PRB | Performance review body of the single european sky

# Performance Review Body Monitoring Report

## Sweden - 2020

This report is automatically generated from: sesperformance.eu




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

# TABLE OF CONTENTS

# 1 OVERVIEW

## 1.1 Contextual information

*National performance plan adopted following Commission Decision (EU) 2022/2423 of 5 December 2022*

**List of ACCs** 2
Malmo ACC
Stockholm ACC

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

**Exchange rate (1 EUR=)**
2017: 9.63311 SEK
2020: 10.4769 SEK

**Share of Union-wide:**
- **traffic (TSUs) 2020** 3.2%
- **en route costs 2020** 4.5%

**Share en route / terminal costs 2020** 91% / 9%

**En route charging zone(s)**
Sweden

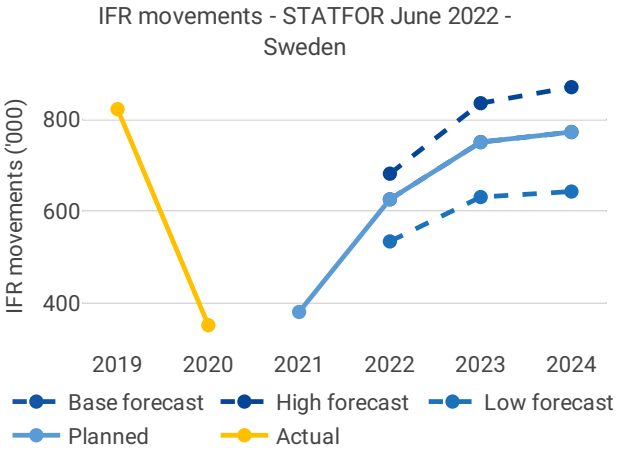
**Terminal charging zone(s)**
Sweden

**Main ANSP**
- LFV

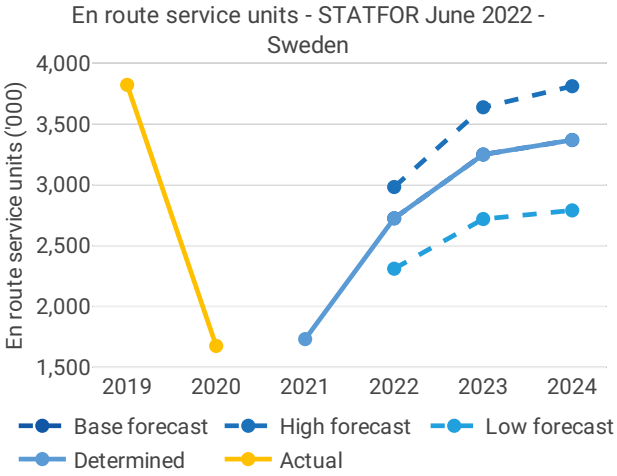
**Other ANSPs**
- SDATS
- ACR
- ARV - Arvidsjaur
- Swedavia

**MET Providers**
- SMHI

## 1.2 Traffic (En route traffic zone)

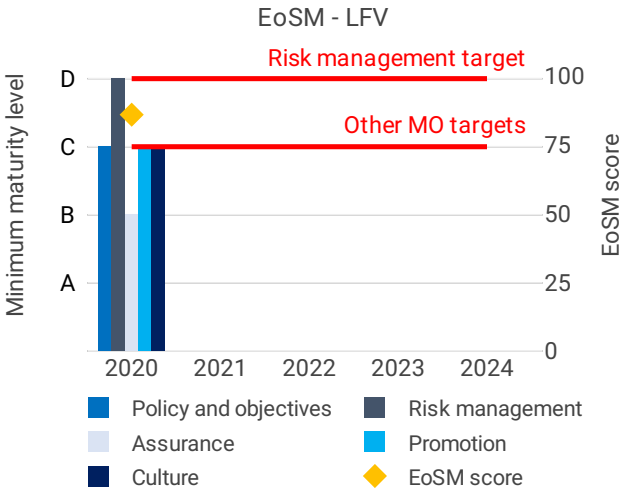



- Sweden recorded 351K actual IFR movements in 2020, -57% compared to 2019 (823K).
- The reduction in IFR movements for Sweden was in line with the average reduction at Union-wide level (-57%).




- Sweden recorded 1,676K actual en route service units in 2020, -56% compared to 2019 (3,820K).
- Sweden service units reduced less than the average reduction at Union-wide level (-57%).

## 1.3 Safety (Main ANSP)

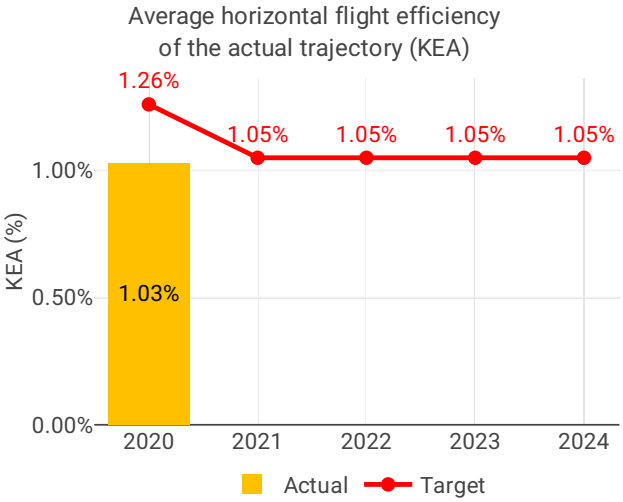



• LFV achieved its RP3 EoSM targets in all management objectives. The levels achieved in 2020 were consistent with the levels planned in the draft 2019 performance plan.

