PRB | Performance review body of the single european sky

Performance Review Body Monitoring Report

Netherlands - 2022

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

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1 OVERVIEW

1.1 Contextual information

National performance plan adopted following Commission Decision (EU) 2023/179 of 14 December 2022

List of ACCs 1
Amsterdam ACC

No of airports in the scope of the performance plan:
- **≥80'K** 1
- **<80'K** 3

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

Share of Union-wide:
- **traffic (TSUs) 2022** 2.4%
- **en route costs 2022** 3.5%

Share en route / terminal costs 2022 77% / 23%

En route charging zone(s)
Netherlands

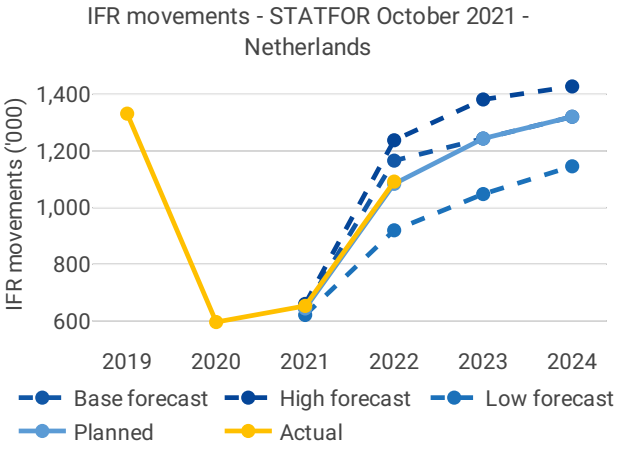
Terminal charging zone(s)
Netherlands

Main ANSP
- LVNL

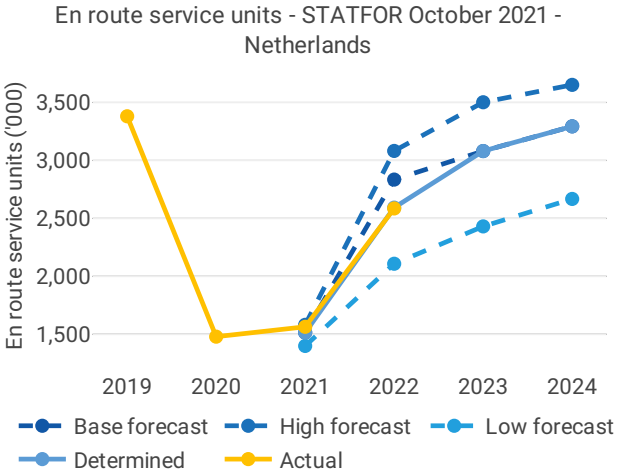
Other ANSPs
- MUAC

MET Providers
- Royal Netherlands Meteorological Institute (KNMI)

1.2 Traffic (En route traffic zone)

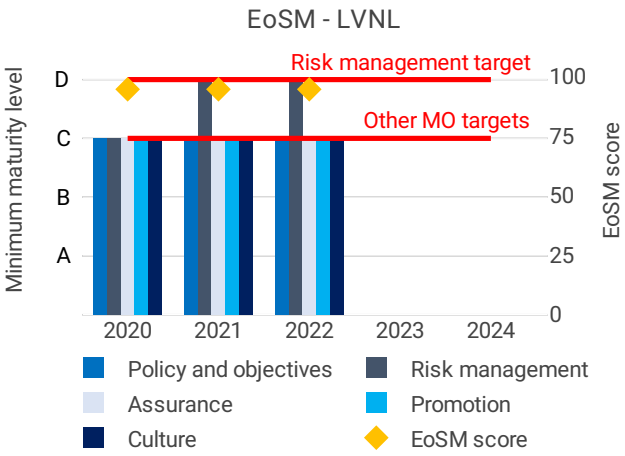


- Netherlands recorded 1,092K actual IFR movements in 2022, +67% compared to 2021 (653K).
- Actual 2022 IFR movements were +0.7% above the plan (1,084K).
- Actual 2022 IFR movements represent 82% of the actual 2019 level (1,332K).



- Netherlands recorded 2,586K actual en route service units in 2022, +65% compared to 2021 (1,565K).
- Actual 2022 service units were -0.3% below the plan (2,593K).
- Actual 2022 service units represent 76% of the actual 2019 level (3,381K).

1.3 Safety (Main ANSP)

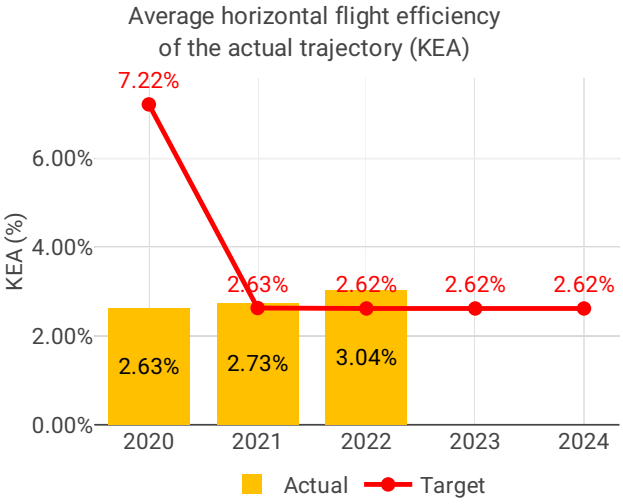


• LVNL achieved its RP3 EoSM targets levels in 2021 and maintained these levels in 2022. Specific measures were implemented ensuring continuous safety improvements (e.g. annual update of safety manual, establishment of a risk-based safety plan, and update of safety risk target document and corresponding unit safety case).

• The Netherlands did not provide monitoring data for separation minima infringements nor runway incursions in 2022.

• LVNL could improve its safety management by implementing automated safety data recording systems for runway incursions.

1.4 Environment (Member State)



• The Netherlands achieved a KEA performance of 3.04% compared to its target of 2.62% and did not contribute positively towards achieving the Union-wide target. KEA deteriorated compared to 2021.

• Both KEP and SCR values have improved by 4% compared to 2021.

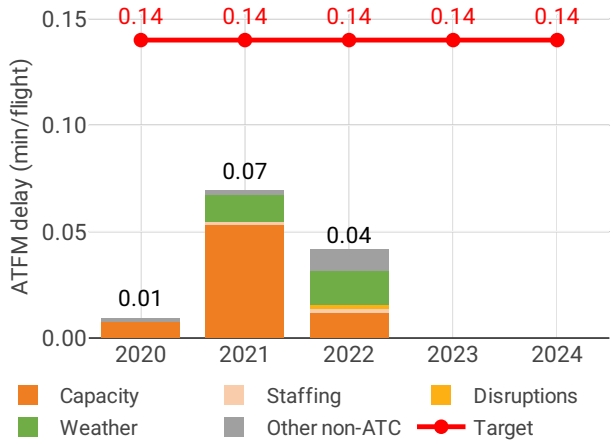
• The share of CDO flights decreased by 8.48% compared to 2021.

• During 2022, additional time in terminal airspace increased from 0.86 to 1.12min/flight, while additional taxi out time increased from 2.19 to 2.77min/flight.

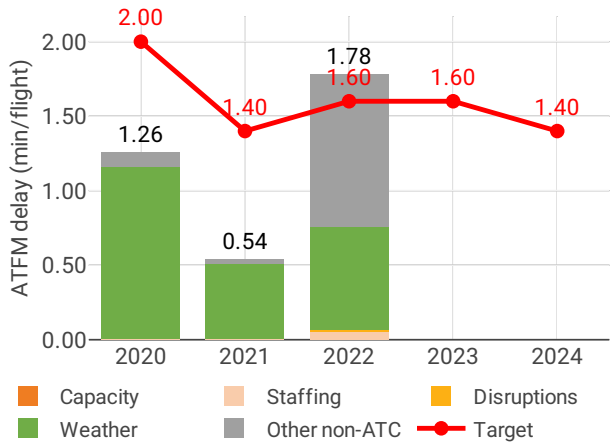
• The NSA states that the worsening environmental performance was due to internal and external issues, such as weather effects, maintenance at Schiphol airport, and network measures to reduce traffic demand for Reims ACC during their 4-FLIGHT implementation.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



Average arrival ATFM delay per flight by delay groups



• The Netherlands registered 0.04 minutes of average en route ATFM delay per flight during 2022, thus achieving the local target value of 0.14.

• The average number of IFR movements was 18% below 2019 levels in the Netherlands in 2022.

• A decrease in the number of ATCOs in OPS is planned in Amsterdam ACC by the end of RP3. The actual number decreased in 2022 and was below the 2022 plan.

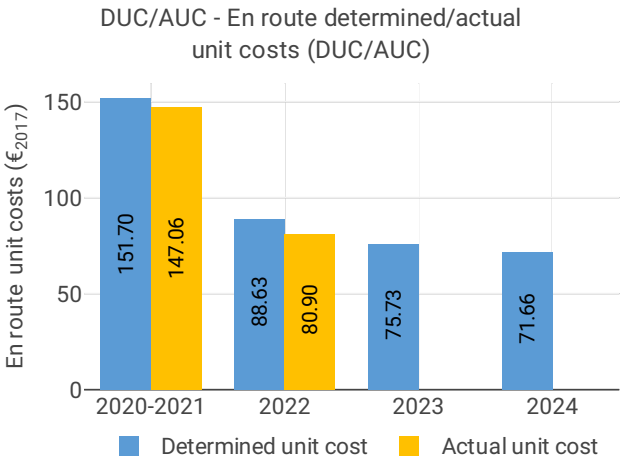
• Delays were highest in May, June and September, mostly driven by ATC Capacity issues.

