



Performance Review Body Monitoring Report

Netherlands - 2021

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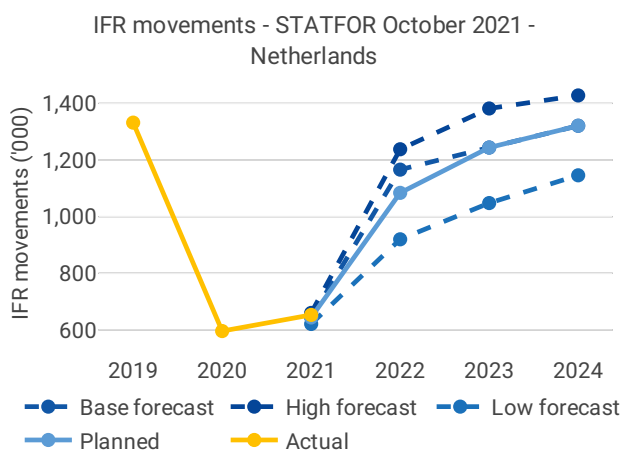
1 OVERVIEW

1.1 Contextual information

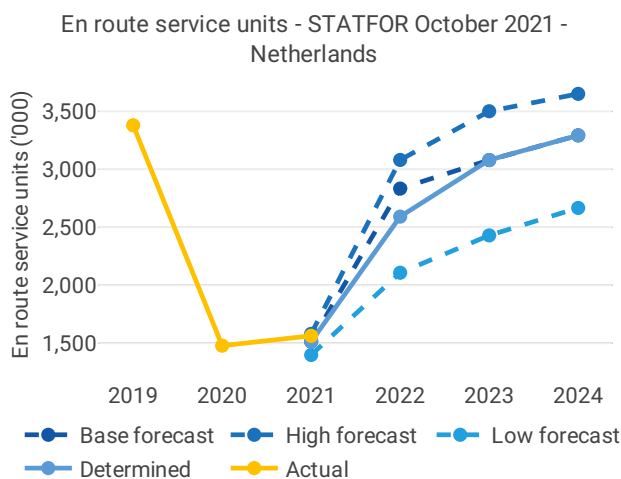
National performance plan adopted following Commission Decision (EU) 2023/179 of 14 December 2022

List of ACCs 1 Amsterdam ACC	Exchange rate (1 EUR=) 2017: 1 EUR 2021: 1 EUR	Main ANSP • LVNL
No of airports in the scope of the performance plan: • ≥80'K 1 • <80'K 3	Share of Union-wide: • traffic (TSUs) 2021 2.3% • en route costs 2021 3.7%	Other ANSPs • MUAC
	Share en route / terminal costs 2021 77% / 23%	MET Providers • Royal Netherlands Meteorological Institute (KNMI)
	En route charging zone(s) Netherlands	
	Terminal charging zone(s) Netherlands	

1.2 Traffic (En route traffic zone)



- Netherlands recorded 653K actual IFR movements in 2021, +10% compared to 2020 (596K).
- Actual 2021 IFR movements were +1.3% above the plan (644K).
- Actual 2021 IFR movements represent 49% of the actual 2019 level (1,332K).



- Netherlands recorded 1,565K actual en route service units in 2021, +5.8% compared to 2020 (1,480K).
- Actual 2021 service units were +3.3% above the plan (1,515K).
- Actual 2021 service units represent 46% of the actual 2019 level (3,381K).

1.3 Safety (Main ANSP)



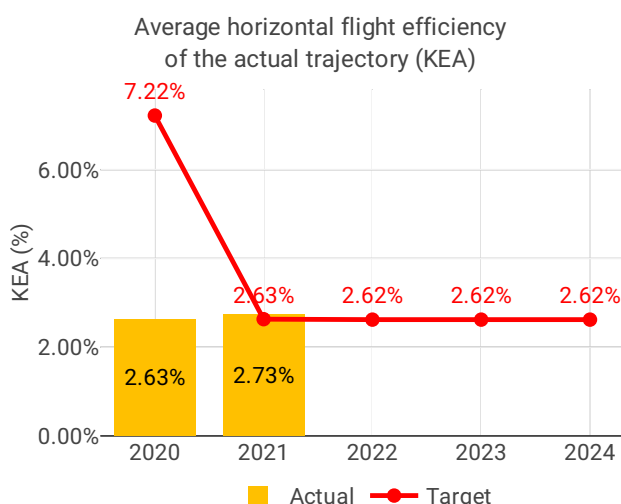
- LVNL has improved its safety performance reaching level D in safety risk management, and achieving the EoSM targets in 2021. Specific measures were implemented ensuring continuous safety improvements (annual update of safety manual, establishment of a risk-based safety plan, and update of safety risk target document and corresponding unit safety case).

- The Netherlands recorded a decrease in the rate of both separation minima infringements and runway incursions in 2021 relative to 2020. Nevertheless, LVNL has the highest rate of SMIs at 49.9 SMIs per 100,000 flight hours. The rate has experienced

an increase of 31.7% with respect to 2020. LVNL should continue assessing occurrences and risk mitigate them according to their SMS, if necessary

- LVNL should 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 2.73% compared to its target of 2.63% and did not contribute positively towards achieving the Union-wide target. KEA deteriorated by 0.1 p.p..

- FABEC states that for the Netherlands it would appear that the national contribution to the FABEC target is challenging but feasible. It is also mentioned that performance is susceptible to disturbances, e.g. weather conditions.

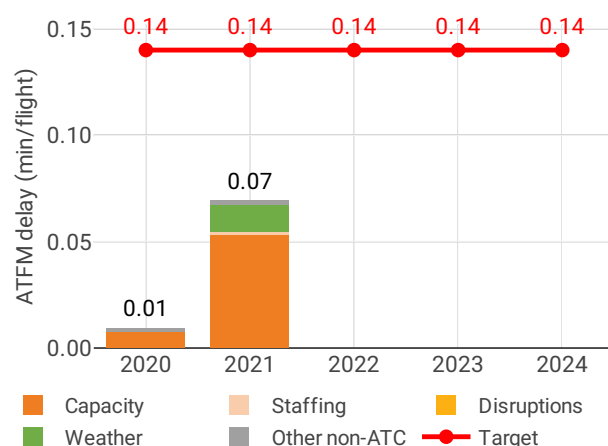
- Both KEP and SCR values have worsened and are at their highest values in five years.

- The share of CDO operations is lower compared to 2020, but higher than pre-pandemic levels.

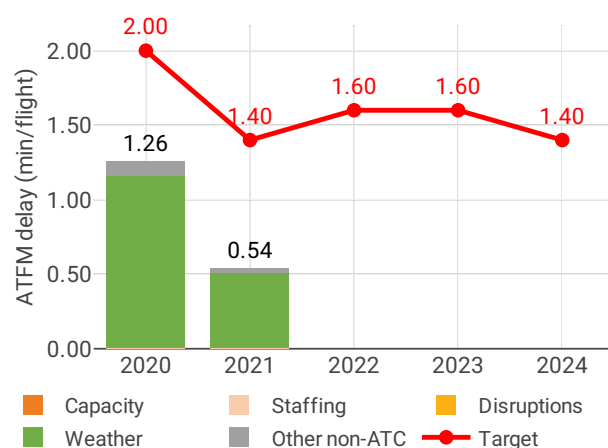
- Additional time in terminal airspace decreased from 1.02 to 0.86min/flight, while additional taxi out time increased from 1.78 to 2.19 min/flight.

1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



Average arrival ATFM delay per flight by delay groups



- The Netherlands registered 0.04 minutes of average en route ATFM delay per flight during 2021, thus meeting the local breakdown value of 0.06.

- Delays should be considered in the context of lower traffic: in the Netherlands, IFR movements in 2021 were 51% lower than in 2019.

- Amsterdam ACC accumulated 0.08 minutes of en route delay which exceeded the ACC reference value of 0.06. The NSA reported that this has been caused by changing traffic patterns around Amsterdam-Schipol airport.

- Traffic is expected to grow, with 2019 levels likely being reached in 2023 in high growth scenario while expected to remain below 2019 levels in base growth scenario. A slight decrease in the number of ATCOs in OPS is planned by the end of RP3.