• With respect to safety occurrences, Sweden recorded a marginally higher rate of occurrences of SMIs and lower RIs in 2020 compared to 2019. Both rates remain above the Union-wide average, however, the NSA declared that they are unable to discriminate the occurrences with safety impact only.

• LFV should improve its SMS by implementing automated safety data recording systems.

## 1.4 Environment (Member State)




• Sweden achieved a KEA performance of 1.03% compared to its reference value of 1.26% and therefore it contributed positively to the Union-wide target.

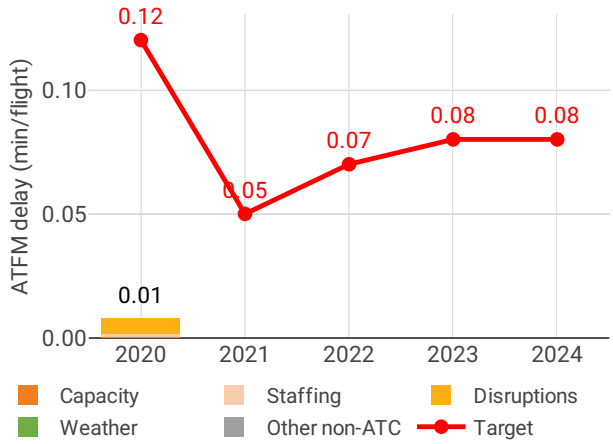
• In 2020, Sweden suspended RAD restrictions and removed ATS routes that existed above FL285. However, the shortest constrained routes in Sweden are still higher than KEA, suggesting that airspace users are not able to plan the routes they actually fly due to airspace constraints. To improve planning, Sweden could consider further measures such as cross-border free route airspace, which it has planned for 2023.

• The share of flights operating CCO/CDO at Stockholm Arlanda airport remained stable in 2020 compared to 2019, but performance is still class leading among regulated airports.

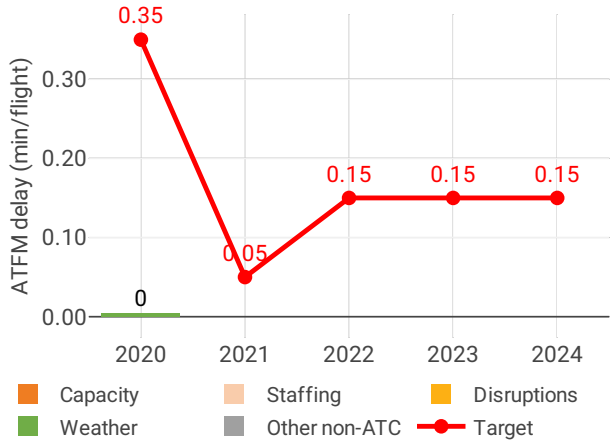
• The additional time airspace users spent taxiing or holding in terminal airspace reduced by 33% compared to 2019.

## 1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups




Average arrival ATFM delay per flight by delay groups




• LFV registered 0.01 minutes of average en route ATFM delay per flight during 2020, thus meeting the local breakdown value of 0.15.

• Delays must be considered in the context of the traffic evolution: IFR movements in 2020 were 57% below the 2019 levels in Sweden.

• Sweden reported no capacity issues and a 1% decrease in ATCO FTE numbers in 2020 compared to 2019.

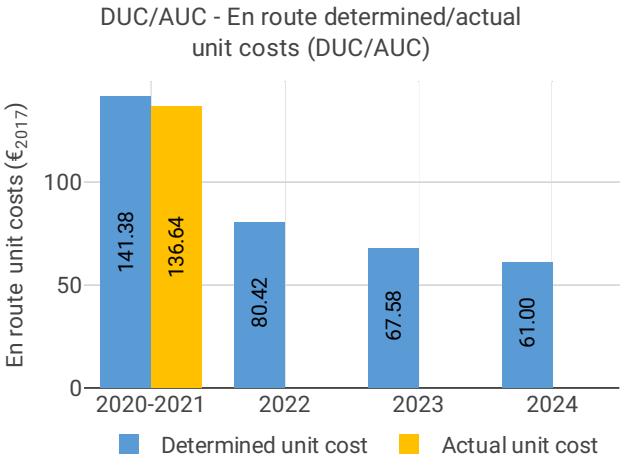
• Delays were driven by disruptions (technical issues).

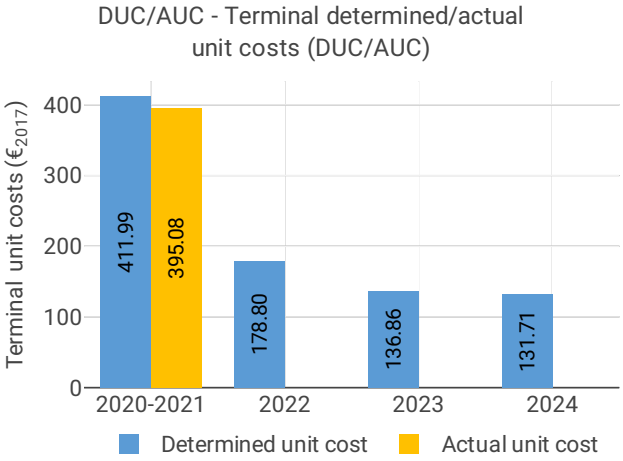
• The share of delayed flights with delays longer than 15 minutes in Sweden increased by 3.28 p.p. compared to 2019.

