zone in the year 2022

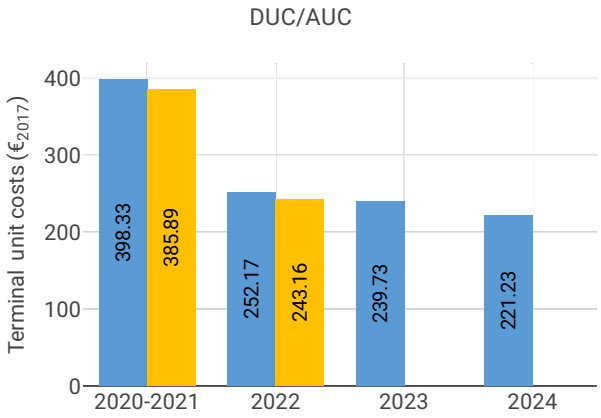
skeyes reported a net gain of +2.5 M€, as a combination of a gain of +3.3 M€ arising from the cost sharing mechanism, with a loss of -0.7 M€ arising from the traffic risk sharing mechanism.

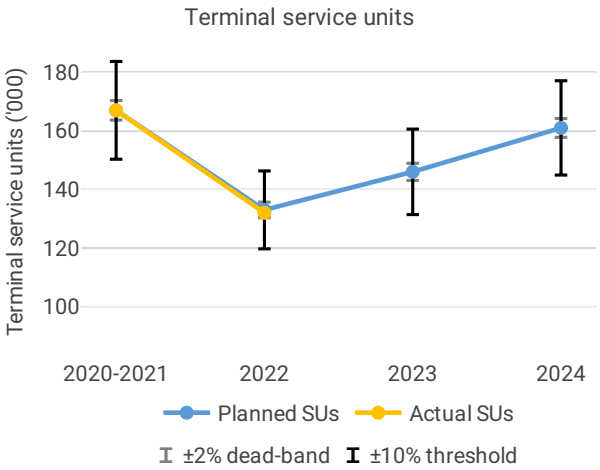
skeyes overall regulatory results (RR) for the en route activity

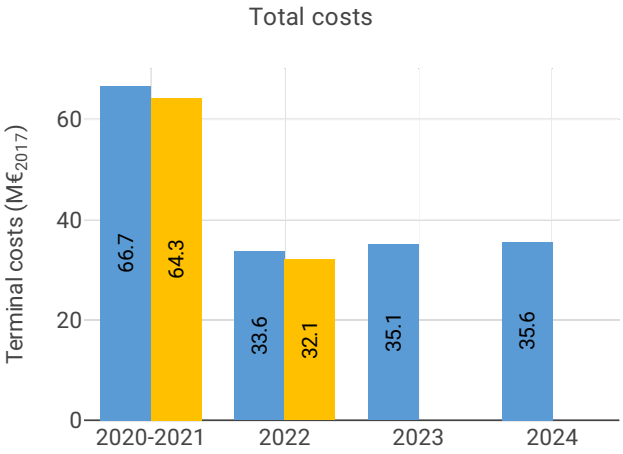
Ex-post, the overall RR taking into account the net gain from the en route activity mentioned above (+2.5 M€) and the actual RoE (+1.1 M€) amounts to +3.6 M€ (2.5% of the en route revenues). The resulting ex-post rate of return on equity is 8.4%, which is higher than the 2.5% planned in the PP.