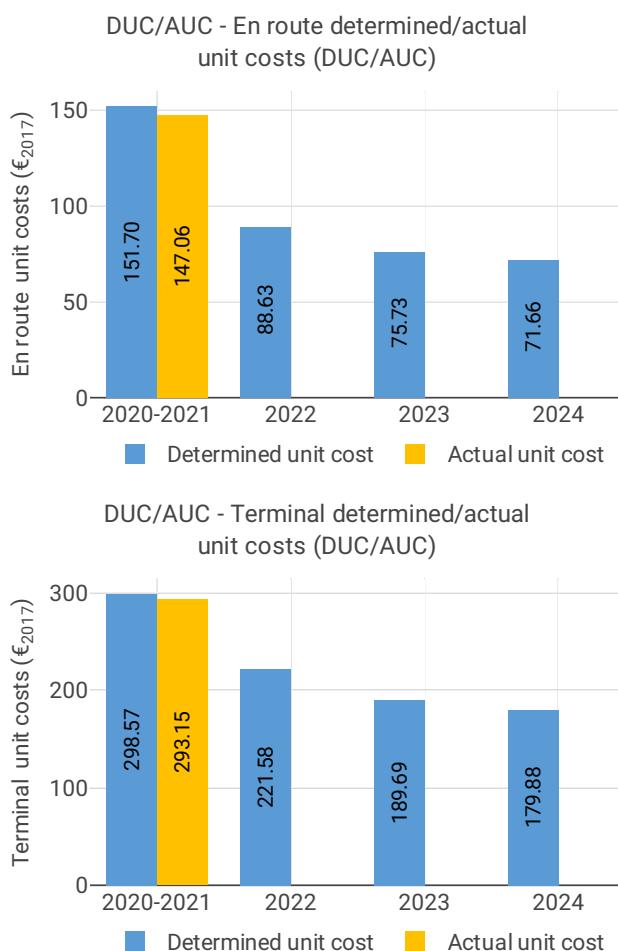
- The share of delayed flights with delays longer than 15 minutes in the Netherlands increased by 9.27 p.p. compared to 2020 and was lower than 2019 values.

- The yearly total of sector opening hours in Amsterdam ACC was 40,028, showing a 0.3% decrease compared to 2020. Sector opening hours are equal to 2019 levels.

- Amsterdam ACC registered 7.84 IFR movements

per one sector opening hour in 2021, being 47.5% below 2019 levels.

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



- The en route 2020/2021 actual unit cost of the Netherlands was 147.06 €2017, -3.1% lower than the determined unit cost (151.70 €2017). The terminal actual unit cost was 293.15 €2017, -1.8% lower than the determined unit cost (298.57 €2017).

- The en route 2021 actual service units (1,565K) were +3.3% higher than determined (1,515K).

- In 2021, actual total costs were -6.5 M€2017 (-2.9%) lower compared to determined, with all cost categories being lower. The reduction was mainly driven by -3.6 M€2017 lower staff costs (-2.6%) driven by a freeze in salaries, and other operating costs (-1.8 M€2017, or -2.7%) due to cost containment measures.

- LVNL spent 21.3 M€2017 in 2021 related to costs of investments, -3.9% less than determined (22.2 M€2017), due to the postponement and delays of some investment projects due to COVID-19.

- The en route actual unit cost incurred by users in 2020/2021 was 151.58€, while the terminal actual unit cost incurred by users was 301.50€.

2 SAFETY - NETHERLANDS

2.1 PRB monitoring

- LVNL has improved its safety performance reaching level D in safety risk management, and achieving the EoSM targets in 2021. Specific measures were implemented ensuring continuous safety improvements (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 recorded a decrease in the rate of both separation minima infringements and runway incursions in 2021 relative to 2020. Nevertheless, LVNL has the highest rate of SMIs at 49.9 SMIs per 100,000 flight hours. The rate has experienced an increase of 31.7% with respect to 2020. LVNL should continue assessing occurrences and risk mitigate them according to their SMS, if necessary

- LVNL should 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

Improvements in maturity levels have been observed with respect 2020, reaching already the 2024 targets in all components.

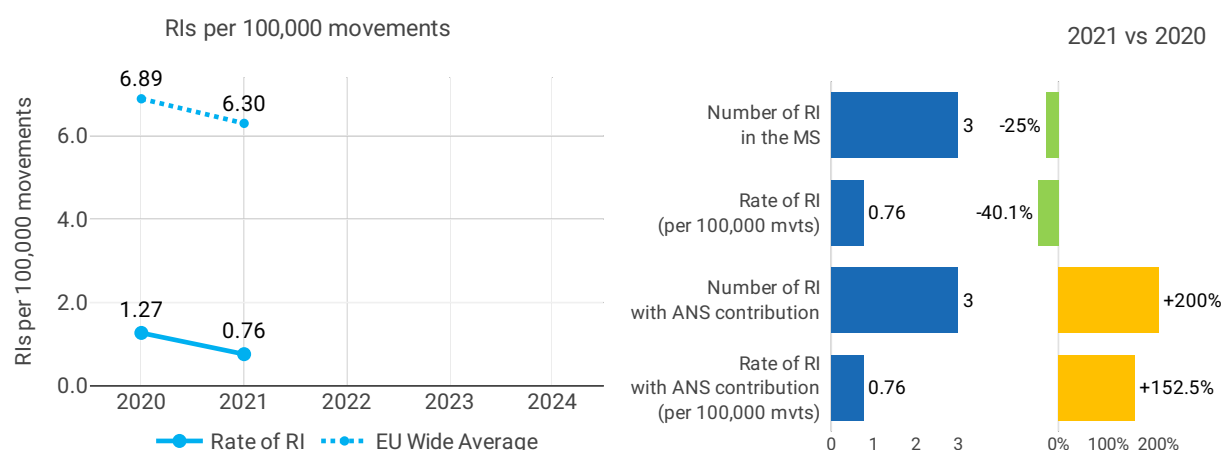
IMPORTANT: EASA/European Commission did not received the verified questionnaire from the NSA on time. This is an important step to receive confirmation that the self-evaluated questionnaire by the ANSP has been actually verified. It should be sent in due time to allow proper and timely drafting of the Monitoring Report.

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, 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

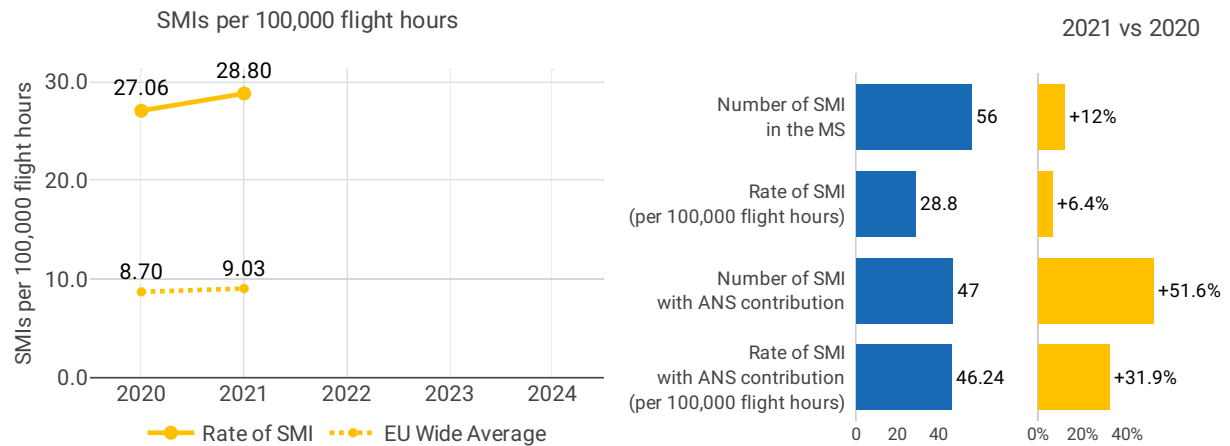
#	Airport name	APT movements	Number of RI	Rate RI per 100,000
1	Amsterdam - Schiphol	280,455	2	0.71
2	Groningen	53,304	0	0.00
3	Rotterdam	46,139	1	2.17
4	Maastricht-Aachen	13,566	0	0.00

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

#	ANSP	Flight hours					Number of SMIs				
		2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
1	LVNL	88,456	101,649	NA	NA	NA	31	47	NA	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	LVNL	37.8	46.2	NA	NA	NA	NA	+22%	NA	NA	NA

Focus on separation minima

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

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2.3.3 Quality of occurrences reporting

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

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

2021

For RIs	For SMIs
X	✓

Detailed information on Safety performance monitoring for the year 2021 are included in Performance Review Body Monitoring Report 2021, Annex III – Safety report

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3 ENVIRONMENT - NETHERLANDS

3.1 PRB monitoring

- The Netherlands achieved a KEA performance of 2.73% compared to its target of 2.63% and did not contribute positively towards achieving the Union-wide target. KEA deteriorated by 0.1 p.p..
- FABEC states that for the Netherlands it would appear that the national contribution to the FABEC target is challenging but feasible. It is also mentioned that performance is susceptible to disturbances, e.g. weather conditions.
- Both KEP and SCR values have worsened and are at their highest values in five years.
- The share of CDO operations is lower compared to 2020, but higher than pre-pandemic levels.
- Additional time in terminal airspace decreased from 1.02 to 0.86min/flight, while additional taxi out time increased from 1.78 to 2.19 min/flight.