• The yearly total of sector opening hours in Malmo ACC was 48,401, showing a 15.8% decrease compared to 2019. The yearly total of sector opening hours in Stockholm ACC was 27,645, showing a 37.6% decrease compared to 2019.

• Malmo ACC registered 5.02 IFR movements per one sector opening hour in 2020, being 50.1% below 2019 levels. Stockholm ACC registered 6.1 IFR movements per one sector opening hour in 2020, being 34.2% below 2019 levels.

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




• The 2020 actual service units (1,676K) were 56% lower than the actual service units in 2019 (3,789K).

• Sweden increased total costs in 2020 by 50 M€2017 (+23%) compared to 2019 actual costs, being the Member States with the largest cost increase. Moreover, Sweden did not achieve the cost-efficiency targets in 2019.

• Sweden increased staff costs by 58 M€2017 (+42%) due to notably higher pension costs. The increase is a lump sum and would only affect 2020.

• LFV spent 15 M€2017 in 2020 related to cost of investments, 21% less than planned in the 2019 draft performance plan (19 M€2017). The decrease is due to the fact that Swedish government decided to charge a WACC without return on equity.

# 2 SAFETY - SWEDEN

## 2.1 PRB monitoring

• LFV achieved its RP3 EoSM targets in all management objectives. The levels achieved in 2020 were consistent with the levels planned in the draft 2019 performance plan.

• With respect to safety occurrences, Sweden recorded a marginally higher rate of occurrences of SMIs and lower RIs in 2020 compared to 2019. Both rates remain above the Union-wide average, however, the NSA declared that they are unable to discriminate the occurrences with safety impact only.

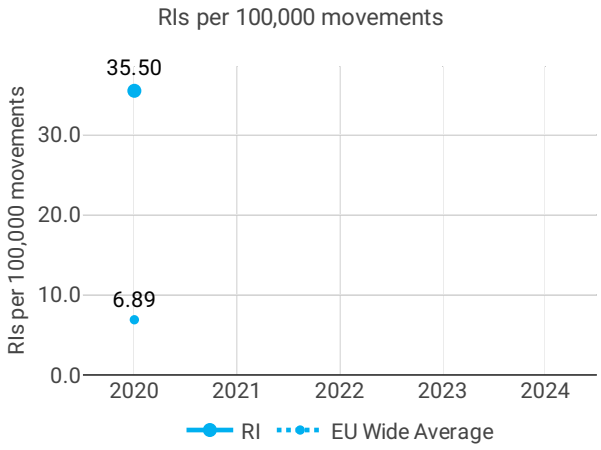
• LFV should improve its SMS by implementing automated safety data recording systems.

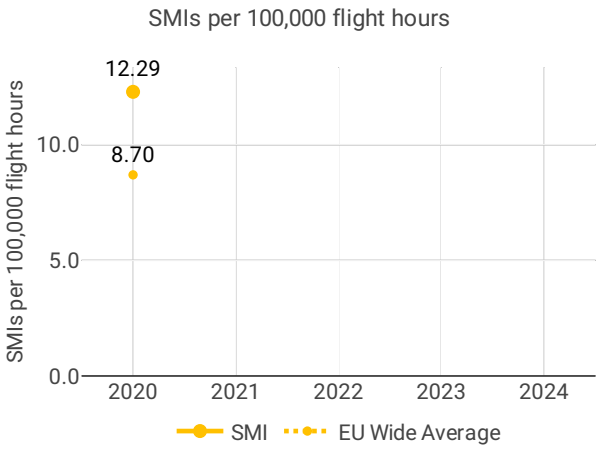
## 2.2 Effectiveness of Safety Management (EoSM) (KPI#1)


**Focus on EoSM**

All five EoSM components of the ANSP meet already the 2024 target level.

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




# 3 ENVIRONMENT - SWEDEN

## 3.1 PRB monitoring

• Sweden achieved a KEA performance of 1.03% compared to its reference value of 1.26% and therefore it contributed positively to the Union-wide target.

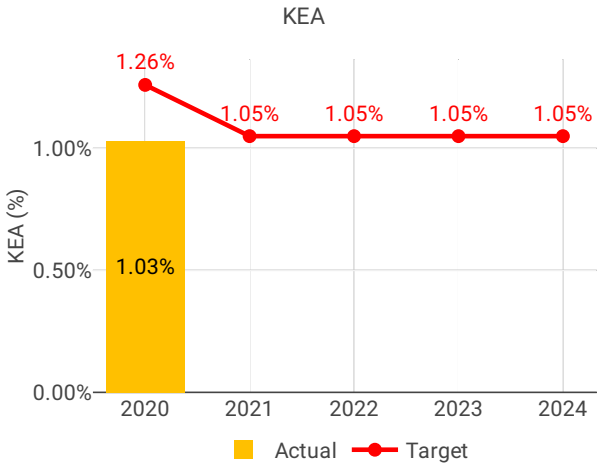
• In 2020, Sweden suspended RAD restrictions and removed ATS routes that existed above FL285. However, the shortest constrained routes in Sweden are still higher than KEA, suggesting that airspace users are not able to plan the routes they actually fly due to airspace constraints. To improve planning, Sweden could consider further measures such as cross-border free route airspace, which it has planned for 2023.