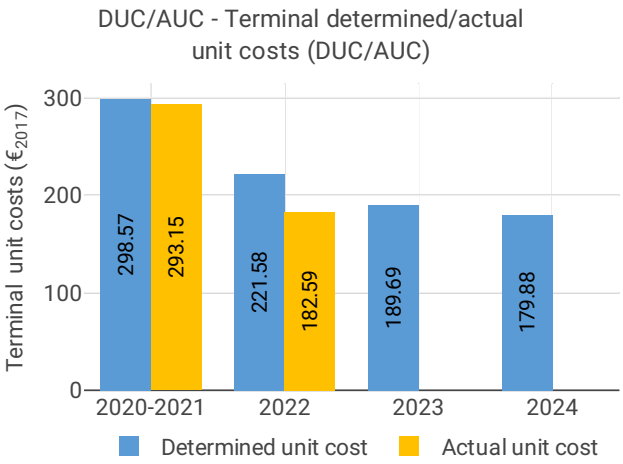
• The share of delayed flights with delays longer than 15 minutes in the Netherlands increased by 5.28 p.p. compared to 2021 and was lower than 2019 values.

• The yearly total of sector opening hours in Amsterdam ACC was 50,686 in 2022, showing a 31.7% increase compared to 2021. Sector opening hours are 1.4% above 2019 levels.

• Amsterdam ACC registered 12.84 IFR movements per one sector opening hour in 2022, being 6.7% below 2019 levels.

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





• The en route 2022 actual unit cost of the Netherlands was 80.81 €2017, -8.8% lower than the determined unit cost (88.63 €2017). The terminal 2022 actual unit cost was 182.59 €2017, -18% lower than the determined unit cost (221.58 €2017).

• The en route 2022 actual service units (2,586K) were in line with the determined service units (2,593K).

• In 2022, the en route actual total costs were 21 M€2017 (-9.1%) lower compared to determined. It was attributable to the substantial reduction in staff cost (-25 M€2017, or -17%) mainly due to lower full-time equivalents and pension premium than planned.

• Even though net book value of fixed assets was -12% lower than planned, LVNL spent 23 M€2017 in 2022 related to costs of investments, in line with the determined.

• The en route actual unit cost incurred by users in 2022 was 101.15€, while the terminal actual unit cost incurred by users was 246.52€.

2 SAFETY - NETHERLANDS

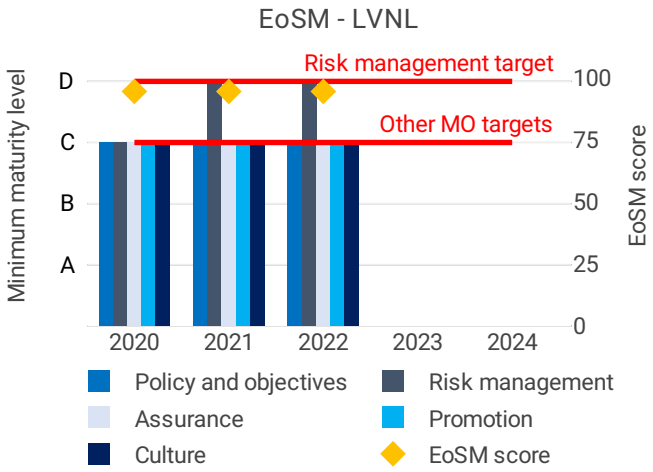
2.1 PRB monitoring

• LVNL achieved its RP3 EoSM targets levels in 2021 and maintained these levels in 2022. Specific measures were implemented ensuring continuous safety improvements (e.g. annual update of safety manual, establishment of a risk-based safety plan, and update of safety risk target document and corresponding unit safety case).

• The Netherlands did not provide monitoring data for separation minima infringements nor runway incursions in 2022.

• LVNL could improve its safety management by implementing automated safety data recording systems for runway incursions.

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



Focus on EoSM

All five EoSM components of the ANSP meet the RP3 target level. The level was maintained compared with 2021.

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

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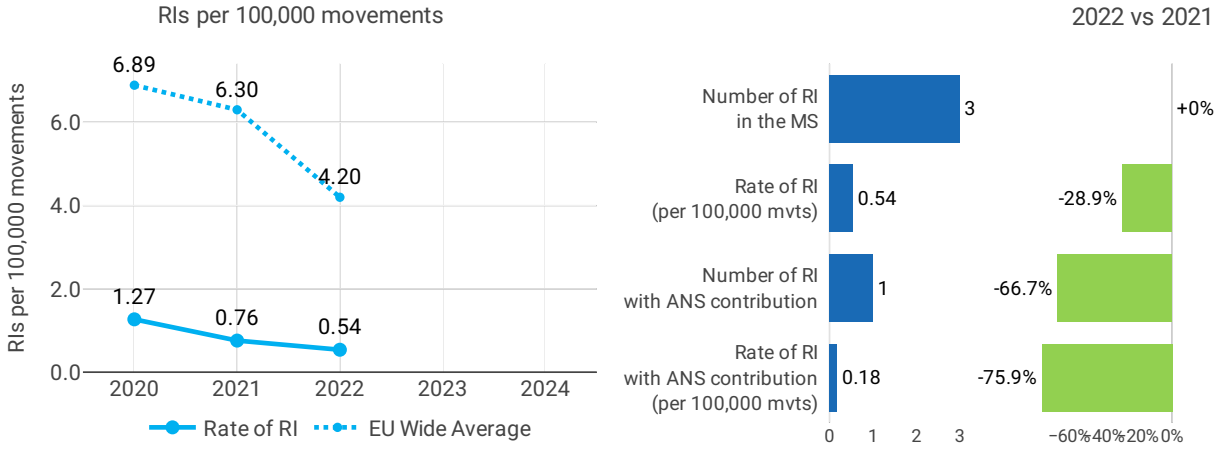
2.3 Safety occurrences

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



Rate of RIs per 100,000 airport movements - Netherlands

#	Airport name	APT movements	Number of RI	Rate RI per 100,000
1	Amsterdam - Schiphol	416,455	0	NA
2	Rotterdam	59,444	0	NA
3	Groningen	55,565	1	NA
4	Maastricht-Aachen	13,619	0	NA

Focus on runway incursions

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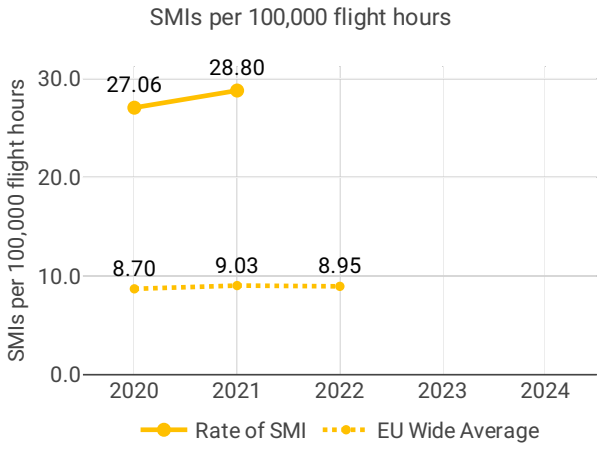
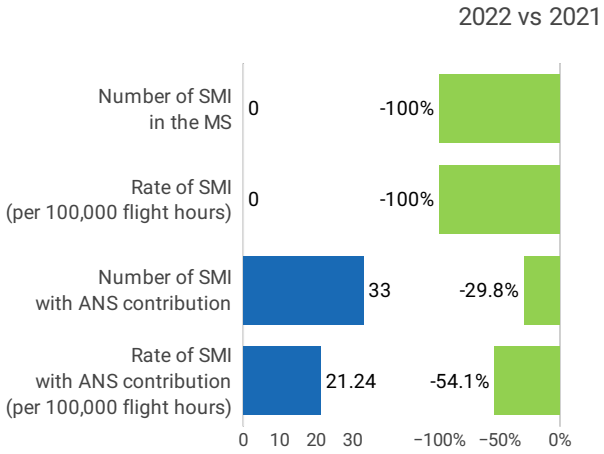
2.3.2 Rate of separation minima infringements (SMIs) (PI#2)





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

		Flight hours					Number of SMIs				
#	ANSP	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	LVNL	88,456	101,649	155,388	NA	NA	31	47	33	NA	NA

		Rate of SMI per 100,000 flight hours					% variation in rate of SMIs				
#	ANSP	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	LVNL	37.8	46.2	21.2	NA	NA	NA	+22%	-54%	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

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2.3.3 Quality of occurences reporting

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

2022	
For RIs	For SMIs
✗	✓

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3 ENVIRONMENT - NETHERLANDS

3.1 PRB monitoring

• The Netherlands achieved a KEA performance of 3.04% compared to its target of 2.62% and did not contribute positively towards achieving the Union-wide target. KEA deteriorated compared to 2021.

• Both KEP and SCR values have improved by 4% compared to 2021.

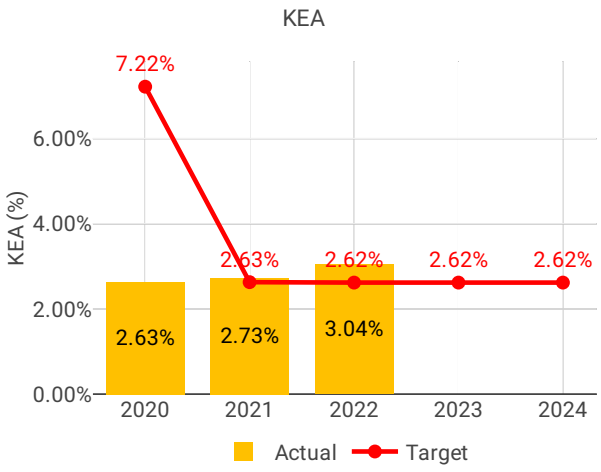
• The share of CDO flights decreased by 8.48% compared to 2021.