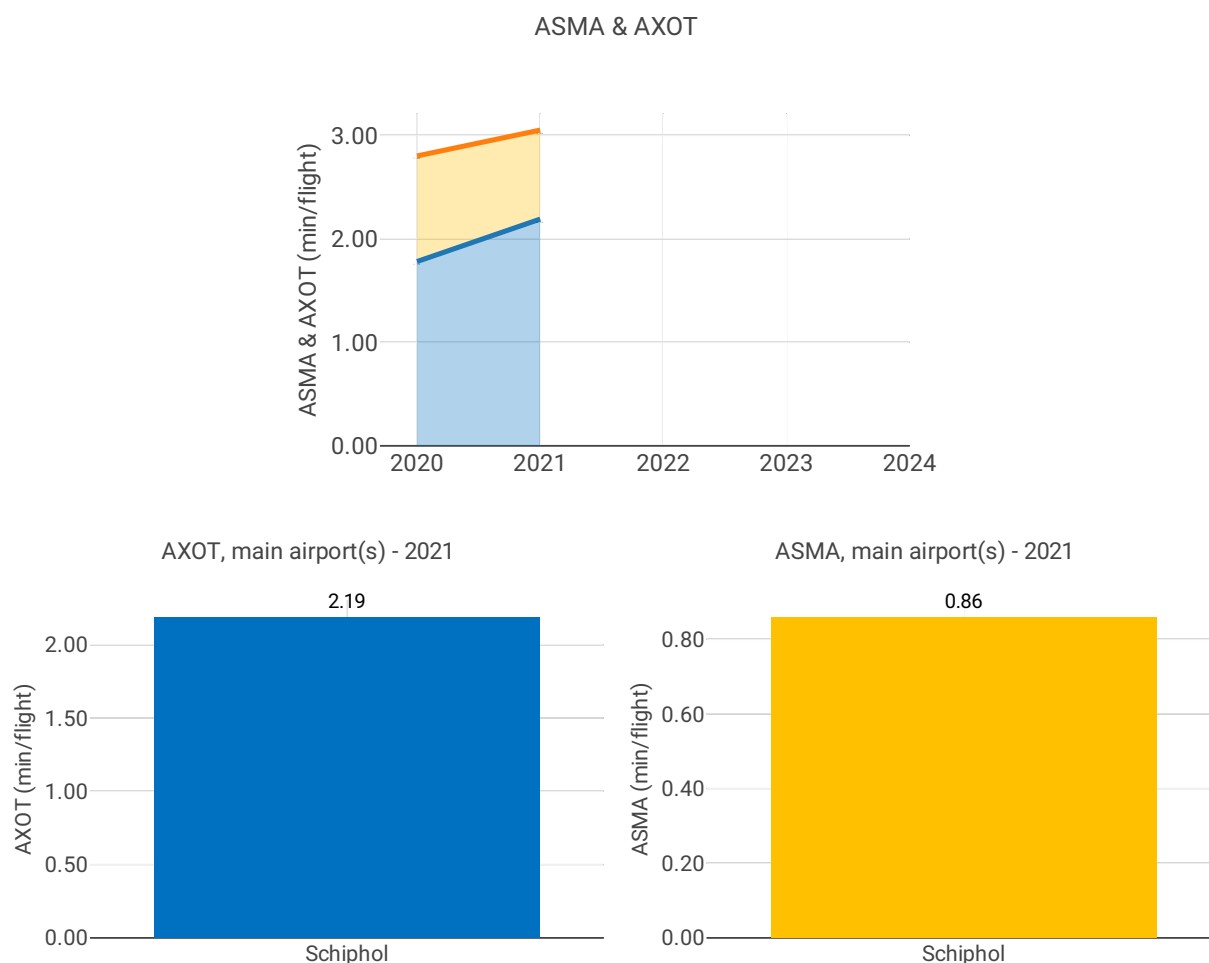
3.2 En route performance

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 Amsterdam (EHAM; 2019: 3.11 min/dep.; 2020: 1.78 min/dep.; 2021: 2.19 min/dep.) were quite high in February and April, exceeding the 2019 levels. Alongside the traffic recovery, the additional times followed an increasing trend since May, ending the year with values very close to the performance in 2019.

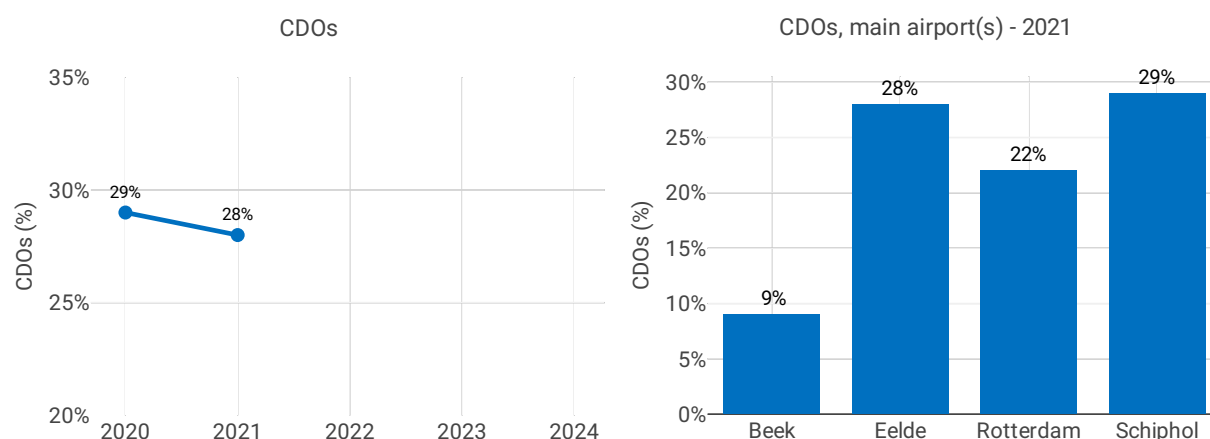
According to FABEC monitoring report: *Taxi out times at Schiphol are expected to improve by the realisation of a dual taxiway over the A4 motorway in 2021, replacing the single taxiway Q. This reduces the number of conflicts due to opposite traffic in specific runway combinations. The dual taxiway also allows through-traffic to bypass aircraft waiting in line at the runway holding point. In both cases waiting times during taxiing decrease, and thus taxi out additional times.*

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.) remained low in the first half of the year (averaging 0.42 min/arr.) but in the second half experienced a progressive increase reaching in December more than 1.5 min/arr, close to the performance in December 2019.

According to FABEC monitoring report: *Additional times in the Arrival Sequencing and Metering Area (ASMA) for Schiphol are expected to reduce when inbound traffic is handed over from Area Control to Approach Control with a high accuracy. Extended arrival management which will introduce a stepwise increase in the planning horizon for arrival traffic, allowing more efficient sequencing and a higher timeliness of delivery at the IAFs.*