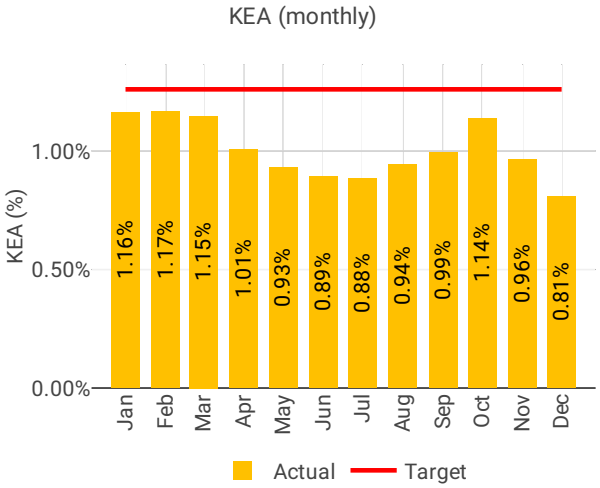
• The share of flights operating CCO/CDO at Stockholm Arlanda airport remained stable in 2020 compared to 2019, but performance is still class leading among regulated airports.

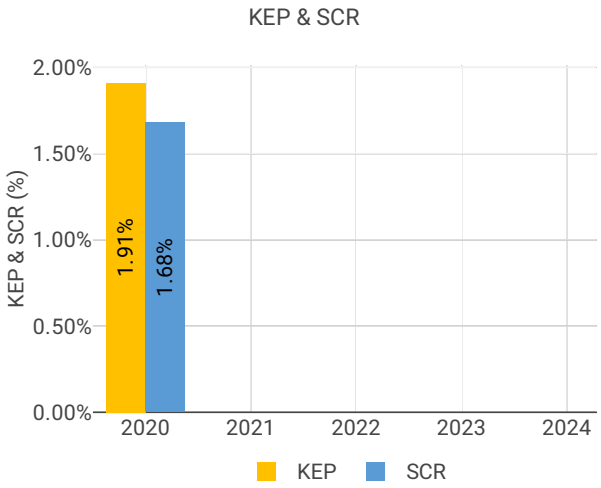
• The additional time airspace users spent taxiing or holding in terminal airspace reduced by 33% compared to 2019.