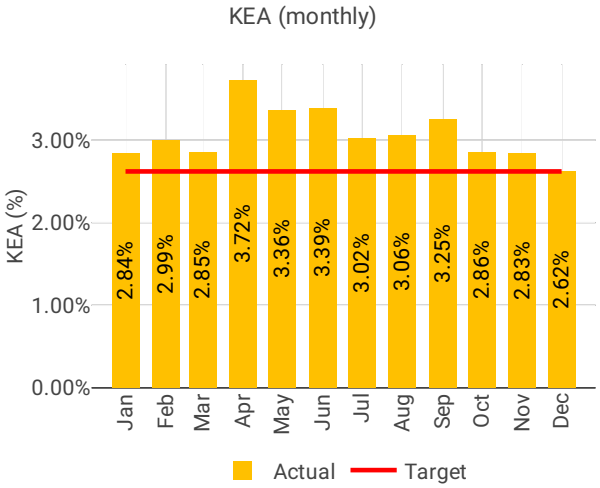
• During 2022, additional time in terminal airspace increased from 0.86 to 1.12min/flight, while additional taxi out time increased from 2.19 to 2.77min/flight.

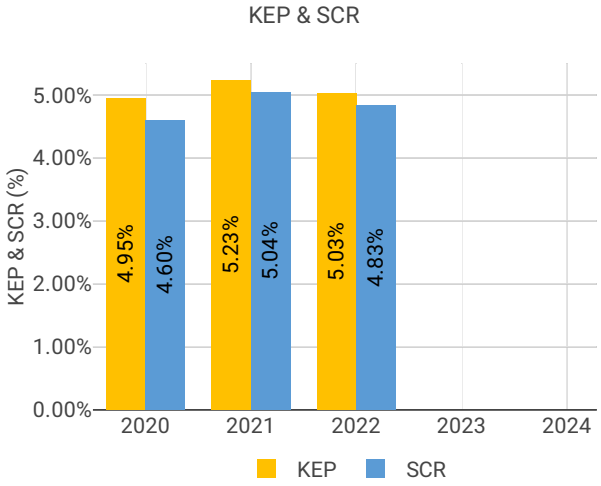
• The NSA states that the worsening environmental performance was due to internal and external issues, such as weather effects, maintenance at Schiphol airport, and network measures to reduce traffic demand for Reims ACC during their 4-FLIGHT implementation.

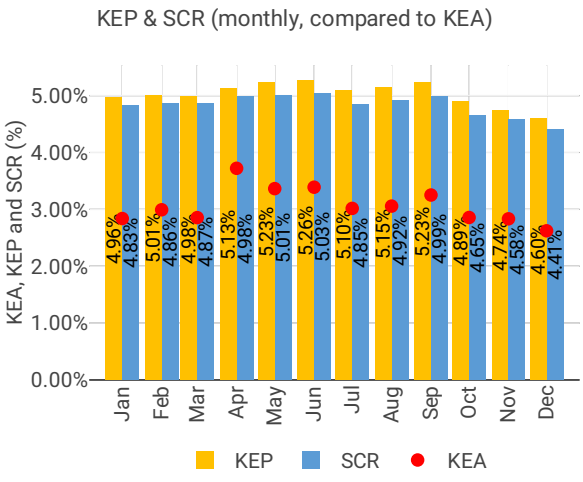
3.2 En route performance

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)



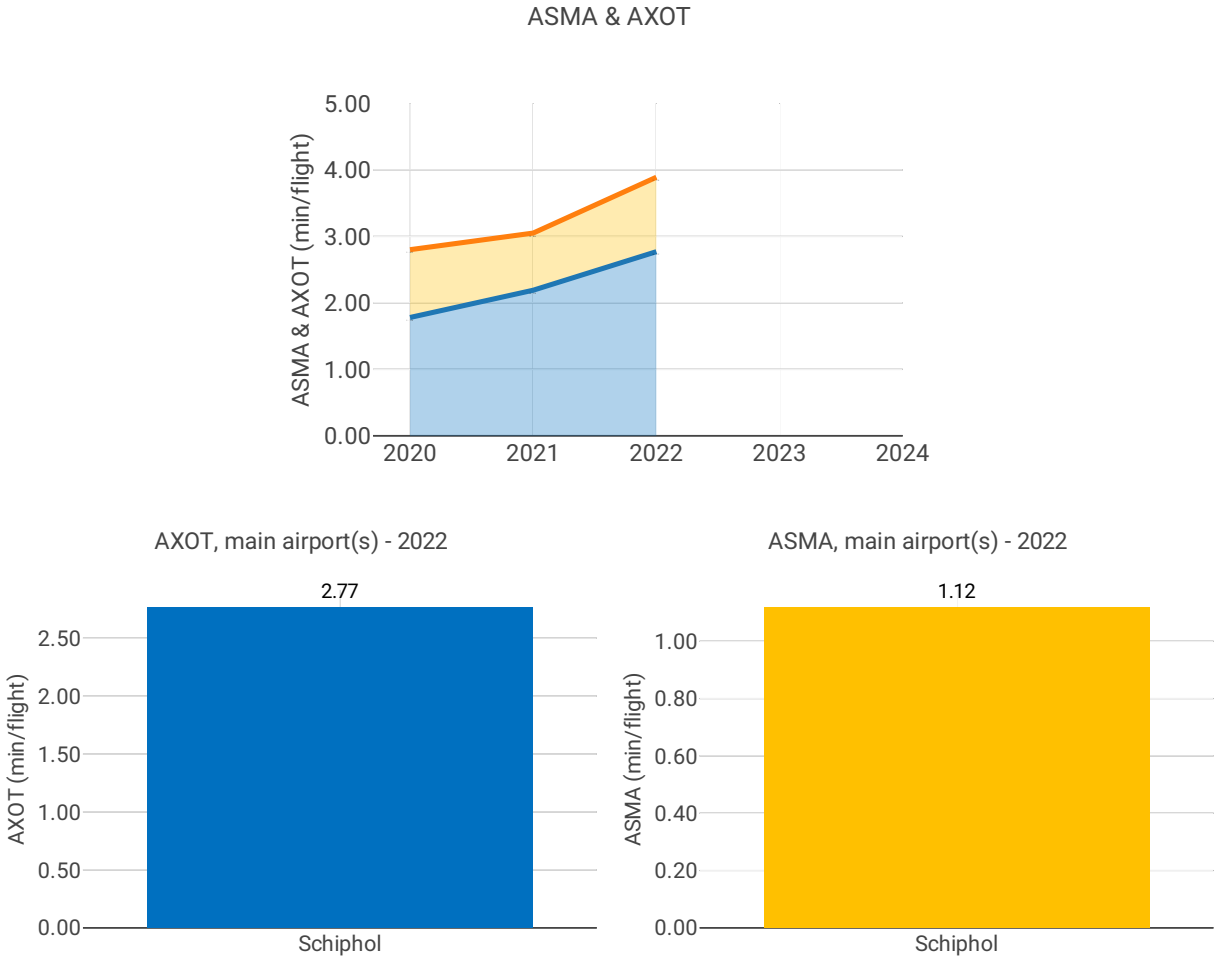






3.3 Terminal performance

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



Focus on ASMA & AXOT

AXOT

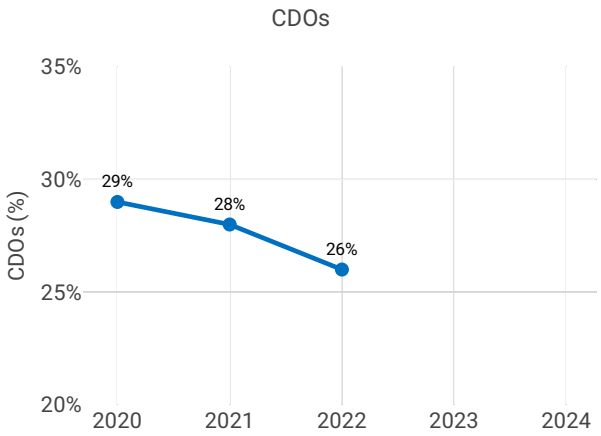
Additional taxi-out times at Amsterdam (EHAM; 2019: 3.11 min/dep; 2020: 1.78 min/dep.; 2021: 2.19 min/dep.; 2022: 2.77 min/dep.) increased in 2022 resulting in an annual value above the SES average 2.52 min/dep, although this was still lower than the pre-COVID value in 2019.
According to the Dutch monitoring report: *No specific initiatives are planned. The performance is mainly influenced by the runway combination in use (e.g. taxiing around an active runway instead of crossing it - that only happens when the runway is not in use) or taxiway maintenance.*
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.

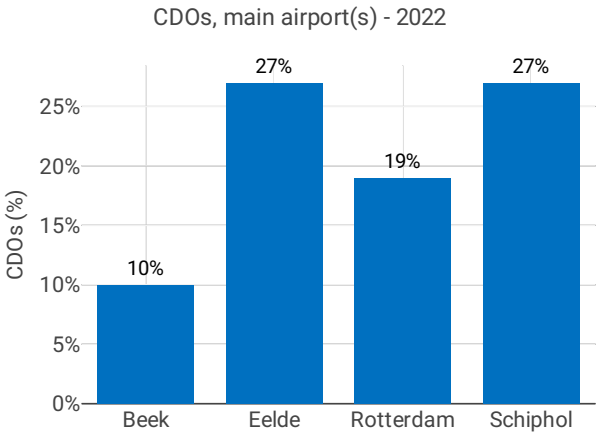
ASMA

Additional times in the terminal airspace of Amsterdam (EHAM; 2019: 1.78 min/arr.; 2020: 1.02 min/arr.; 2021: 0.86 min/arr.; 2022: 1.12 min/arr.) increased in 2022 resulting in an annual value above the SES average 1.06 min/arr., although this was still lower than the pre-COVID value in 2019.
According to the Dutch monitoring report: *RECAT-EU and Time-Based Separation has been introduced at Amsterdam-Schiphol resulting in increased runway capacity under certain circumstances and reduced*

time in ASMA. Furthermore, implementation of fixed arrival routes in the Schiphol TMA are planed in RP4. Expected effects are reduced vectoring and more predictable times in the TMA.