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

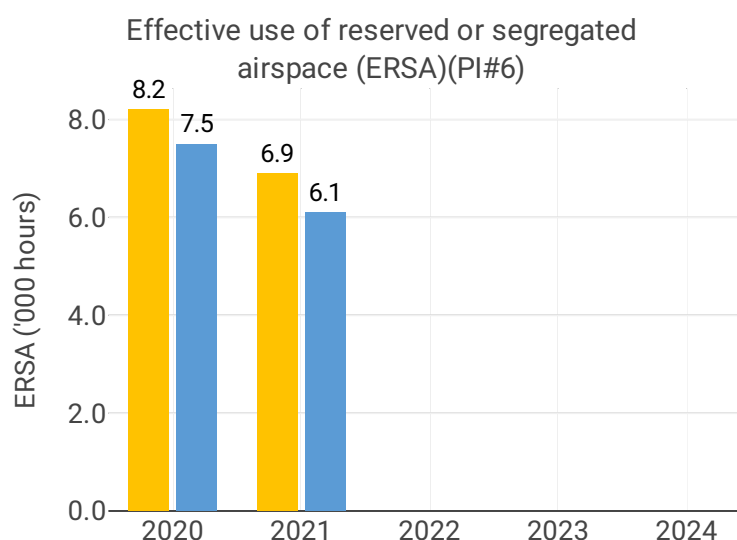


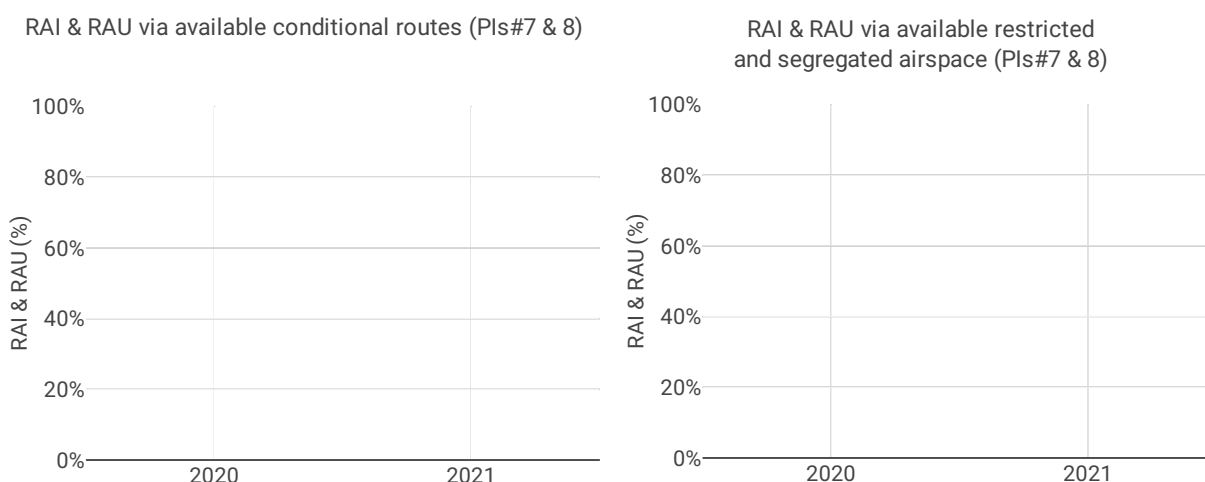
Focus CDOs

Amsterdam, being the major airport in the Netherlands, has the highest share of CDO flights of the 4 airports: 29.2% which is a small decrease with respect to 2020 and which is a little below the overall RP3 value in 2021 (30.5%). Groningen (EHGG) and Rotterdam (EHRD) both have a higher share of CDO flights than in 2020 while it has reduced at Maastricht-Aachen (EHBK) from 11.3% to 8.9% of CDO flights in 2021. According to FABEC monitoring report: *For the Netherlands, the percentage of arrivals performing a CDO is similar in 2021 compared to 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). The average time in level flight, a different indicator, has significantly reduced, so a performance improvement was achieved in 2021.*

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
Schiphol	1.78	2.19	NA	NA	NA	1.02	0.86	NA	NA	NA	30%	29%	NA	NA	NA
Beek	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11%	9%	NA	NA	NA
Eelde	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26%	28%	NA	NA	NA
Rotterdam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20%	22%	NA	NA	NA

3.4 Civil-Military dimension





Focus on Civil-Military dimension

Update on Military dimension of the plan

Military - related measures implemented or planned to improve capacity

Initiatives implemented or planned to improve PI#6

Initiatives implemented or planned to improve PI#7

Initiatives implemented or planned to improve PI#8

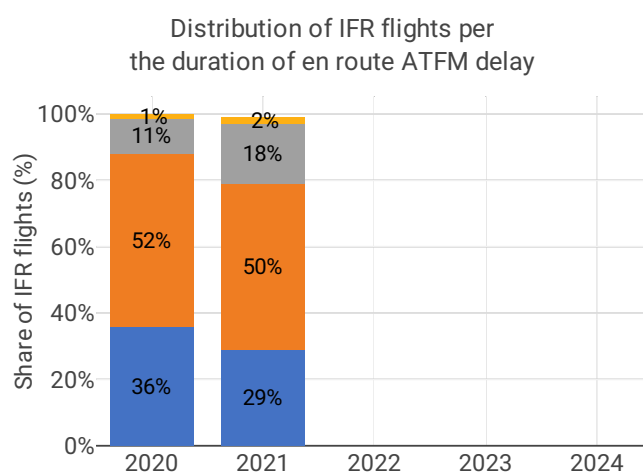
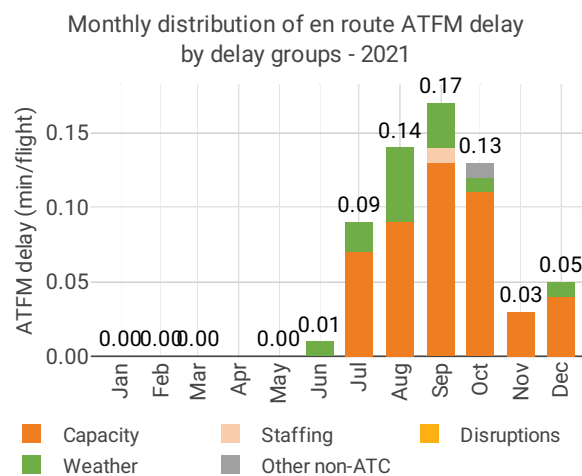
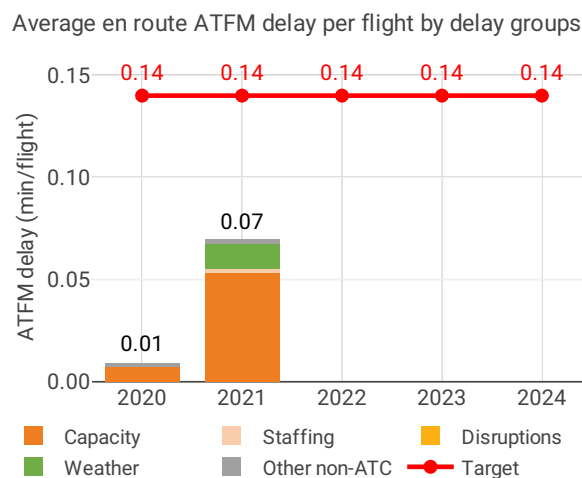
4 CAPACITY - NETHERLANDS

4.1 PRB monitoring

- The Netherlands registered 0.04 minutes of average en route ATFM delay per flight during 2021, thus meeting the local breakdown value of 0.06.
- Delays should be considered in the context of lower traffic: in the Netherlands, IFR movements in 2021 were 51% lower than in 2019.
- Amsterdam ACC accumulated 0.08 minutes of en route delay which exceeded the ACC reference value of 0.06. The NSA reported that this has been caused by changing traffic patterns around Amsterdam-Schipol airport.
- Traffic is expected to grow, with 2019 levels likely being reached in 2023 in high growth scenario while expected to remain below 2019 levels in base growth scenario. A slight decrease in the number of ATCOs in OPS is planned by the end of RP3.
- The share of delayed flights with delays longer than 15 minutes in the Netherlands increased by 9.27 p.p. compared to 2020 and was lower than 2019 values.
- The yearly total of sector opening hours in Amsterdam ACC was 40,028, showing a 0.3% decrease compared to 2020. Sector opening hours are equal to 2019 levels.
- Amsterdam ACC registered 7.84 IFR movements per one sector opening hour in 2021, being 47.5% 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

2021 en route capacity performance are monitored at FABEC level. Therefore, no inputs are available for the individual States.