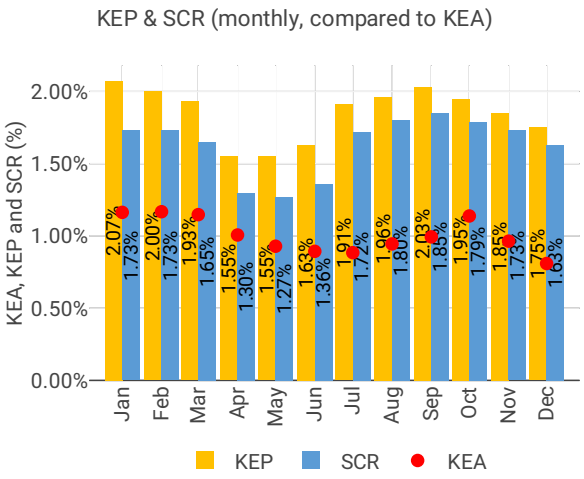
## 3.2 En route performance

### 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)



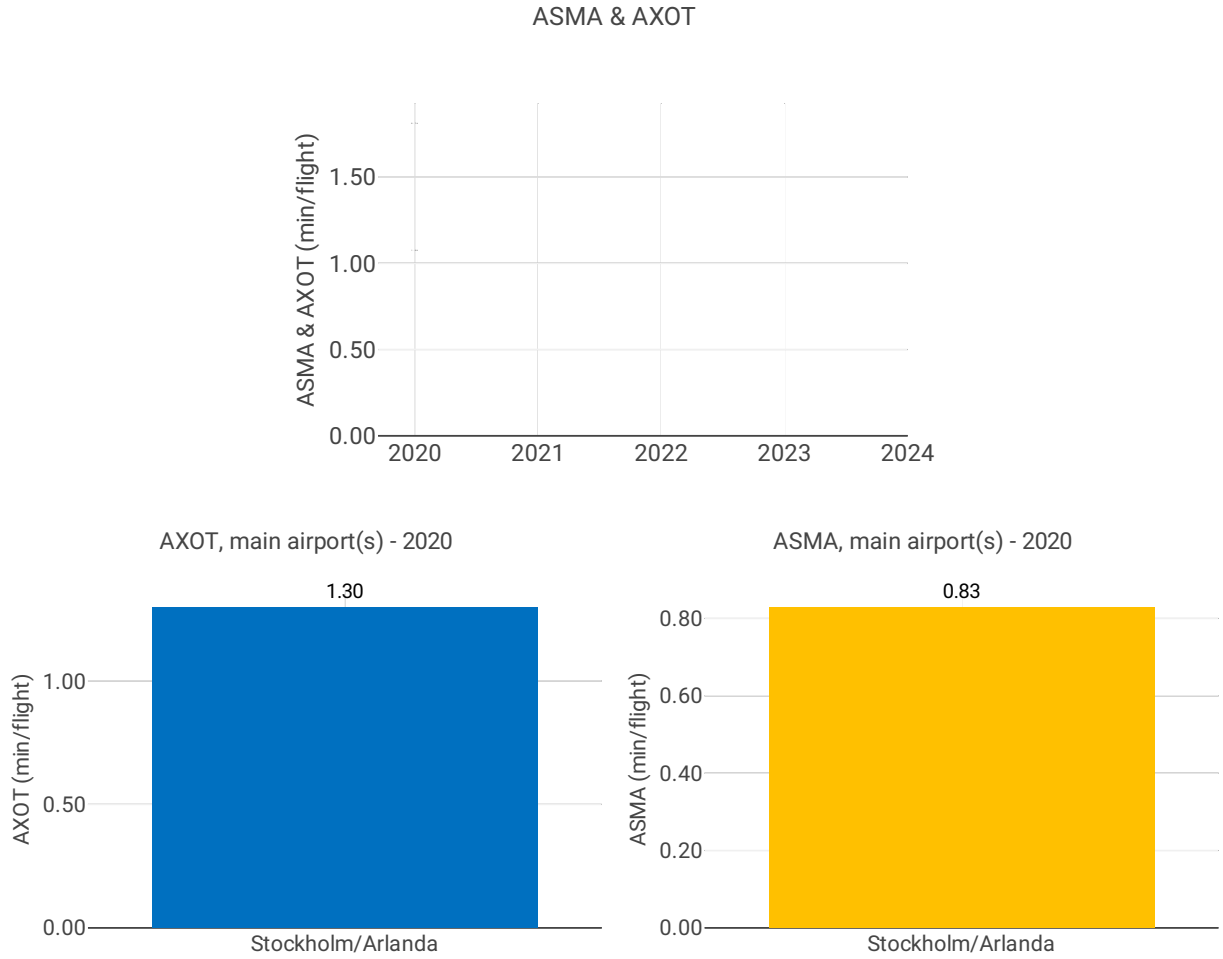



## 3.3 Terminal performance

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




**Focus on ASMA & AXOT**

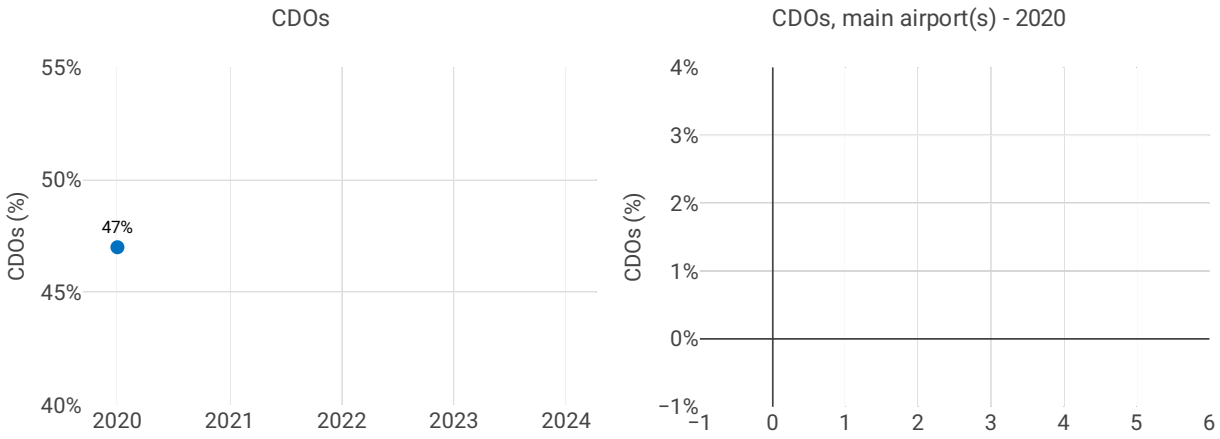
**AXOT**

The additional taxi-out times at Stockholm decreased by 37% (ESSA; 2019: 2.05 min/dep.; 2020: 1.3 min/dep.) with a sharp reduction from April until the end of the year, period in which these times averaged only 0.75 min/arr.
According to the Swedish monitoring report: *The airport operator (Swedavia) is currently executing a CDM project that aims to, among other things, improve this PI.*

**ASMA**

The additional time in the terminal area at Stockholm Arlanda was low and very stable around 1.2 min/arr during RP2. The traffic reduction in 2020 had a significant impact in the performance (ESSA; 2019: 1.15 min/arr.; 2020: 0.83 min/arr.), with additional ASMA times under 0.40 min/arr. between April and October.
According to the Swedish monitoring report: *LFV is currently starting up a major airspace overhaul project. One of the objectives is to improve the airspace around ESSA. LFV is monitoring the additional time for each individual arrival and will use that data in the aforementioned project.*