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





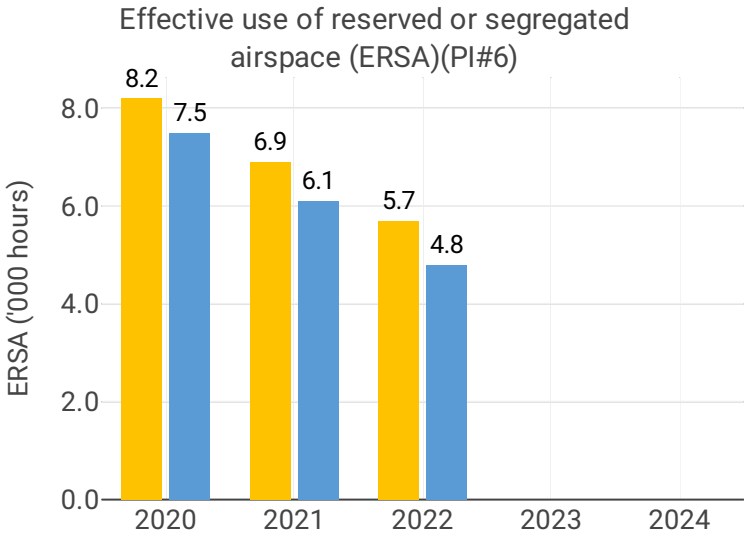
Focus CDOs

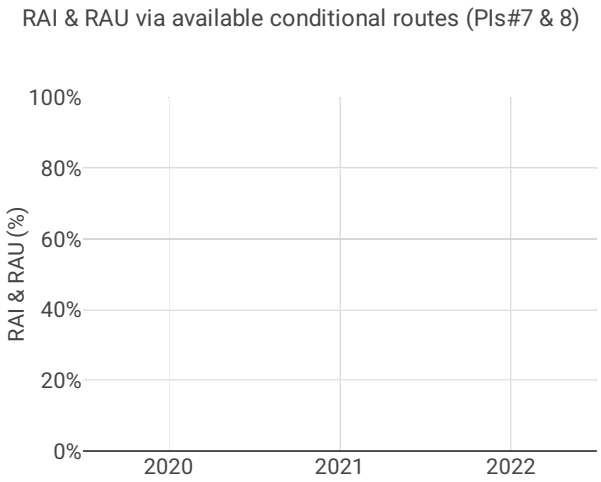
All airport have shares of CDO flights below the overall RP3 value in 2022 (29.0%). Amsterdam (EHAM), Groningen (EHGG) and Rotterdam (EHRD) have a lower share of CDO flights than in 2021 while it has increased at Maastricht-Aachen (EHBK) from 8.9% in 2021 to 10.4% of CDO flights in 2022.
According to the Dutch monitoring report: *For the Netherlands, the percentage of arrivals performing a CDO is similar in 2022 compared to 2021 and 2020. Even with lower traffic levels arrivals have to fly a part of the approach in level flight e.g. due to procedures (vertical separation between parallel approaches, interception of glide slope from below). Implementation of fixed arrival routes in the Schiphol and Rotterdam TMA in RP4 should improve predictability of distance to go for airspace users and thus a higher share of CDOs.*

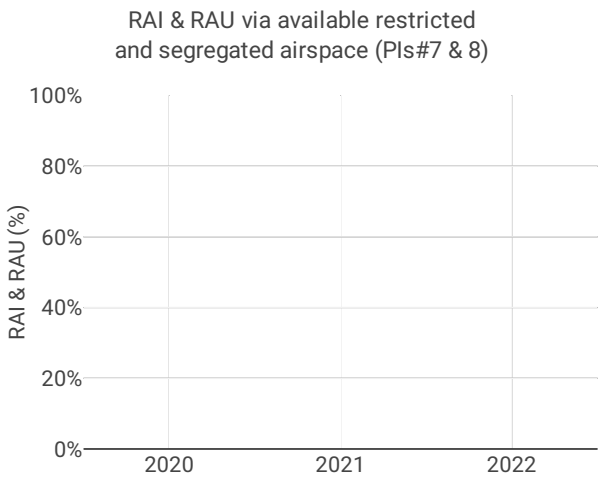
Airport level

	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
Schiphol	1.78	2.19	2.77	NA	NA	1.02	0.86	1.12	NA	NA	30%	29%	27%	NA	NA
Beek	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11%	9%	10%	NA	NA
Eelde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26%	28%	27%	NA	NA
Rotterdam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20%	22%	19%	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

For MUAC the ATMP will be used to propose improved routings to aircraft operators in pre-tract. The tool takes into account the expected airspace availability.

Initiatives implemented or planned to improve PI#7

No data available.

Initiatives implemented or planned to improve PI#8

No data available.

4 CAPACITY - NETHERLANDS

4.1 PRB monitoring

• The Netherlands registered 0.04 minutes of average en route ATFM delay per flight during 2022, thus achieving the local target value of 0.14.

• The average number of IFR movements was 18% below 2019 levels in the Netherlands in 2022.

• A decrease in the number of ATCOs in OPS is planned in Amsterdam ACC by the end of RP3. The actual number decreased in 2022 and was below the 2022 plan.

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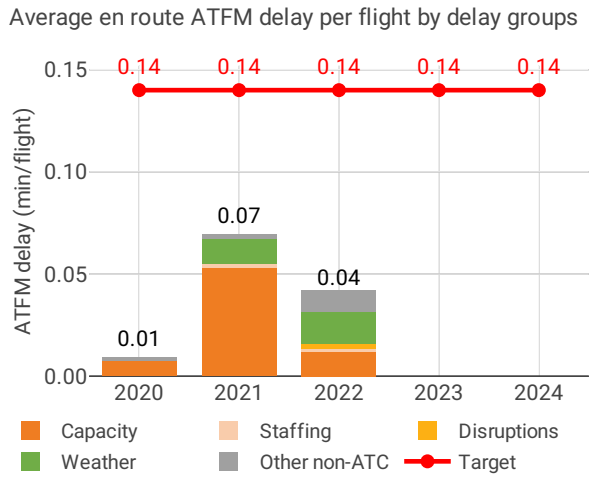
• The share of delayed flights with delays longer than 15 minutes in the Netherlands increased by 5.28 p.p. compared to 2021 and was lower than 2019 values.

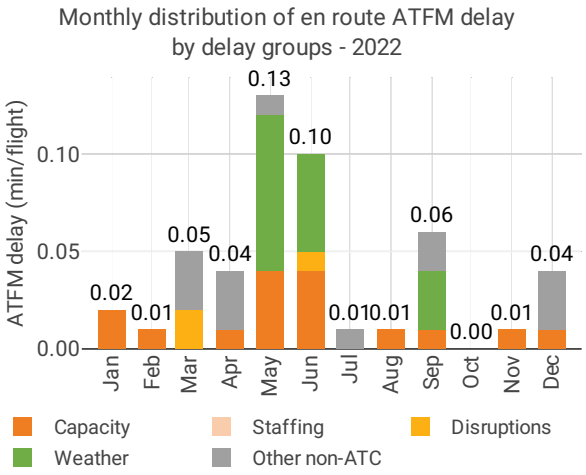
• The yearly total of sector opening hours in Amsterdam ACC was 50,686 in 2022, showing a 31.7% increase compared to 2021. Sector opening hours are 1.4% above 2019 levels.

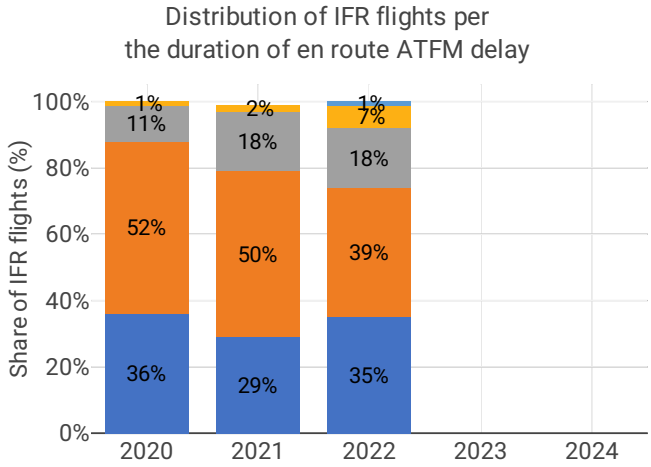
• Amsterdam ACC registered 12.84 IFR movements per one sector opening hour in 2022, being 6.7% below 2019 levels.

4.2 En route performance

4.2.1 En route ATFM delay (KPI#1)







Focus on en route ATFM delay

Summary of capacity performance

The Netherlands achieved the required en route capacity performance in 2022. There were 1 092k flights handled in the airspace of the Netherlands (both Amsterdam ACC and the DECO sectors in MUAC).
There were 48k minutes of en route ATFM delay attributed to ANSPs in Dutch airspace.

NSA's assessment of capacity performance

In 2022, the Netherlands did reach the en route capacity target.

Monitoring process for capacity performance

LVNL 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 quarterly performance reports directly to the State. This report is based on LVNL data and available PRU data, which is consolidated and analysed and the results compared to the reference and indicative values.