NSA's assessment of capacity performance

N/A

Monitoring process for capacity performance

N/A

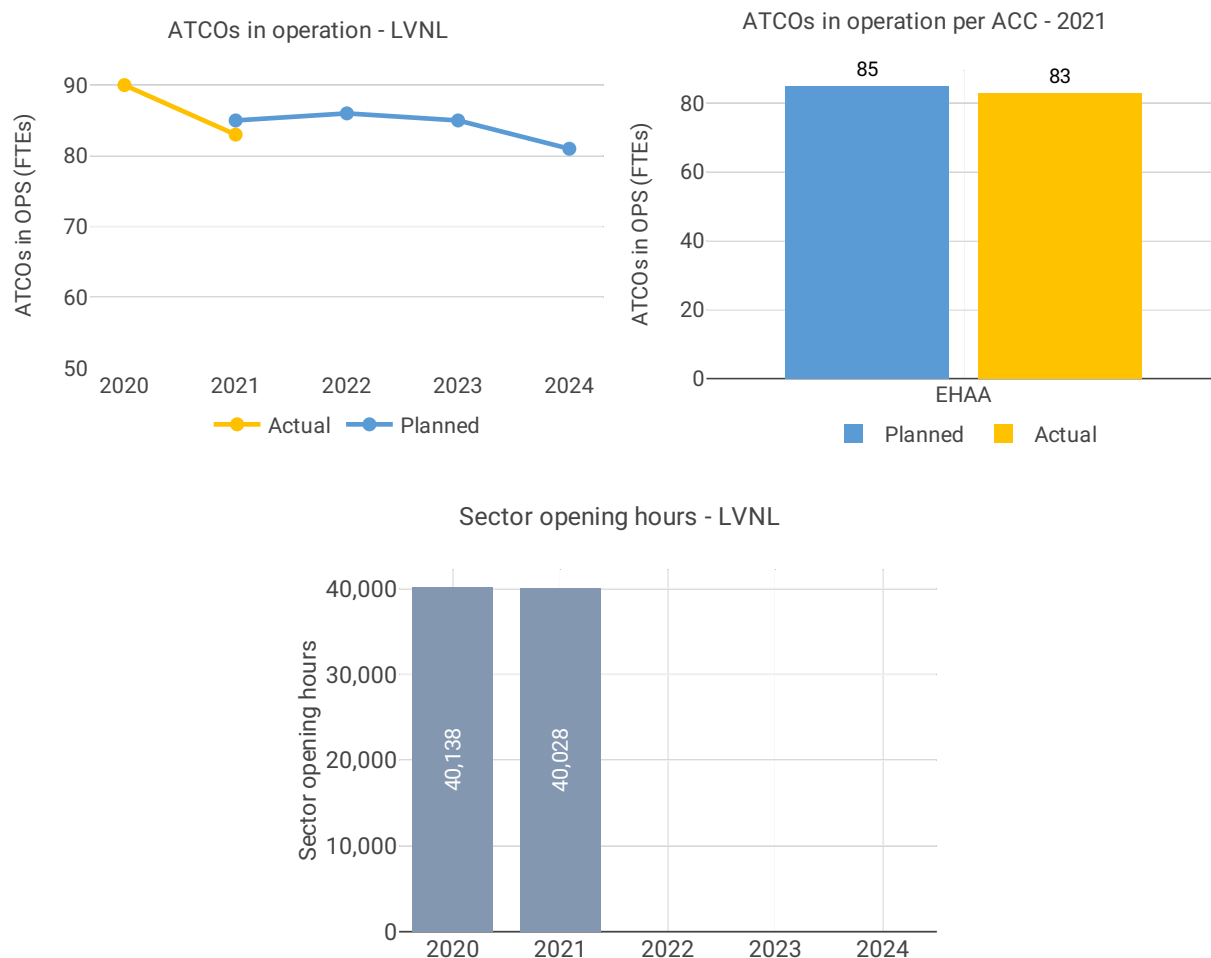
Capacity planning

N/A

Application of Corrective Measures for Capacity (if applicable)

N/A

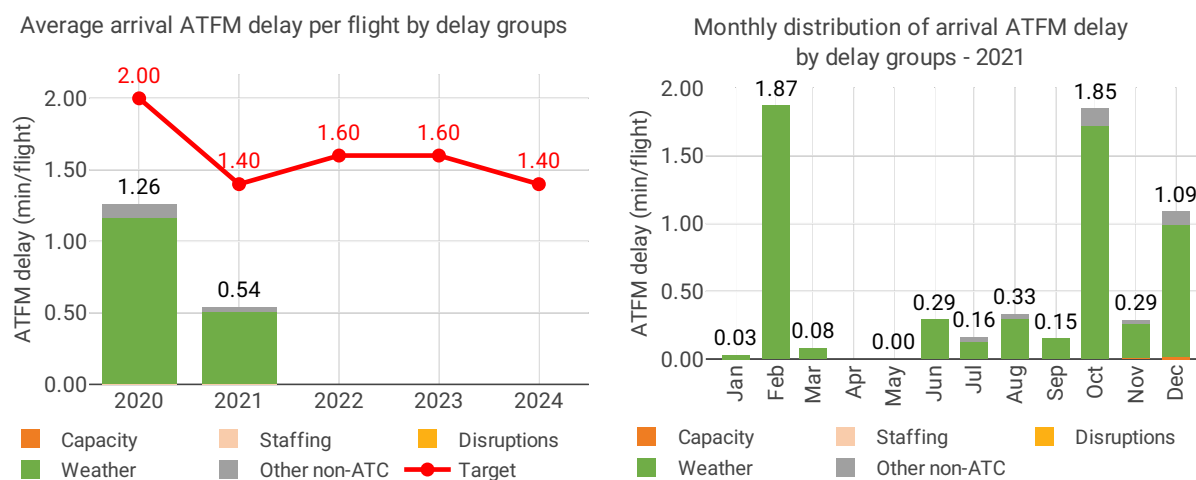
4.2.2 Other indicators



Focus on ATCOs in operations

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 2021 was still 44% lower than in 2019 regardless the increase of 18% with respect to 2020.

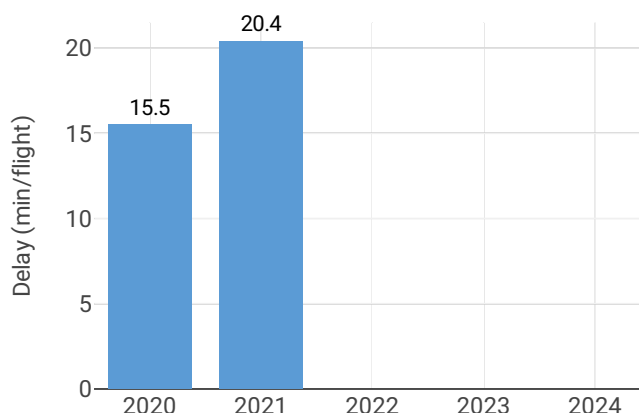
Average arrival ATFM delays in 2021 was 0.54 min/arr, compared to 1.26 min/arr in 2020. ATFM slot adherence has improved (2021: 98.1%; 2020: 97.6%).

Amsterdam (EHAM: 2019: 4.23 min/arr.; 2020: 1.41 min/arr.; 2021: 0.60 min/arr.) further decreased the arrival ATFM delays compared to previous years. 93% of the registered delays were attributed to weather. The rest of Dutch airports registered zero or nearly zero arrival ATFM delays in 2021. According to FABEC's monitoring report: *The terminal capacity target has been met, with actual performance in 2021 being significantly better than 2020. However, it is recognised that this is partly due to a shift of ATFM delay from the terminal zone to the en route zone, as described in more detail in response to the minor underperformance of LVNL with respect its contribution to the FABEC en route capacity target. In 2022 planned runway maintenance at Schiphol may cause additional delays.*

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

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

All causes pre-departure delay



Airport level

Airport name	Avg arrival ATFM delay (KPI#2)					Slot adherence (PI#1)				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
Beek	NA	0.01	NA	NA	NA	96.0%	97.4%	NA%	NA%	NA%
Eelde	0.01	0.00	NA	NA	NA	88.0%	91.9%	NA%	NA%	NA%
Rotterdam	NA	0.00	NA	NA	NA	100.0%	98.8%	NA%	NA%	NA%
Schiphol	1.41	0.60	NA	NA	NA	97.6%	98.1%	NA%	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
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	NA	NA	NA

Focus on performance indicators at airport level

ATFM slot adherence

With the drastic drop in traffic, the share of regulated departures from Dutch airports virtually disappeared until July 2021. All four airports showed adherence above 91% and the national average was 98.1%, an improvement with respect to 2020 (97.6%). With regard to the 1.9% of flights that did not adhere, 0.6% was early and 1.3% was late.

ATC pre-departure delay

The share of unidentified delay reported by Amsterdam (the only Dutch airport subject to monitoring of this indicator) in 2021 has been well above 40% for more than 2 months in the year, preventing the calculation of this indicator. The insufficient data quality provided by Amsterdam is a long standing issue prior to April 2020, but the situation worsened since April 2020. The unidentified delay after April 2020 was around 80% of all delays and with the traffic recovery as of June 2021 the reporting has slightly improved but the unidentified delays still account for more than 60% of the total delays.

All causes 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 2021 was 20.40 min/dep. (almost 5 minutes higher than in 2020) which is the highest among the RP3 monitored airports. The highest delays per flight were observed in February, averaging almost 45 min/dep.