5.3 Terminal charging zone

5.3.1 Unit cost (KPI#1)

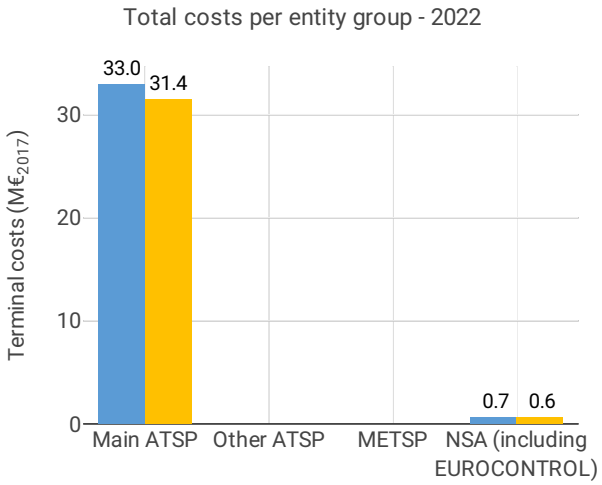


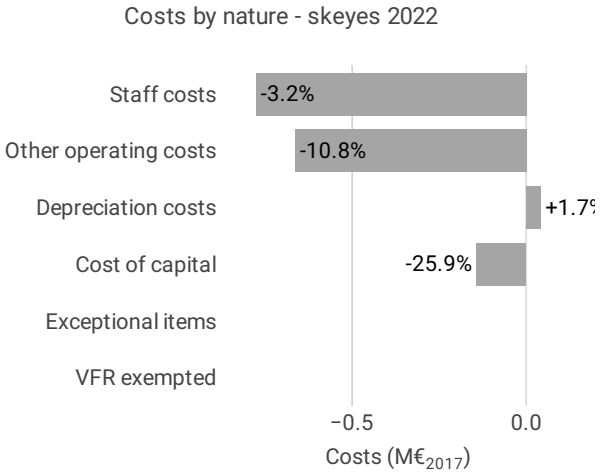




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	67	37	NA	NA
Determined costs	70	38	42	44
Difference costs	-2	-1	NA	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	7.8%	4.7%	2.1%
Determined inflation index	NA	115.6	123.9	126.5
Actual inflation rate	NA	10.3%	NA	NA
Actual inflation index	NA	118.3	NA	NA
Difference inflation index (p.p.)	NA	+2.7	NA	NA





Focus on unit cost

AUC vs. DUC

In 2022, the terminal AUC was -3.6% (or -9.01 €2017) lower than the planned DUC. This results from the combination of lower than planned terminal costs in real terms (-4.6%, or -1.6 M€2017) and lower than planned TNSUs (-1.1%). It should be noted that actual inflation index in 2022 was +2.7 p.p. higher than planned.

Terminal service units

The difference between actual and planned TNSUs (-1.1%) falls inside the ±2% dead band. Hence loss of terminal revenues is borne by the ANSPs.

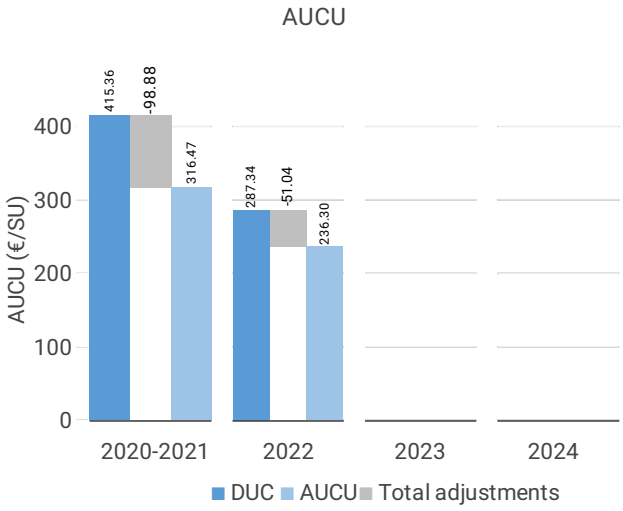
Terminal costs by entity

Actual real terminal costs are -4.6% (-1.6 M€2017) lower than planned. This is the result of lower costs for the main ANSP, skeyes (-4.7%, or -1.5 M€2017) and the NSA (-2.8%, or 0.02 M€2017).

Terminal costs for the main ANSP at charging zone level

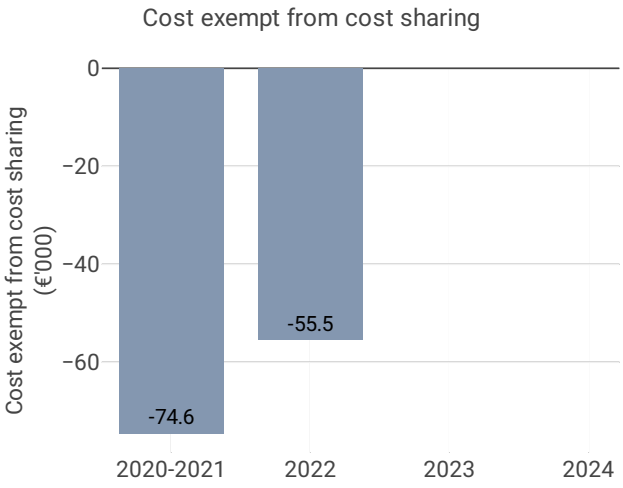
Lower than planned terminal costs in real terms for skeyes in 2022 (-4.7%, or -1.5 M€2017) result from:
- Lower staff costs (-3.2%), mainly due to the inflation index impact (+2.7 p.p., -1.0% difference in nominal terms). The impact of the automatic inflation indexation on salaries was compensated by lower training costs than planned for the EBBR Tower;
- Significantly lower other operating costs (-10.8%), due to delay of certain projects, which has negatively impacted the involvement of external support and license costs.
- Slightly higher depreciation (+1.7%),
- Significantly lower cost of capital (-25.9%), mainly due to a lower fixed asset base.