Capacity planning

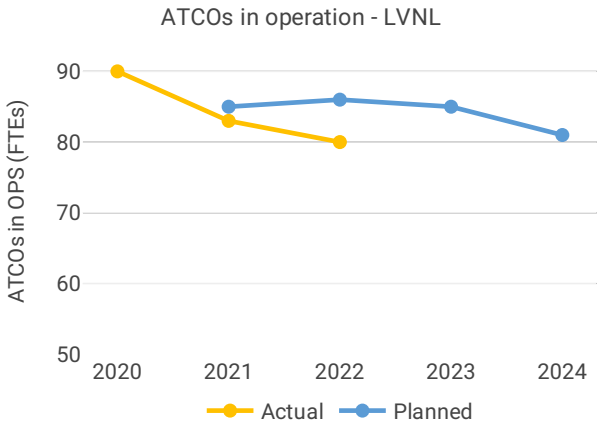
The ANSPs in the Netherlands, LVNL and MUAC, contribute to the new NOP planning process, both the long term NOP and the weekly Rolling NOP.
They contribute information and data to the provision for a consolidated European network view of the evolution of the air traffic, enabling the planning of the service delivered 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.

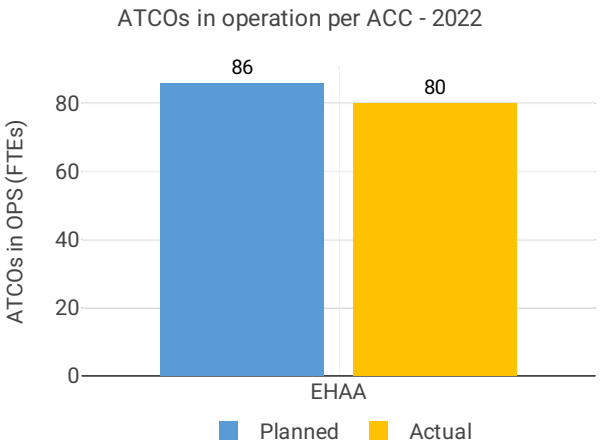
Application of Corrective Measures for Capacity (if applicable)

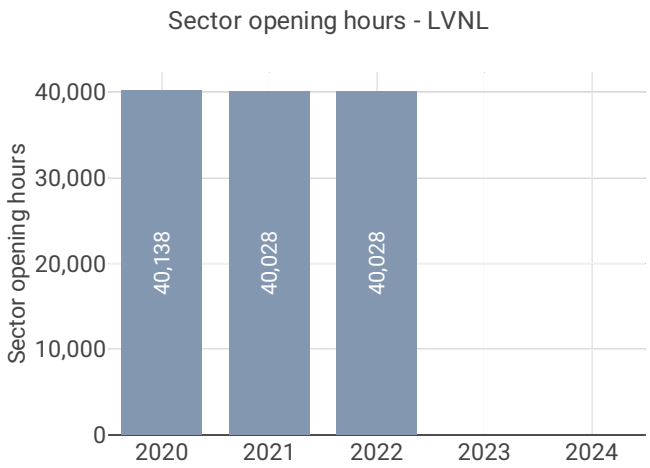
No data available.

Additional Information Related to Russia's War of Aggression Against Ukraine No data available.

4.2.2 Other indicators





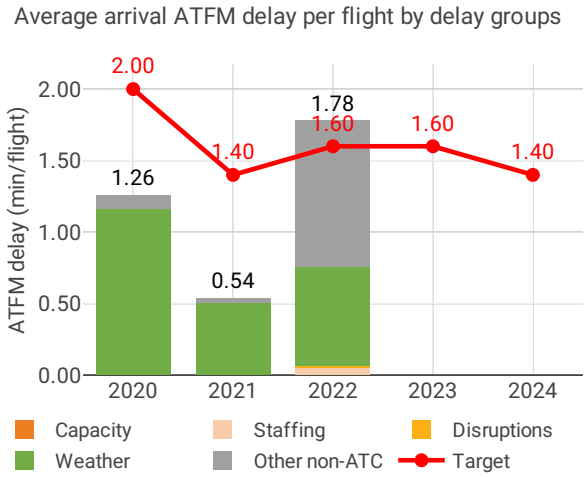


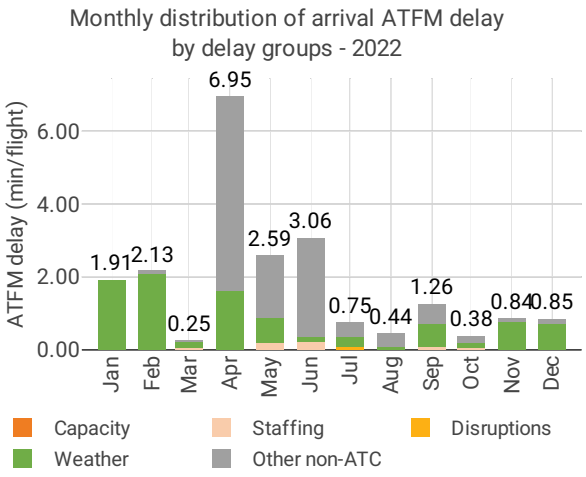
Focus on ATCOs in operations

Amsterdam ACC: N/AMaastricht ACC: For MUAC more ATCO than anticipated have stopped working in OPS

4.3 Terminal performance

4.3.1 Arrival ATFM delay (KPI#2)





Focus on arrival ATFM delay

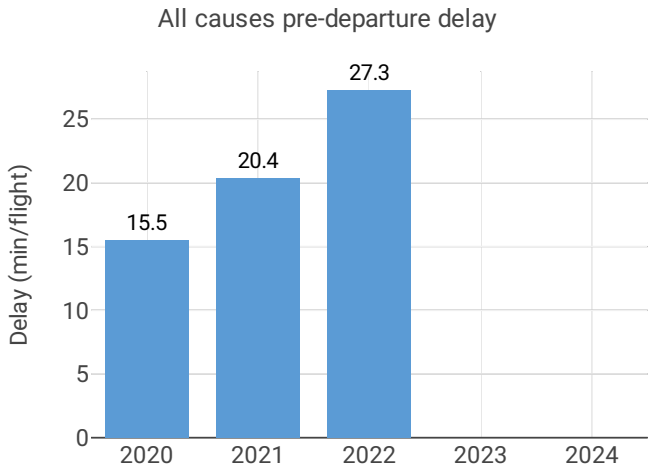
For the Netherlands, the scope of the performance monitoring of terminal services under RP3 comprises a total of 4 airports. In accordance with IR (EU) 2019/317 and the traffic figures at these 4 airports, only Amsterdam must be monitored for pre-departure delays. The Airport Operator Data Flow is fully established at Amsterdam and the monitoring of pre-departure delays can be performed. Nevertheless, the quality of the reporting does not allow for the calculation of the ATC pre-departure delay, with more than 60% of the reported delay not allocated to any cause. Traffic at these 4 airports decreased in 2022 was still 17% lower than in 2019 regardless the increase of 49% with respect to 2021.
Average arrival ATFM delays in 2022 was 1.78 min/arr, compared to 0.54 min/arr in 2021. ATFM slot adherence has deteriorated (2022: 97.7%; 2021: 98.1%).

Amsterdam (EHAM: 2019: 4.23 min/arr.; 2020: 1.41 min/arr.; 2021: 0.60 min/arr.; 2022: 1.98 min/arr.) significantly increased the arrival ATFM delays compared to previous years. 56% of the delays were attributed to Aerodrome Capacity issues, followed by 39% attributed to Weather. The rest of Dutch airports registered zero or nearly zero arrival ATFM delays in 2022.
The Dutch monitoring report mentions these recommendations: *In the long term LVNL is working with AAS, the main Airline Operator at Schiphol, and the slot coordinator to improve the slot allocation, with the aim of reducing bunching for inbound traffic demand since this is one of the major causes of airport*

delay at Schiphol. Additionally, LVNL has implemented Time-Based Separation to increase the runway capacity of Schiphol, especially during strong winds. This is expected to reduce airport ATFM delays.
As additional measures, the monitoring report adds: *In the coming years each year one runway will undergo heavy maintenance, lasting 2-3 months. This reduced runway availability increases the probability that only one landing runway can be used while demand is for two runways.*
Concerning remedial actions related to the war in Ukraine, the monitoring report mentions: For MUAC: *Re-alignment of the corridors and a better coordination on when to activate and de-activate the corridors were achieved after negotiations.*
3. Arrival ATFM Delay – National TargetThe national target on arrival ATFM delay in 2022 was met.

All four airports showed adherence above 97% and the national average was 97.7%. With regard to the 2.3% of flights that did not adhere, 0.6% was early and 1.6% was late.

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	2024	2020	2021	2022	2023	2024
Beek	NA	0.01	0.10	NA	NA	96.0%	97.4%	97.2%	NA%	NA%
Eelde	0.01	0.00	0.01	NA	NA	88.0%	91.9%	98.1%	NA%	NA%
Rotterdam	NA	0.00	0.00	NA	NA	100.0%	98.8%	98.9%	NA%	NA%
Schiphol	1.41	0.60	1.98	NA	NA	97.6%	98.1%	97.7%	NA%	NA%

	ATC pre departure delay (PI#2)					All causes pre departure delay (PI#3)				
Airport name	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Beek	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Eelde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rotterdam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Schiphol	NA	NA	NA	NA	NA	15.5	20.4	27.3	NA	NA

Focus on performance indicators at airport level

ATFM slot adherence

The share of unidentified delay reported by Amsterdam (the only Dutch airport subject to monitoring of this indicator) in 2022 has been well above 40% every month of the year, preventing the calculation of this indicator. The insufficient data quality provided by Amsterdam is a long standing issue. The Dutch monitoring report does not mention any special measure to improve the data reporting.

ATC pre-departure delay

Amsterdam is the only Dutch airport subject to the monitoring of this indicator. The total (all causes) delay in the actual off block time at Amsterdam in 2022 was 27.35 min/dep. which is the second highest among the RP3 monitored airports. The highest delays per flight were observed in June, averaging amore than 35 min/dep.

All causes pre-departure delay

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

5 COST-EFFICIENCY - NETHERLANDS

5.1 PRB monitoring

• The en route 2022 actual unit cost of the Netherlands was 80.81 €2017, -8.8% lower than the determined unit cost (88.63 €2017). The terminal 2022 actual unit cost was 182.59 €2017, -18% lower than the determined unit cost (221.58 €2017).