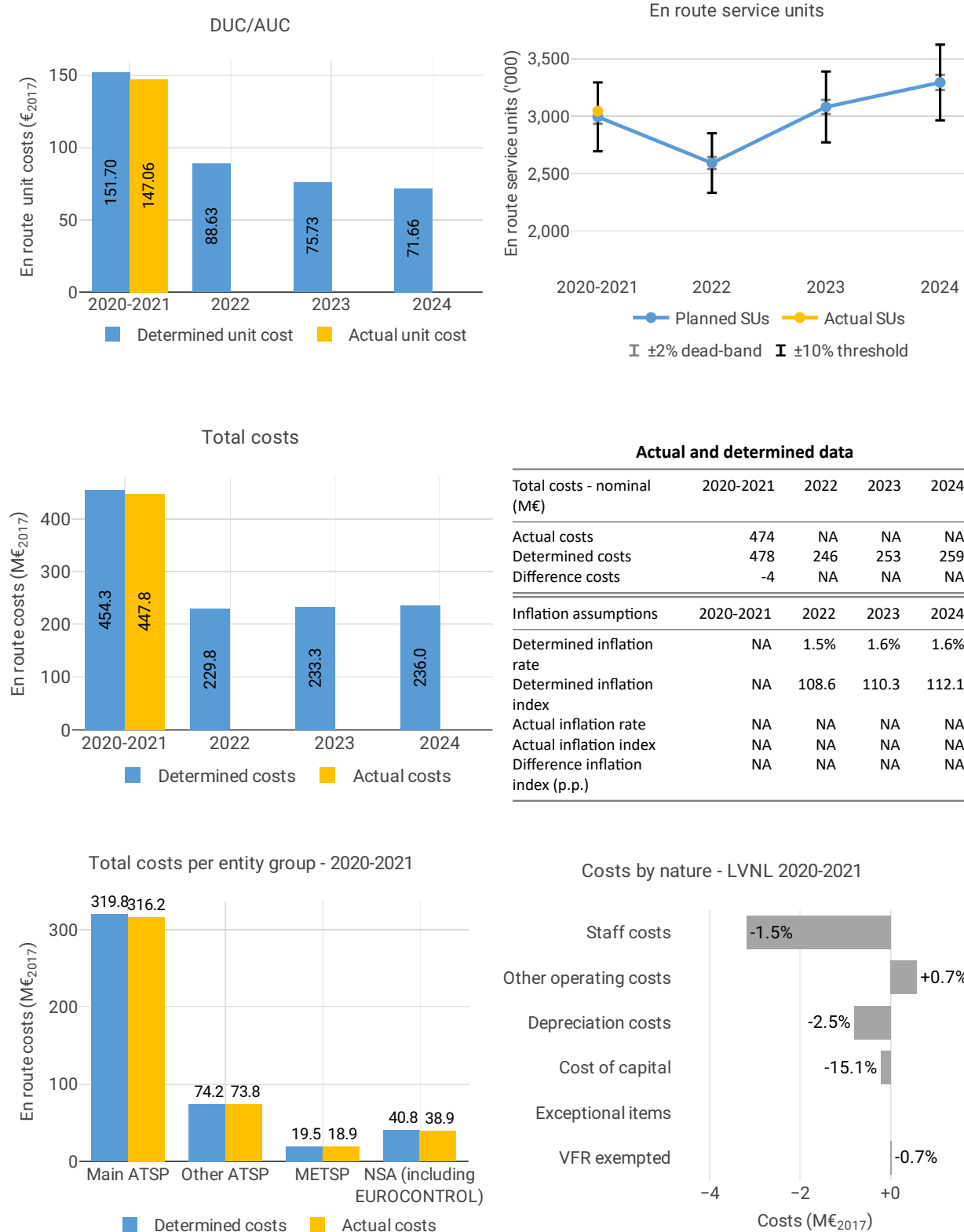
5 COST-EFFICIENCY - NETHERLANDS

5.1 PRB monitoring

- The en route 2020/2021 actual unit cost of the Netherlands was 147.06 €2017, -3.1% lower than the determined unit cost (151.70 €2017). The terminal actual unit cost was 293.15 €2017, -1.8% lower than the determined unit cost (298.57 €2017).
- The en route 2021 actual service units (1,565K) were +3.3% higher than determined (1,515K).
- In 2021, actual total costs were -6.5 M€2017 (-2.9%) lower compared to determined, with all cost categories being lower. The reduction was mainly driven by -3.6 M€2017 lower staff costs (-2.6%) driven by a freeze in salaries, and other operating costs (-1.8 M€2017, or -2.7%) due to cost containment measures.
- LVNL spent 21.3 M€2017 in 2021 related to costs of investments, -3.9% less than determined (22.2 M€2017), due to the postponement and delays of some investment projects due to COVID-19.
- The en route actual unit cost incurred by users in 2020/2021 was 151.58€, while the terminal actual unit cost incurred by users was 301.50€.

5.2 En route charging zone

5.2.1 Unit cost (KPI#1)



Focus on unit cost

AUC vs. DUC

In the combined year 2020-2021, the AUC was -3.1% (or -4.64 €2017) lower than the planned DUC. This results from the combination of higher than planned TSUs (+1.7%) and lower than planned en route costs in real terms (-1.4%, or -6.5 M€2017).

En route service units

The difference between actual and planned TSUs (+1.7%) falls within the $\pm 2\%$ dead band. Hence the resulting additional en-route revenue is kept by the ANSPs.

En route costs by entity

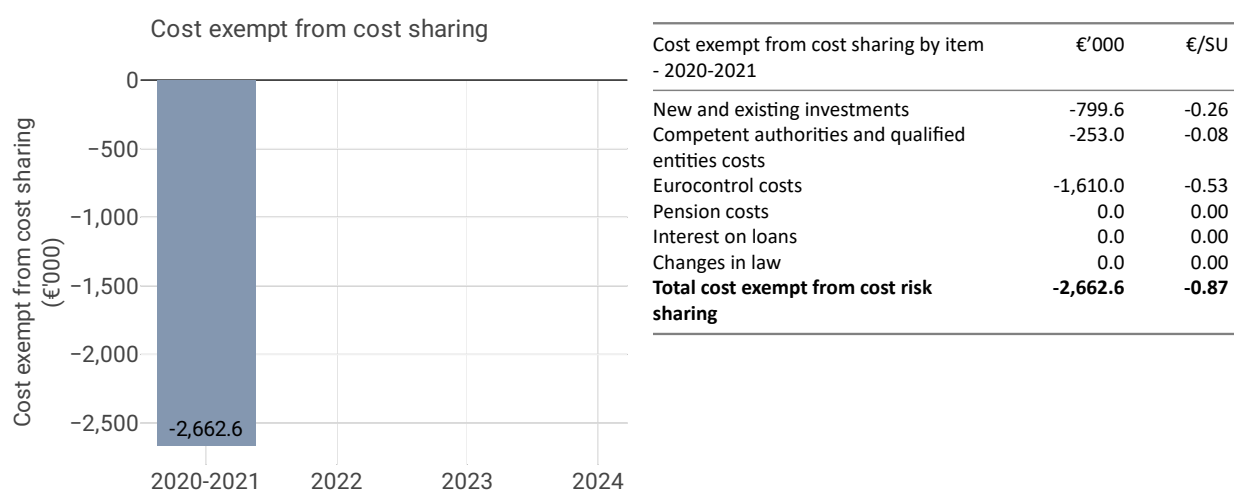
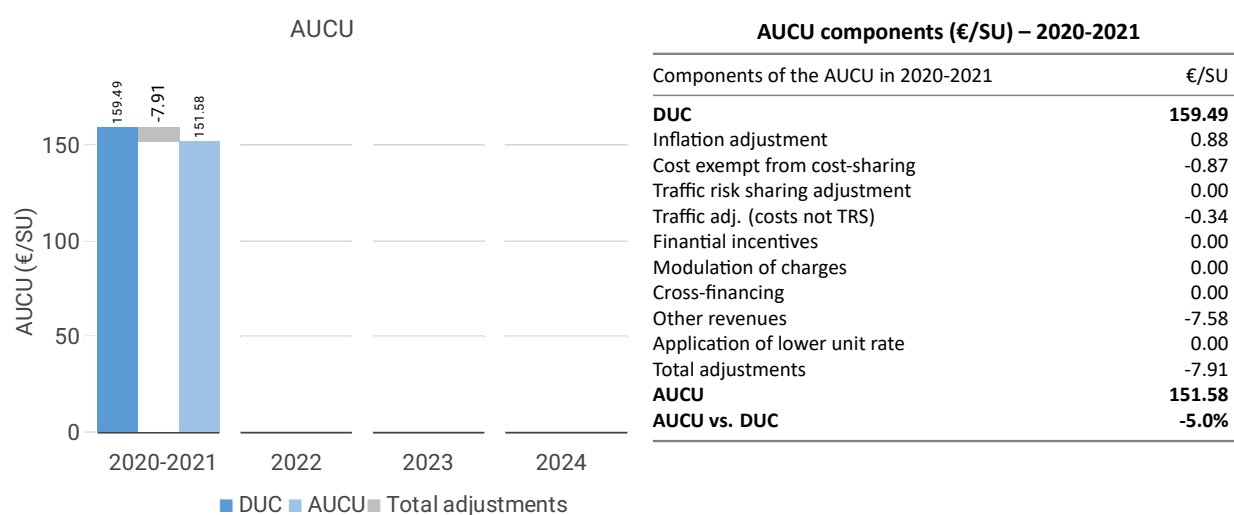
Actual real en route costs are -1.4% (-6.5 M€2017) lower than planned. This is driven by the lower costs across all the entities in the charging zone: main ANSP - LVNL(-1.1%, or -3.6 M€2017), other ANSP - MUAC (-0.6%, or -0.5 M€2017), MET service provider (-2.7%, or -0.5 M€2017) and NSA/EUROCONTROL (-4.6%, or -1.9 M€2017).