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



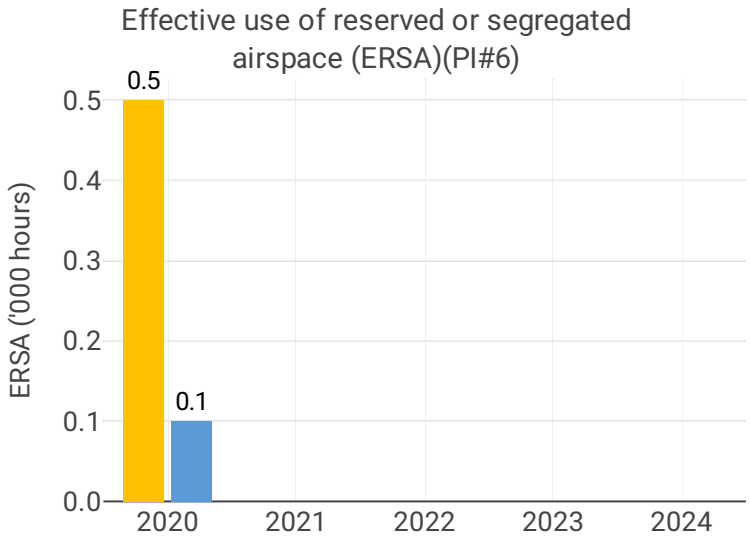

**Focus CDOs**

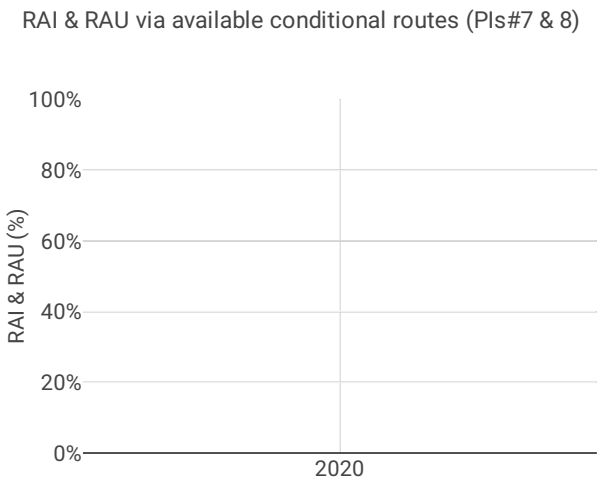
The share of CDO flights at Stockholm (ESSA) is 42.5% which is above the overall RP3 value in 2020 (32.5%).

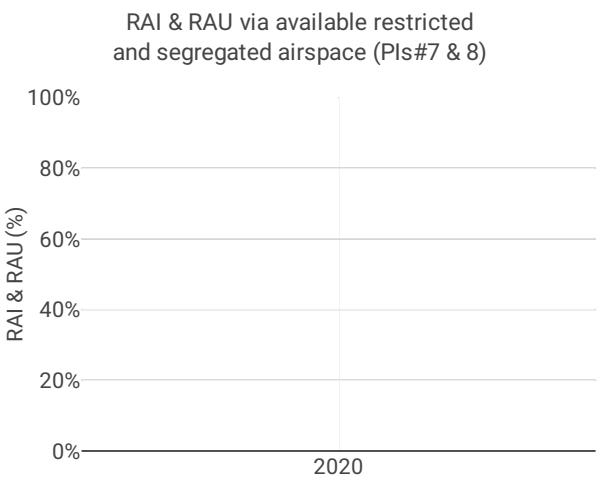
**Airport level**

| | 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 |
| Stockholm/Arlanda | 1.3 | NA | NA | NA | NA | 0.83 | NA | NA | NA | NA | NA | NA | NA | NA | NA |

## 3.4 Civil-Military dimension






### Focus on Civil-Military dimension

**Update on Military dimension of the plan**

Environment: FUA has been implemented in Sweden since 1978, before the concept was defined on European level and the benefit is already achieved, therefore its limitations to environmental factors are small.
Capacity: Sweden have an implemented extended FUA with the content that [doesn't create] limits in the capacity.

**Military - related measures implemented or planned to improve environment and capacity**

Environment: No comment provided.
Capacity: No comment provided.

**Initiatives implemented or planned to improve PI#6**

No comment provided. [No explanation of mismatch between national level (10%) and ACC level (21%).]

**Initiatives implemented or planned to improve PI#7**

No data available

**Initiatives implemented or planned to improve PI#8**

No data available

## 4 CAPACITY - SWEDEN

### 4.1 PRB monitoring

• LFV registered 0.01 minutes of average en route ATFM delay per flight during 2020, thus meeting the local breakdown value of 0.15.

• Delays must be considered in the context of the traffic evolution: IFR movements in 2020 were 57% below the 2019 levels in Sweden.

• Sweden reported no capacity issues and a 1% decrease in ATCO FTE numbers in 2020 compared to 2019.

• Delays were driven by disruptions (technical issues).

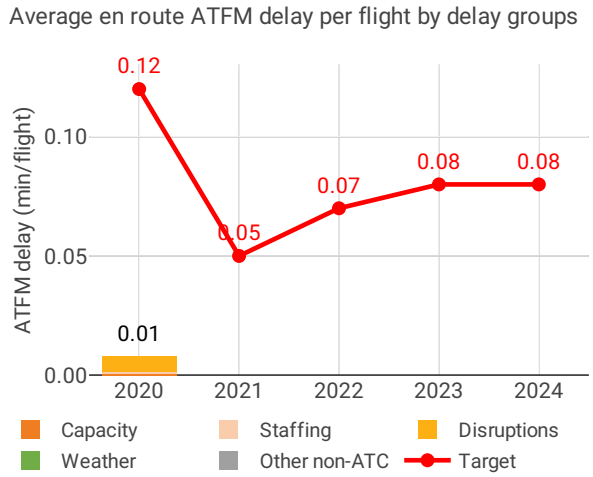
• The share of delayed flights with delays longer than 15 minutes in Sweden increased by 3.28 p.p. compared to 2019.