• The en route 2022 actual service units (2,586K) were in line with the determined service units (2,593K).

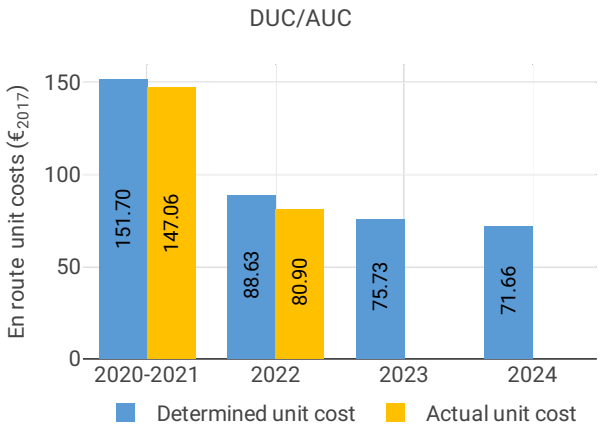
• In 2022, the en route actual total costs were 21 M€2017 (-9.1%) lower compared to determined. It was attributable to the substantial reduction in staff cost (-25 M€2017, or -17%) mainly due to lower full-time equivalents and pension premium than planned.

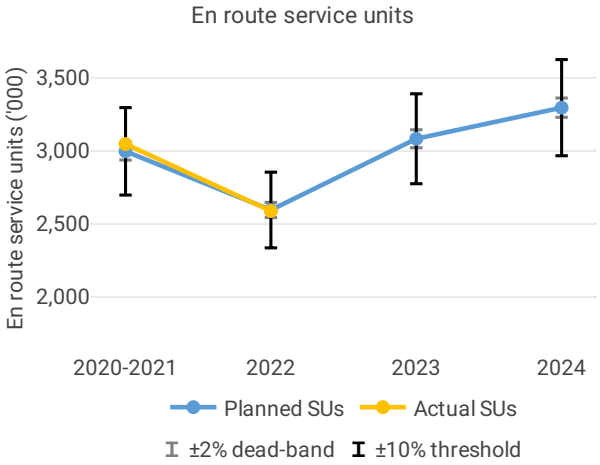
• Even though net book value of fixed assets was -12% lower than planned, LVNL spent 23 M€2017 in 2022 related to costs of investments, in line with the determined.

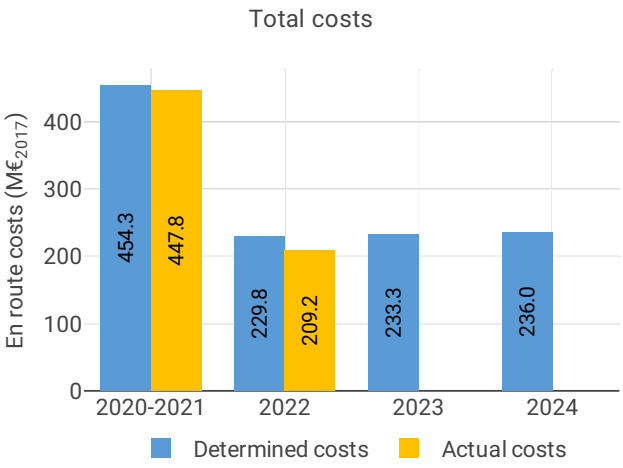
• The en route actual unit cost incurred by users in 2022 was 101.15€, while the terminal actual unit cost incurred by users was 246.52€.

5.2 En route charging zone

5.2.1 Unit cost (KPI#1)

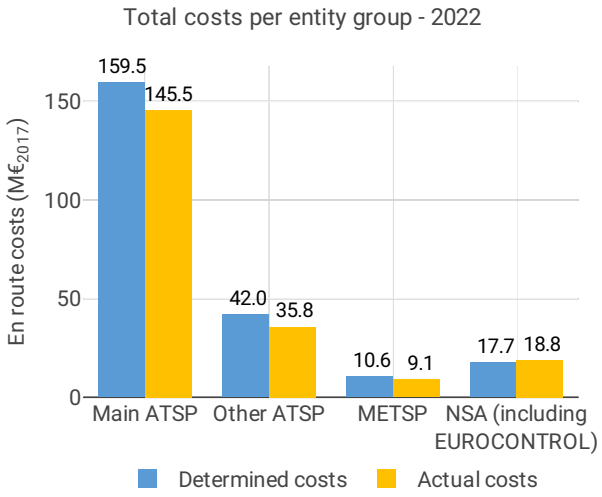


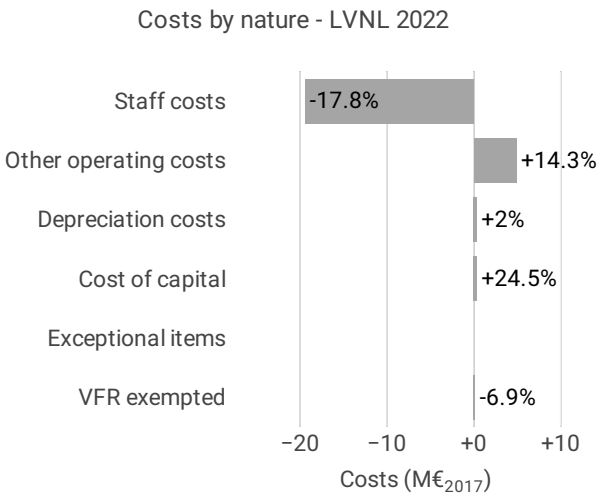




Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	474	245	NA	NA
Determined costs	478	246	253	259
Difference costs	-4	-1	NA	NA
Inflation assumptions	**2020-2021**	**2022**	**2023**	**2024**
Determined inflation rate	NA	1.5%	1.6%	1.6%
Determined inflation index	NA	108.6	110.3	112.1
Actual inflation rate	NA	11.6%	NA	NA
Actual inflation index	NA	121	NA	NA
Difference inflation index (p.p.)	NA	+12.5	NA	NA





Focus on unit cost

AUC vs. DUC

In 2022, the en route AUC was -8.8% (or -7.82 €2017) lower than the planned DUC. This results from the combination of significantly lower than planned en route costs in real terms (-9.1%, or -20.9 M€2017) and slightly lower than planned TSUs (-0.3%). It should be noted that actual inflation index in 2022 was +12.5 p.p. higher than planned.

En route service units

The difference between actual and planned TSUs (-0.3%) 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 -9.1% (-20.9 M€2017) lower than planned. This is the result of lower costs for the main ANSP, LVNL (-8.8%, or -14.0 M€2017), the other ANSP (MUAC (Netherlands), -14.9%, or -6.2 M€2017) and the MET service provider (-14.9%, or -1.6 M€2017) and higher costs for the NSA/EUROCONTROL (+5.5%, or +1.0 M€2017).

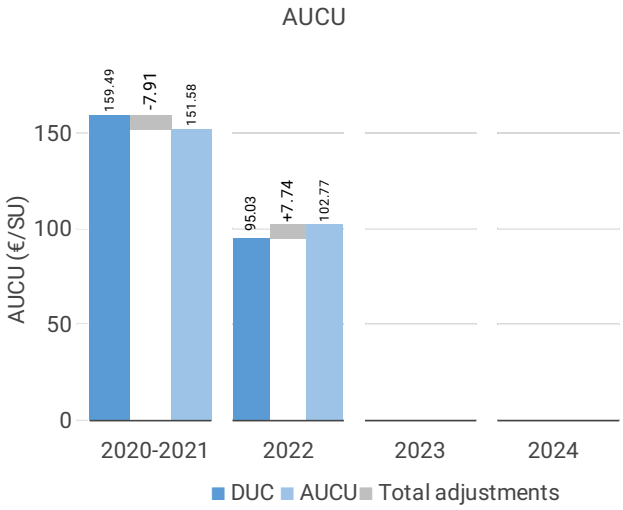
En route costs for the main ANSP at charging zone level

Significantly lower than planned en route costs in real terms for LVNL in 2022 (-8.8%, or -14.0 M€2017) result from:

- Significantly lower staff costs (-17.8%), due to lower FTE's and lower pension costs than planned in performance plan.
- Significantly higher other operating costs (+14.3%), as a result of the increase in the training costs, due to outsourcing of the Initial training of air traffic controllers for RP4 and the inflation, impacting among

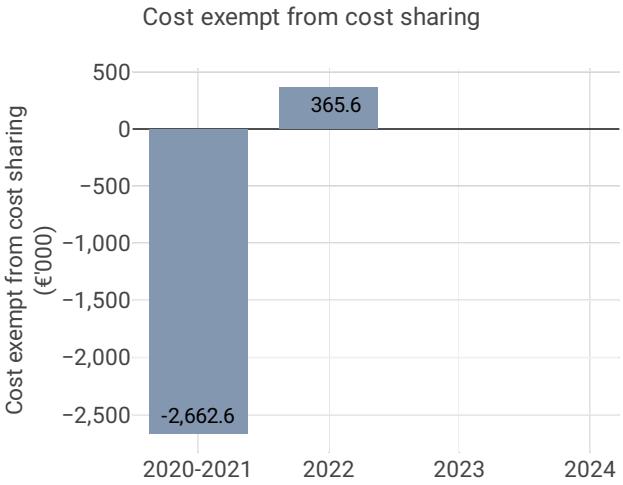
others, the energy and external hiring costs
- Higher depreciation (+2.0%), related to numerous small changes.
- Significantly higher cost of capital (+24.5%), due to increased interest rate.
- Significantly lower deduction for VFR exempted flights (-6.9%).