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



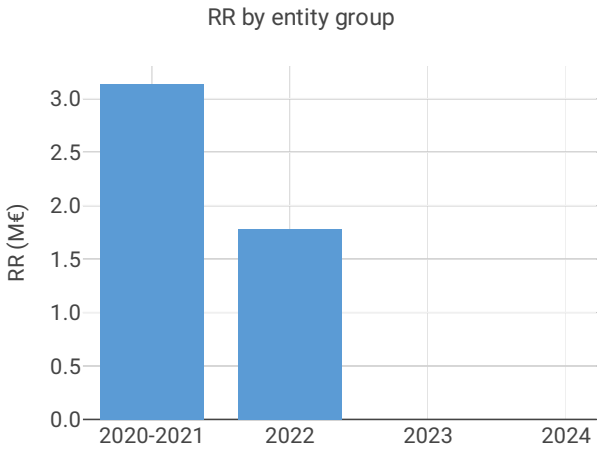
AUCU components (€/SU) – 2022

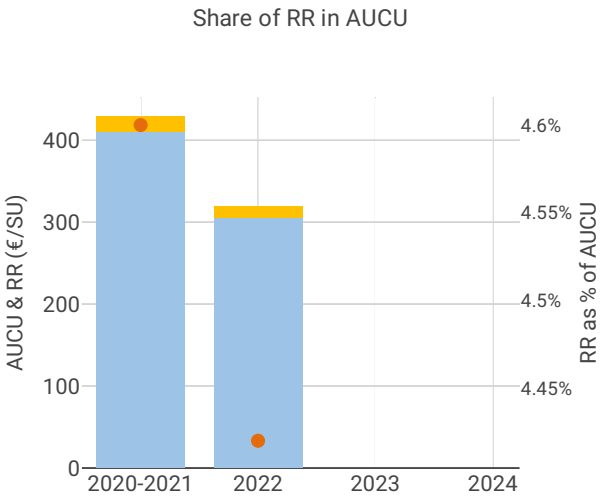
Components of the AUCU in 2022	€/SU
DUC	**287.34**
Inflation adjustment	6.10
Cost exempt from cost-sharing	-0.42
Traffic risk sharing adjustment	0.00
Traffic adj. (costs not TRS)	0.23
Finantial incentives	0.00
Modulation of charges	12.23
Cross-financing	0.00
Other revenues	-69.19
Application of lower unit rate	0.00
Total adjustments	-51.04
AUCU	**236.30**
AUCU vs. DUC	**-17.8%**

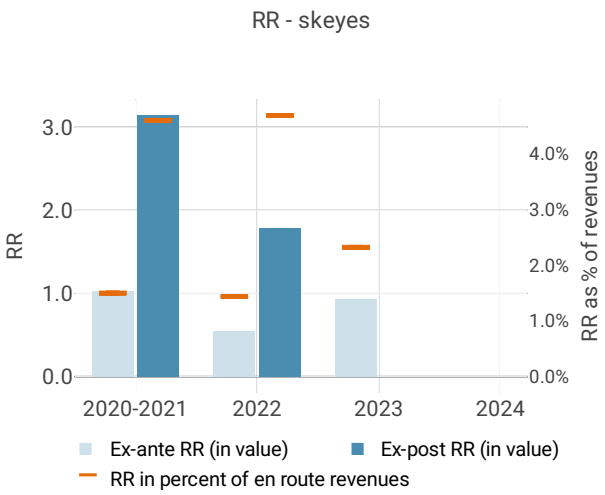


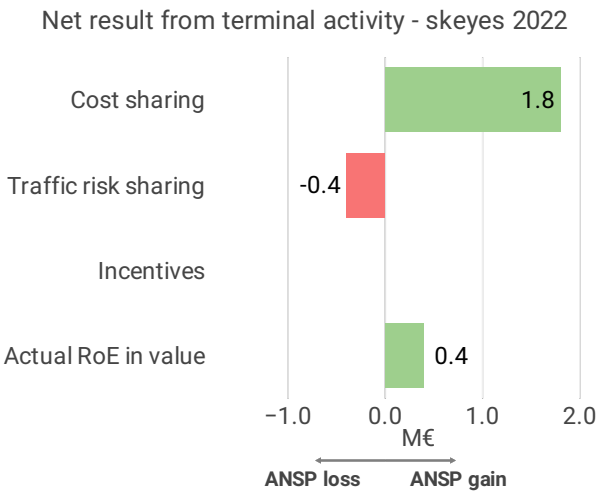
Cost exempt from cost sharing by item - 2022	€'000	€/SU
New and existing investments	-37.3	-0.28
Competent authorities and qualified entities costs	-18.3	-0.14
Eurocontrol costs	0.0	0.00
Pension costs	0.0	0.00
Interest on loans	0.0	0.00
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**-55.5**	**-0.42**

5.3.3 Regulatory result (RR)









Focus on regulatory result

skeyes net gain on activity in the Belgium terminal charging zone in the year 2022

skeyes reported a net gain of +1.4 M€, as a combination of a gain of +1.8 M€ arising from the cost sharing mechanism, with a loss of -0.4 M€ arising from the traffic risk sharing mechanism.

skeyes overall regulatory results (RR) for the Belgium terminal charging zone activity

Ex-post, the overall RR taking into account the net gain from the terminal activity mentioned above (+1.4 M€) and the actual RoE (+0.4 M€) amounts to +1.8 M€ (4.8% of the terminal revenues). The resulting ex-post rate of return on equity is 11.2%, which is higher than the 2.5% planned in the PP.