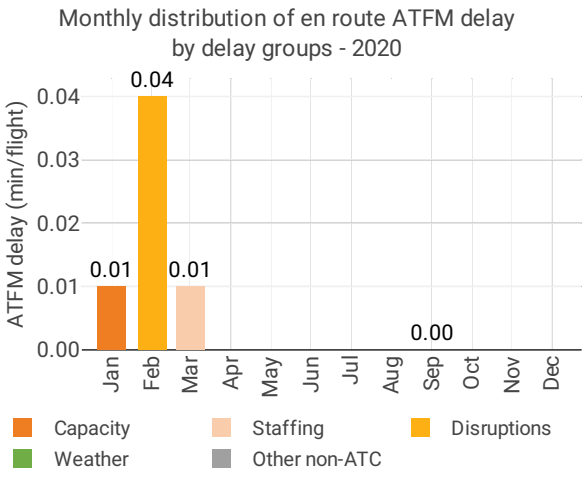
• The yearly total of sector opening hours in Malmo ACC was 48,401, showing a 15.8% decrease compared to 2019. The yearly total of sector opening hours in Stockholm ACC was 27,645, showing a 37.6% decrease compared to 2019.

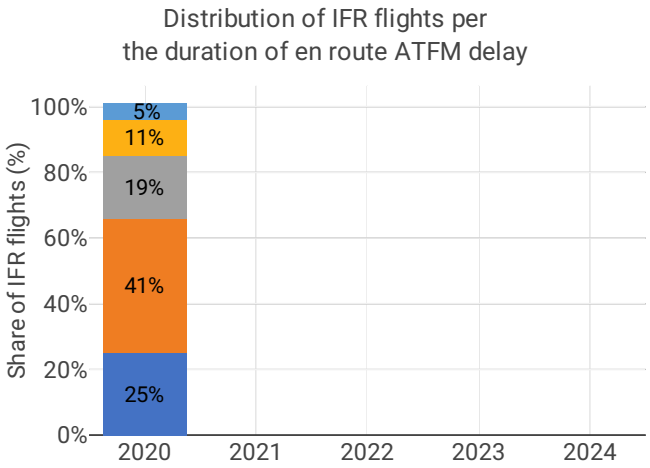
• Malmo ACC registered 5.02 IFR movements per one sector opening hour in 2020, being 50.1% below 2019 levels. Stockholm ACC registered 6.1 IFR movements per one sector opening hour in 2020, being 34.2% below 2019 levels.

## 4.2 En route performance

### 4.2.1 En route ATFM delay (KPI#1)




**Focus on en route ATFM delay**

**Summary of capacity performance**

Sweden experienced a traffic reduction of 57% from 2019 levels, to 351k flights. The traffic level was accommodated with less than 3k minutes of en route ATFM delays to airspace users. Almost 80% of ATFM delays were attributed to ATC equipment in February 2020.

**NSA's assessment of capacity performance**

Performance is better than target as a result of the reduction in traffic. The delays reported refer to the period January - February.

**Monitoring process for capacity performance**

No data available

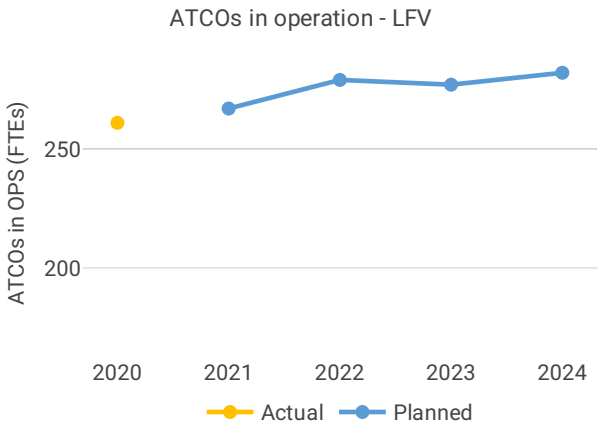
**Capacity planning**

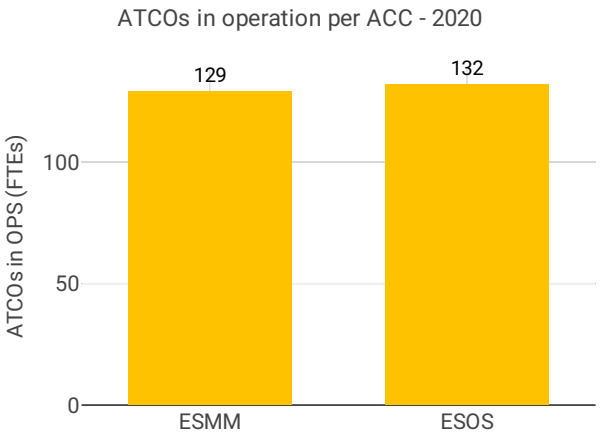
No data available

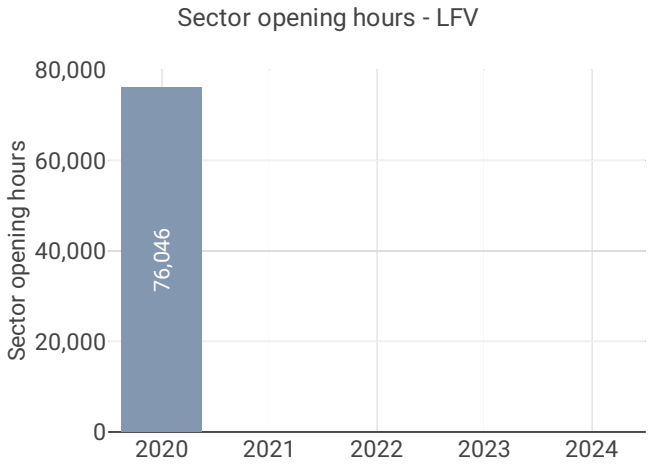
**Application of Corrective Measures for Capacity (if applicable)**