En route costs for the main ANSP at charging zone level

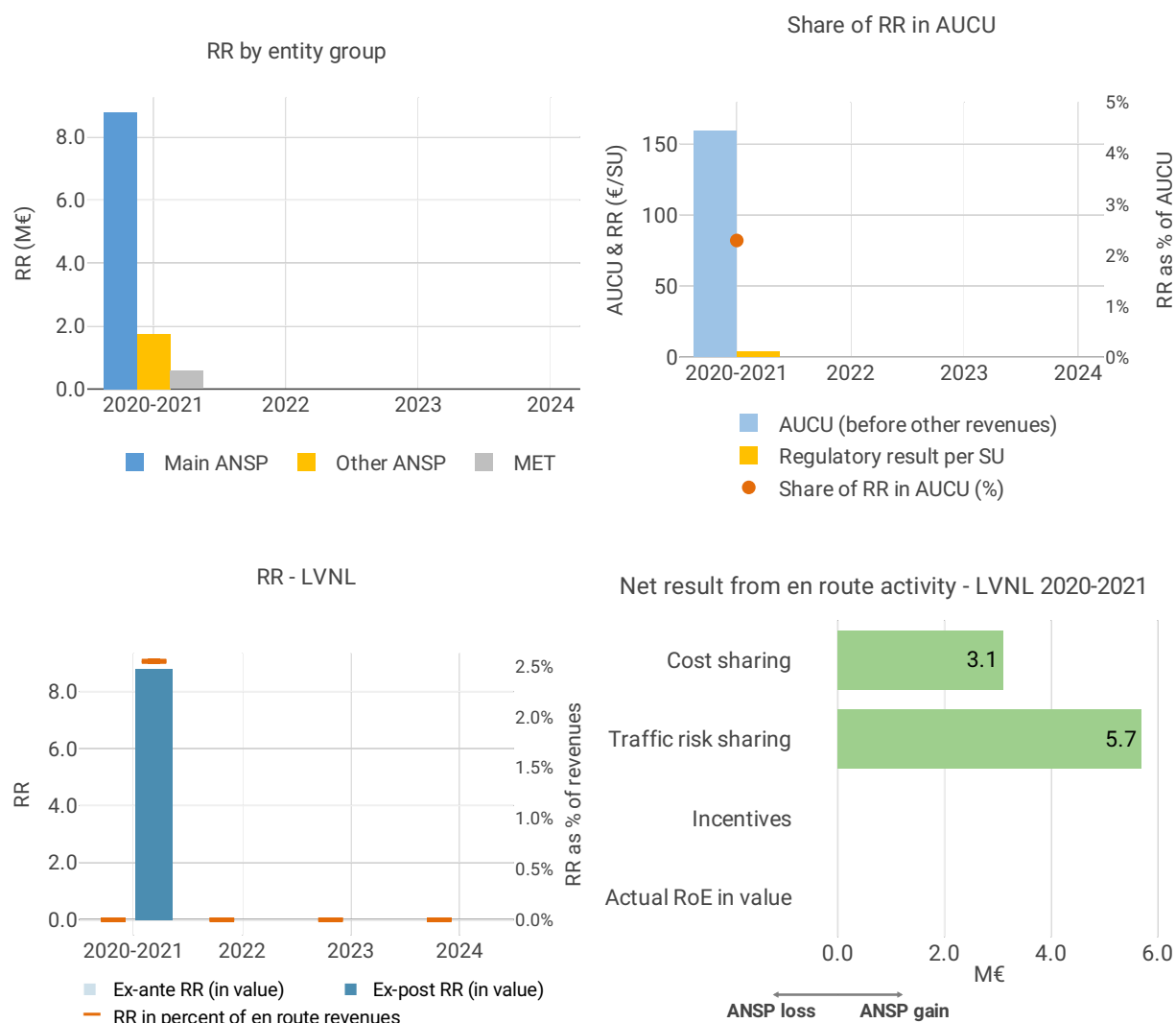
The lower than planned en route costs in real terms for LVNL (-1.1%, or -3.6 M€2017) result from:

- lower staff costs (-1.5%) reflecting cost-containment measures relating to staff wages;
- slightly higher other operating costs (+0.7%);
- lower depreciation (-2.5%) reflecting delays in projects implementation due to the impact of Covid-19;
- lower cost of capital (-15.1%) resulting from the lower than planned asset base and lower than planned average interest on debts; and,
- slightly lower than planned deduction for VFR exempted flights (-0.7%).

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



5.2.3 Regulatory result (RR)



Focus on regulatory result

LVNL net gain on activity in the Netherlands en route charging zone in the combined year 2020-2021

LVNL generated a net gain of +8.8 M€, resulting from a gain of +3.1 M€ arising from the cost sharing mechanism and a gain of +5.7 M€ arising from the traffic risk sharing mechanism.

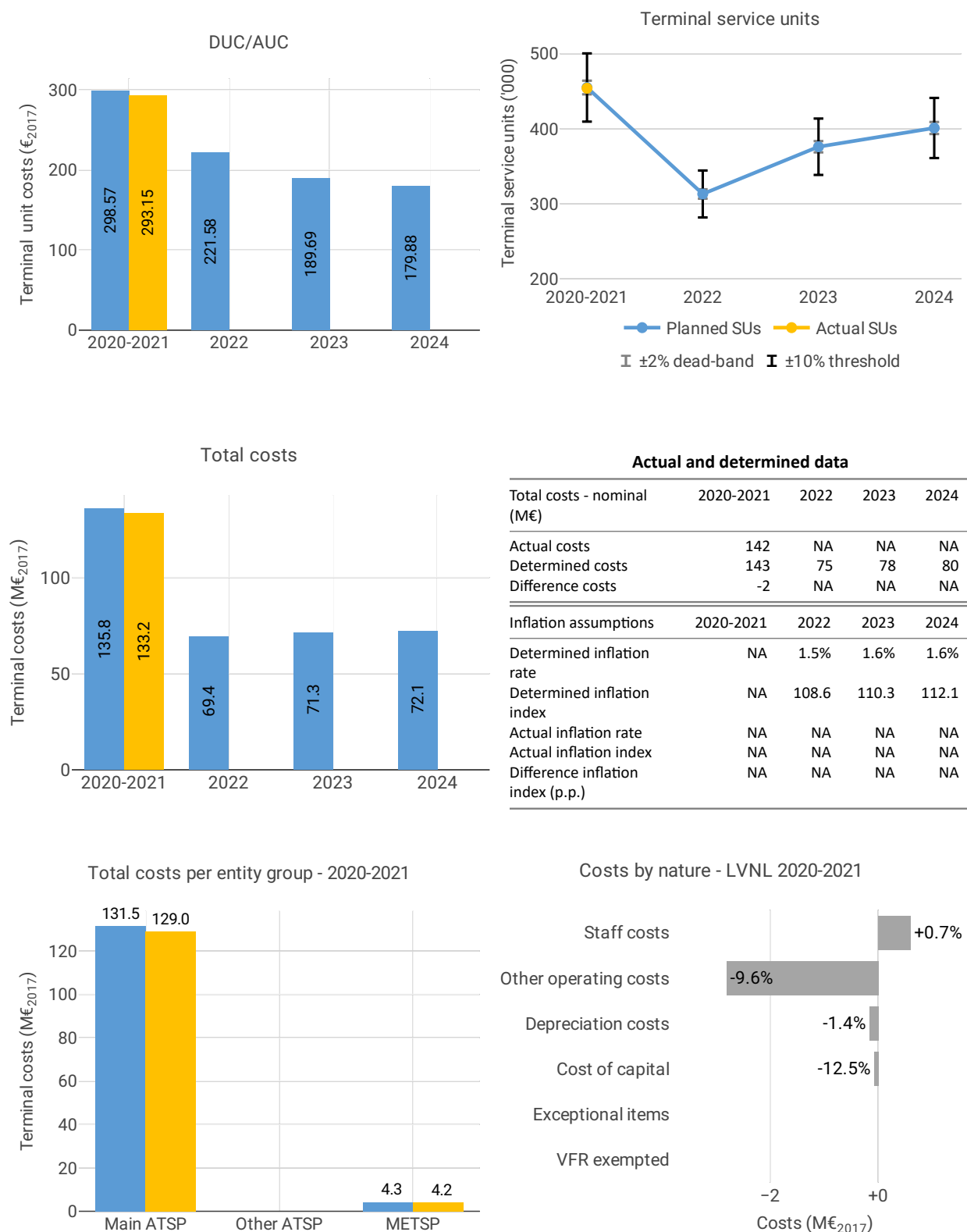
LVNL overall regulatory results (RR) for the en route activity

Ex-post, the overall RR is equal to the net gain from the en route activity mentioned above (+8.8 M€) and corresponds to 2.5% of the en route revenues.

The RoE cannot be computed for LVNL, as its assets are entirely financed through debt.

5.3 Terminal charging zone

5.3.1 Unit cost (KPI#1)



Focus on unit cost

AUC vs. DUC

In the combined year 2020-2021, the AUC was -1.8% (or -5.43 €2017) lower than the planned DUC. This results from the combination of slightly lower than planned TNSUs(-0.1%) and lower than planned terminal costs in real terms (-1.9%, or -2.5 M€2017).

Terminal service units

The difference between actual and planned TNSUs (-0.1%) falls within the $\pm 2\%$ dead band. Hence the resulting loss is borne by the ANSPs.