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



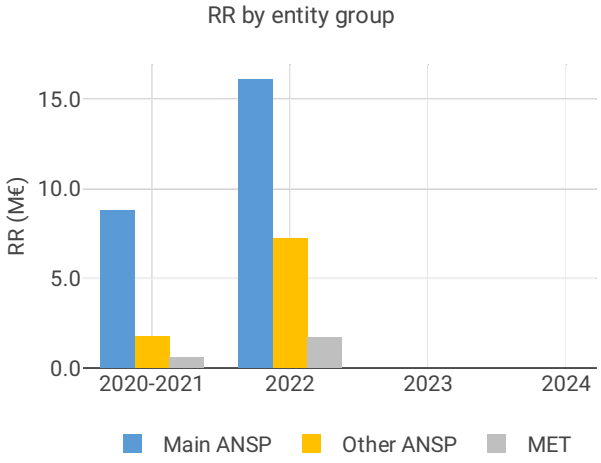
AUCU components (€/SU) – 2022

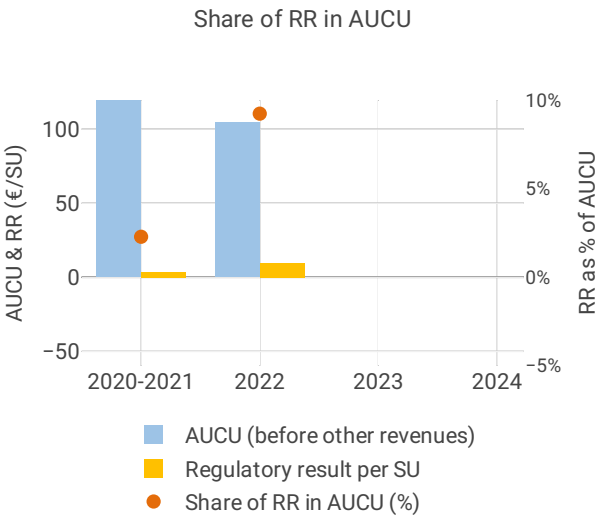
Components of the AUCU in 2022	€/SU
DUC	**95.03**
Inflation adjustment	9.33
Cost exempt from cost-sharing	0.14
Traffic risk sharing adjustment	0.00
Traffic adj. (costs not TRS)	0.03
Finantial incentives	0.00
Modulation of charges	0.00
Cross-financing	0.00
Other revenues	-1.76
Application of lower unit rate	0.00
Total adjustments	7.74
AUCU	**102.77**
AUCU vs. DUC	**+8.1%**

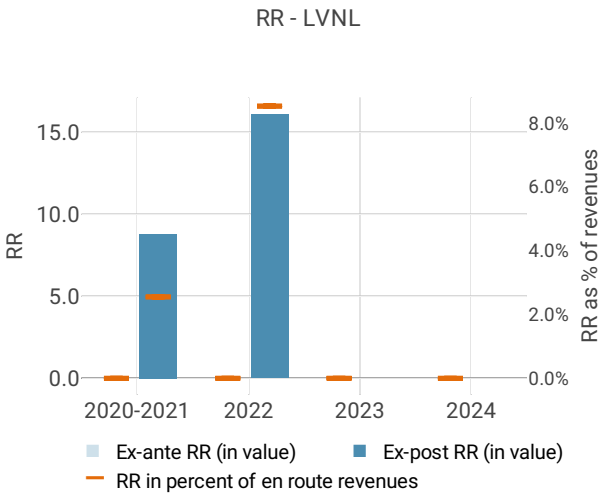


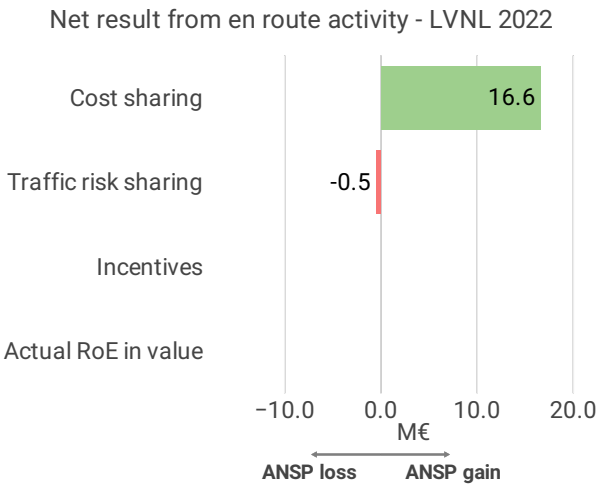
Cost exempt from cost sharing by item - 2022	€'000	€/SU
New and existing investments	-150.8	-0.06
Competent authorities and qualified entities costs	0.0	0.00
Eurocontrol costs	1,191.5	0.46
Pension costs	-1,145.0	-0.44
Interest on loans	470.0	0.18
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**365.6**	**0.14**

5.2.3 Regulatory result (RR)









Focus on regulatory result

LVNL net gain on activity in the Netherlands en route charging zone in the year 2022

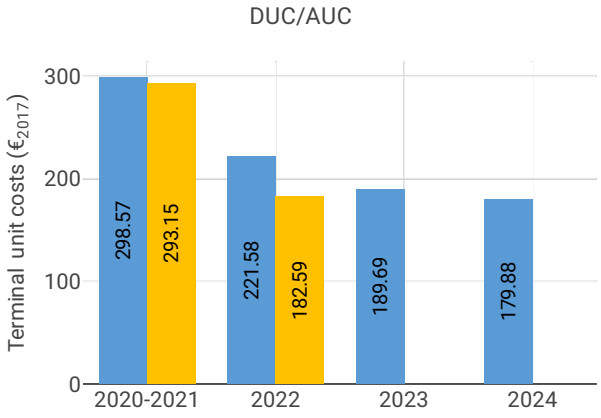
LVNL reported a net gain of +16.1 M€, as a combination of a gain of +16.6 M€ arising from the cost sharing mechanism, with a loss of -0.5 M€ arising from the traffic risk sharing mechanism.

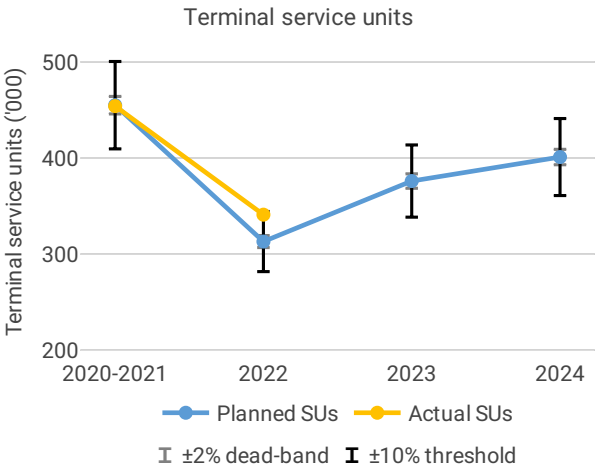
LVNL overall regulatory results (RR) for the en route activity

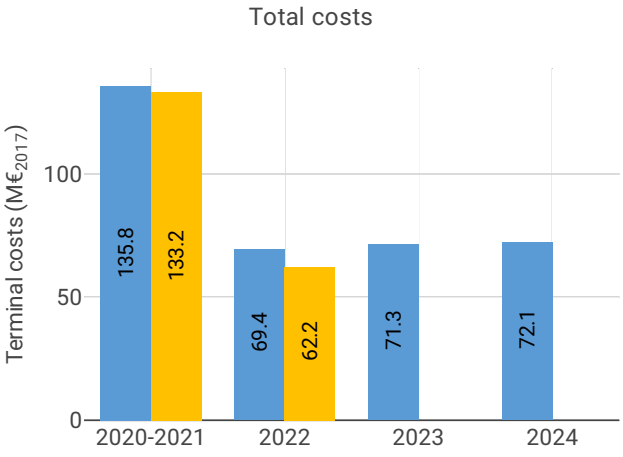
LVNL has no return on equity, as its assets are entirely financed through debt, no ex-ante estimated surplus was embedded in the cost of capital provided in the PP for RP3. Therefore, ex-post, the overall RR is equal to the net gain from the en route activity mentioned above (+16.1 M€) and corresponds to 8.5% of the en route revenues.

5.3 Terminal charging zone

5.3.1 Unit cost (KPI#1)



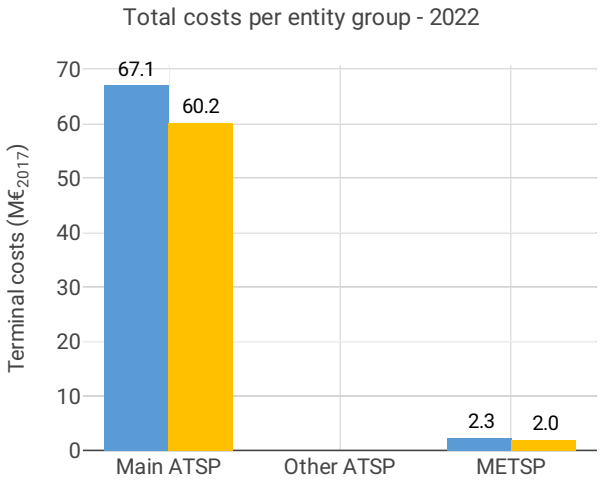


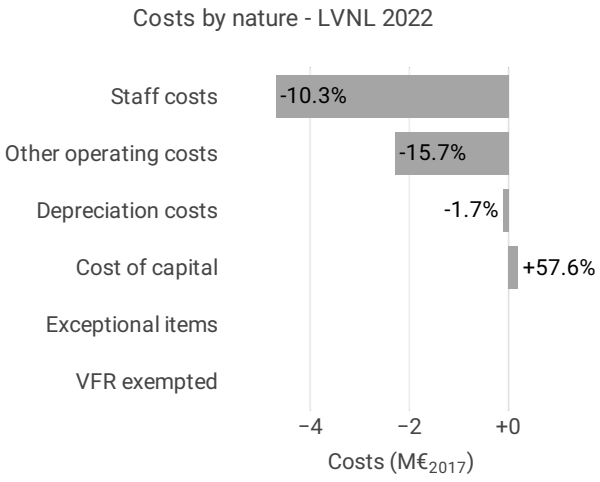


Actual and determined data

Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	142	74	NA	NA
Determined costs	143	75	78	80
Difference costs	-2	-1	NA	NA

Inflation assumptions	2020-2021	2022	2023	2024
Determined inflation rate	NA	1.5%	1.6%	1.6%
Determined inflation index	NA	108.6	110.3	112.1
Actual inflation rate	NA	11.6%	NA	NA
Actual inflation index	NA	121	NA	NA
Difference inflation index (p.p.)	NA	+12.5	NA	NA





Focus on unit cost

AUC vs. DUC

In 2022, the terminal AUC was -17.6% (or -39.00 €2017) lower than the planned DUC. This results from the combination of significantly lower than planned terminal costs in real terms (-10.4%, or -7.3 M€2017) and significantly higher than planned TNSUs (+8.7%). It should be noted that actual inflation index in 2022 was +12.5 p.p. higher than planned.