Terminal costs by entity

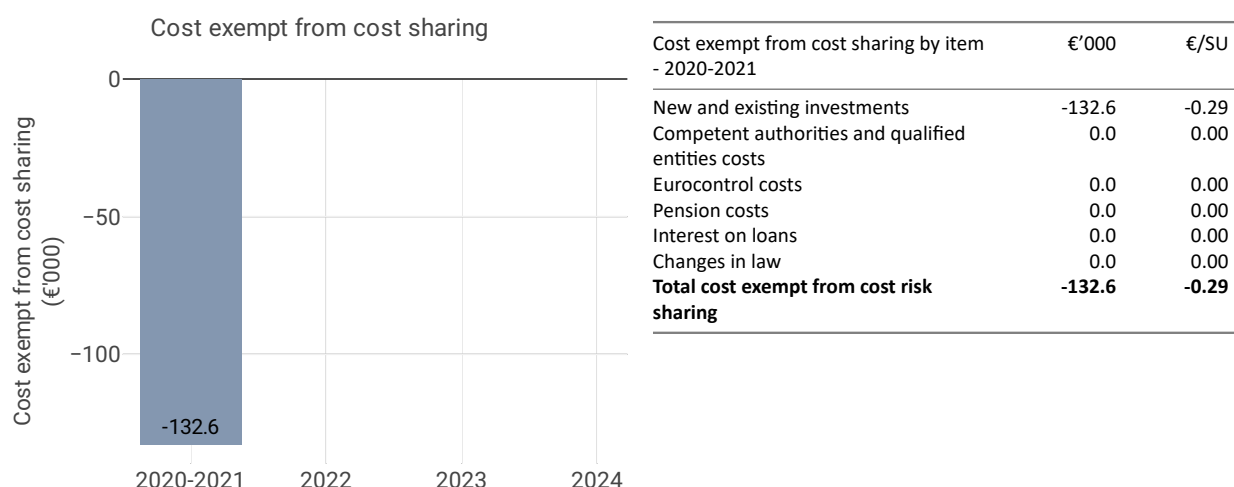
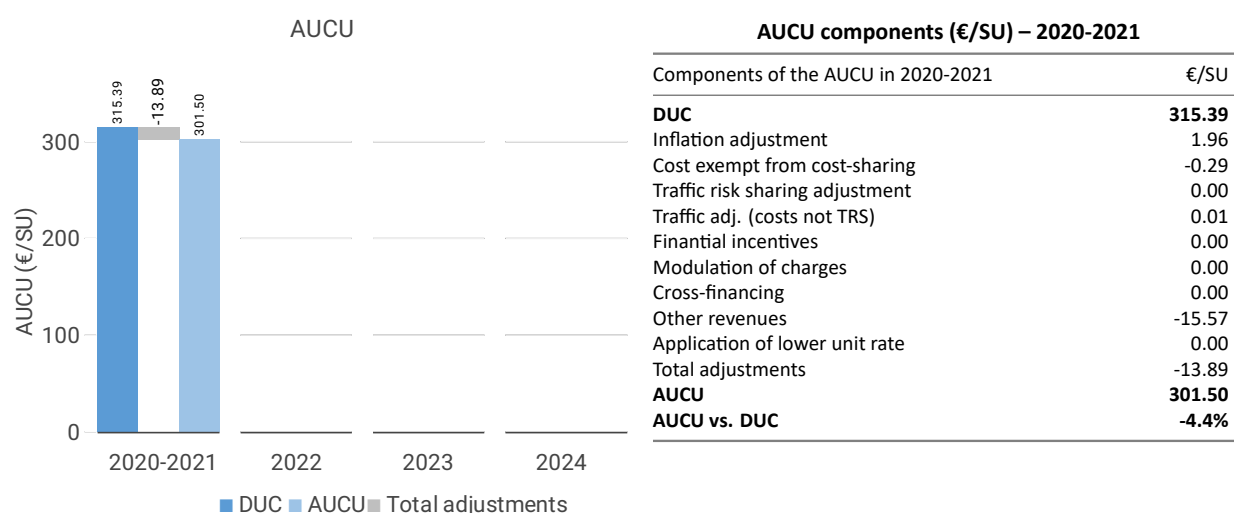
Actual real terminal costs for 2020-2021 are -1.9% (-2.5 M€2017) lower than planned. This result is driven by the main ANSP, LVNL (-1.9%, or -2.4 M€2017), while the MET service provider costs are -2.4% (or -0.1 M€2017) lower than planned.

Terminal costs for the main ANSP at charging zone level

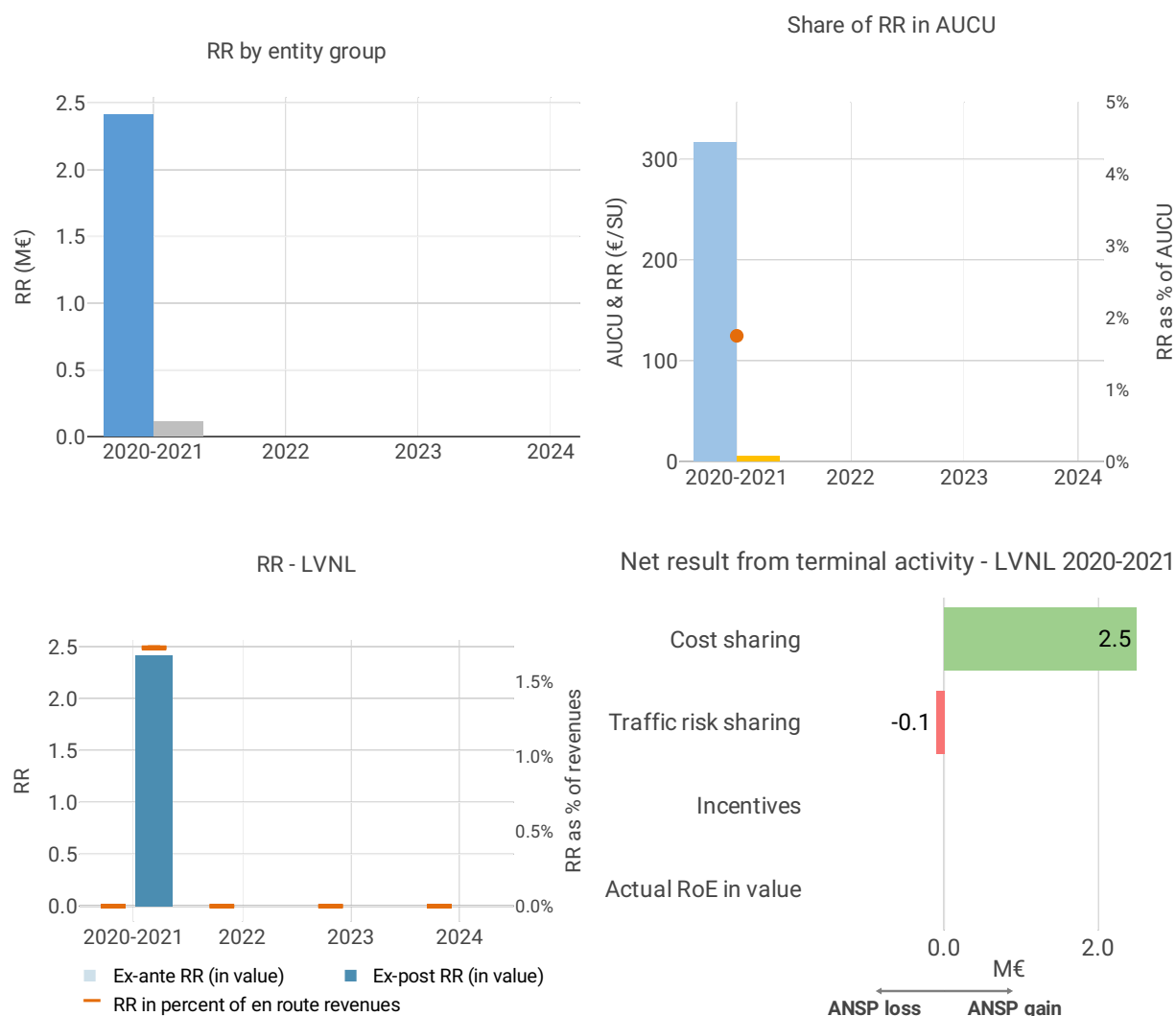
The lower than planned terminal costs in real terms for LVNL (-1.9%, or -2.4 M€2017) in 2020-2021 result from:

- slightly higher staff costs (+0.7%);
- lower other operating costs (-9.6%) as a result of cost-containment measures;
- slightly lower depreciation (-1.4%); and,
- lower cost of capital (-12.5%) reflecting lower than planned asset base and lower than planned average interest on debts.

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



5.3.3 Regulatory result (RR)



Focus on regulatory result

LVNL net gain on activity in the Netherlands terminal charging zone in the combined year 2020-2021

LVNL generated a net gain of +2.4 M€, resulting from a gain of +2.5 M€ arising from the cost sharing mechanism and a loss of -0.09 M€ arising from the traffic risk sharing mechanism.

LVNL overall regulatory results (RR) for the terminal activity

Ex-post, the overall RR is equal to the net gain from the terminal activity mentioned above (+2.4 M€) and corresponds to 1.7% of the terminal revenues.

The RoE cannot be computed for LVNL, as its assets are entirely financed through debt.