Terminal service units

The difference between actual and planned TNSUs (+8.7%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ANSP and the airspace users, with the ANSP (LVNL) retaining an amount of +2.4 M€2017.

Terminal costs by entity

Actual real terminal costs are -10.4% (-7.3 M€2017) lower than planned. This is the result of lower costs for the main ANSP, LVNL (-10.3%, or -6.9 M€2017) and the MET service provider (-14.3%, or -0.3 M€2017).

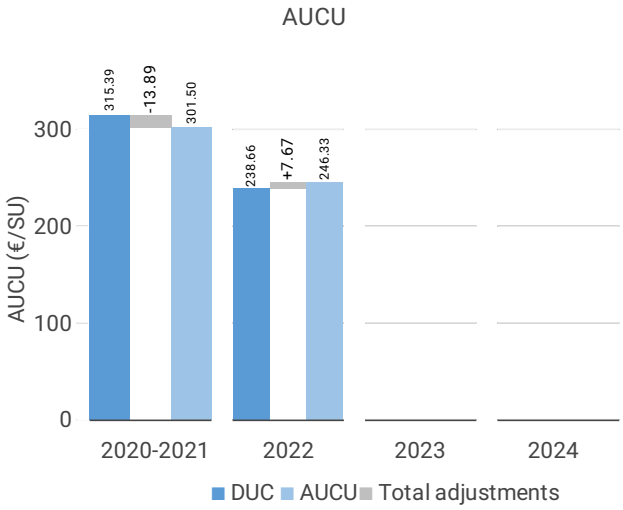
Terminal costs for the main ANSP at charging zone level

Significantly lower than planned terminal costs in real terms for LVNL in 2022 (-10.3%, or -6.9 M€2017) result from:

- Significantly lower staff costs (-10.3%), mainly due to the inflation index impact (+12.5 p.p.) since in nominal terms staff costs are in line with planned (-0.04%);
- Significantly lower other operating costs (-15.7%), mainly due to the inflation index impact (+12.5 p.p.), in nominal terms staff costs are -6.0% lower than planned (no driver information has been provided);

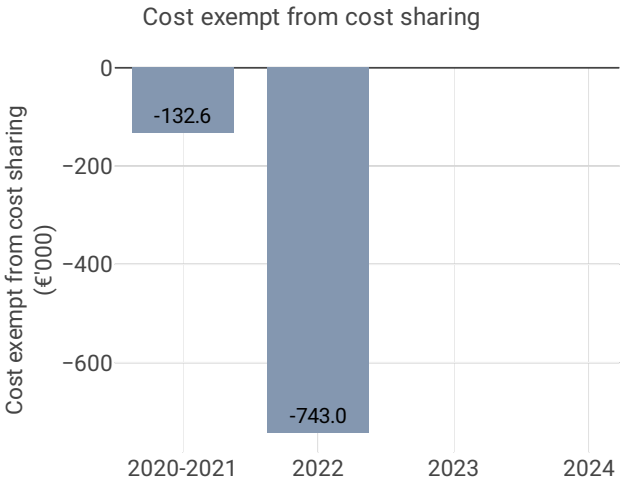
- Slightly lower depreciation (-1.7%),
- Significantly higher cost of capital (+57.6%), due to increased interest rate.

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



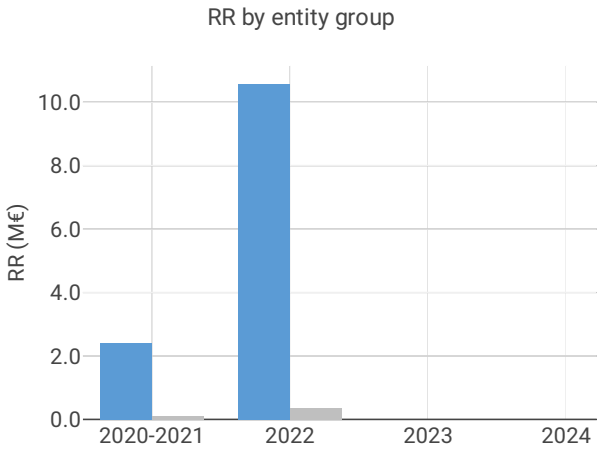
AUCU components (€/SU) – 2022

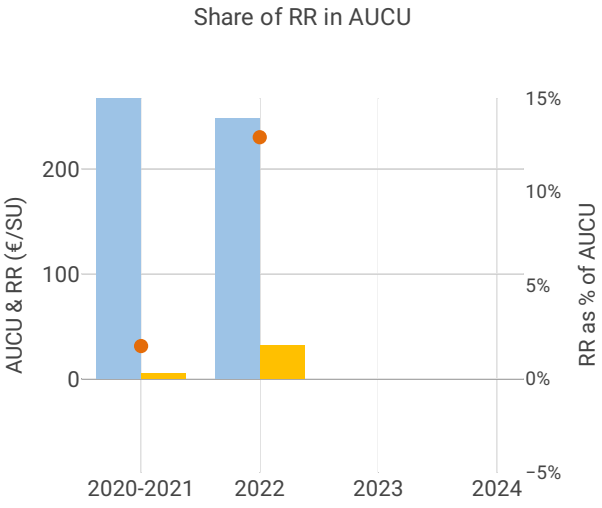
Components of the AUCU in 2022	€/SU
DUC	**238.66**
Inflation adjustment	22.83
Cost exempt from cost-sharing	-2.18
Traffic risk sharing adjustment	-9.93
Traffic adj. (costs not TRS)	-0.64
Finantial incentives	0.00
Modulation of charges	0.00
Cross-financing	0.00
Other revenues	-2.41
Application of lower unit rate	0.00
Total adjustments	7.67
AUCU	**246.33**
AUCU vs. DUC	**+3.2%**

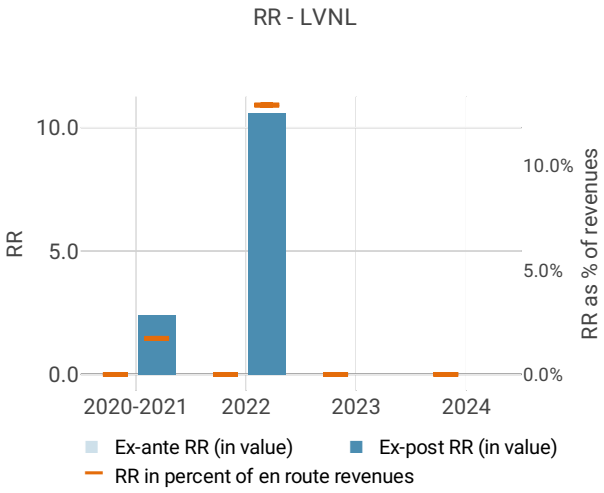


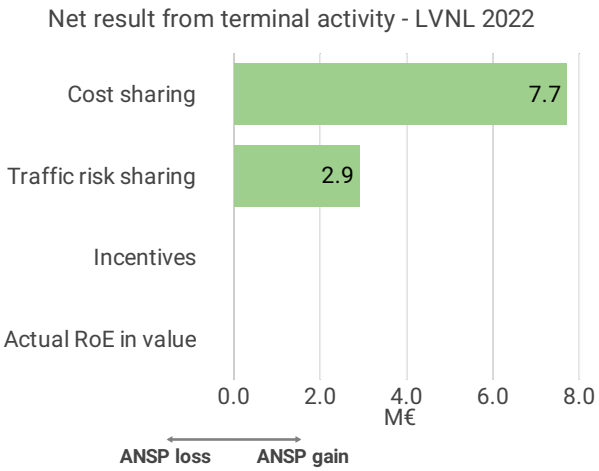
Cost exempt from cost sharing by item - 2022	€'000	€/SU
New and existing investments	-226.0	-0.66
Competent authorities and qualified entities costs	0.0	0.00
Eurocontrol costs	0.0	0.00
Pension costs	-628.0	-1.84
Interest on loans	111.0	0.33
Changes in law	0.0	0.00
Total cost exempt from cost risk sharing	**-743.0**	**-2.18**

5.3.3 Regulatory result (RR)









Focus on regulatory result

LVNL net gain on activity in the Netherlands terminal charging zone in the year 2022

LVNL reported a net gain of +10.6 M€, as a combination of a gain of +7.7 M€ arising from the cost sharing mechanism, with a gain of +2.9 M€ arising from the traffic risk sharing mechanism.

LVNL overall regulatory results (RR) for the terminal activity

LVNL has no return on equity, as its assets are entirely financed through debt, no ex-ante estimated surplus was embedded in the cost of capital provided in the PP for RP3. Therefore, ex-post, the overall RR is equal to the net gain from the terminal activity mentioned above (+10.6 M€) and corresponds to 12.9% of the en route revenues.