No data available

### 4.2.2 Other indicators



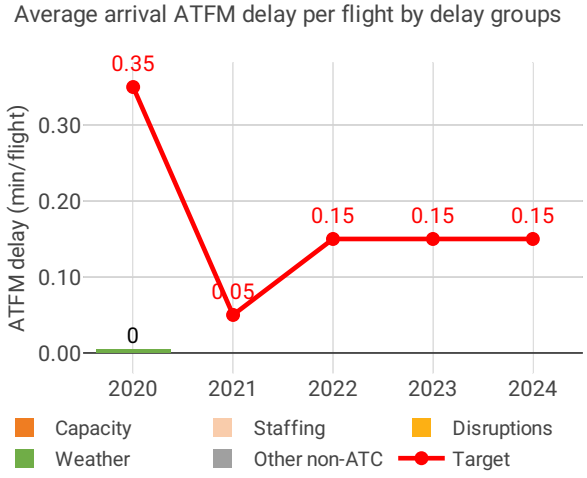



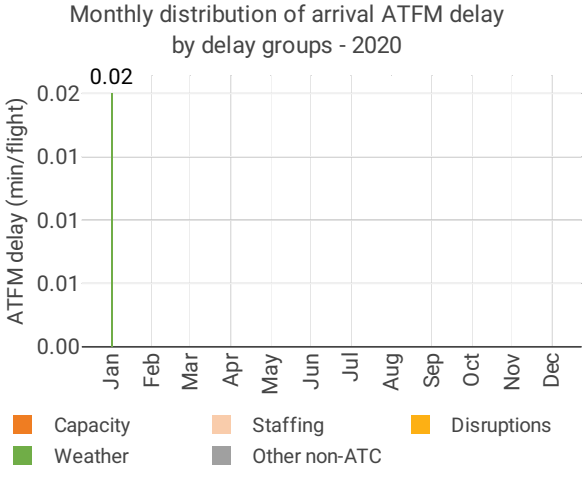

**Focus on ATCOs in operations**

**Malmo ACC**: Reporting according to the definition used in ACE.**Stockholm ACC**: Reporting according to the definition used in ACE.

## 4.3 Terminal performance

### 4.3.1 Arrival ATFM delay (KPI#2)



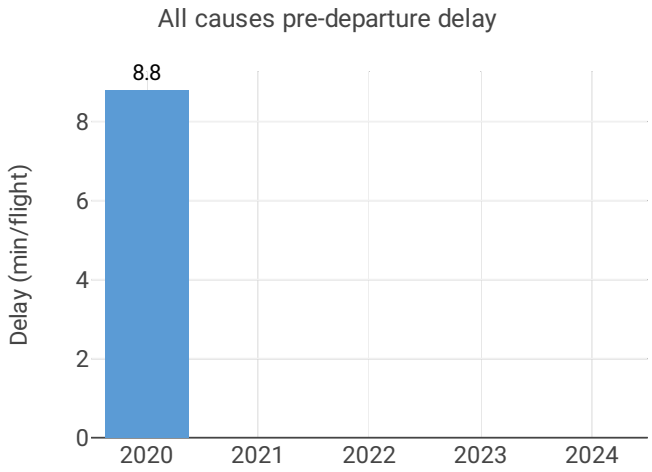
## Focus on arrival ATFM delay

Sweden only has Stockholm (ESSA) airport subject to RP3 monitoring for which the APDF is successfully established and the monitoring of the capacity indicators 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 this airport in 2020 decreased by 63% with respect to 2019. This drop in traffic also resulted in zero average arrival ATFM delay for Stockholm in 2020. The slot adherence was 98.1%.

Only 203 min of arrival ATFM delay were registered at Stockholm in 2020, in January, resulting in an average 0 min/arr for the year. This is a significant improvement with respect to the 0.32 min/arr in 2019.

The provisional national target on arrival ATFM delay in 2020 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)




**Airport level**

| | Avg arrival ATFM delay (KPI#2) | | | | Slot adherence (PI#1) | | | |
|---|---|---|---|---|---|---|---|---|
| Airport name | 2020 | 2021 | 2022 | 2023 | 2020 | 2021 | 2022 | 2023 |
| Stockholm/Arlanda | 0 | NA | NA | NA | 98.2% | NA% | NA% | NA% |

| | ATC pre departure delay (PI#2) | | | | All causes pre departure delay (PI#3) | | | |
|---|---|---|---|---|---|---|---|---|
| Airport name | 2020 | 2021 | 2022 | 2023 | 2020 | 2021 | 2022 | 2023 |
| Stockholm/Arlanda | 0.06 | NA | NA | NA | 8.3 | NA | NA | NA |

## Focus on performance indicators at airport level

### ATFM slot adherence

With the drastic drop in traffic, regulated departures from Stockholm virtually disappeared as of April. The annual figure is therefore driven by the performance in the first trimester.
Stockholm's ATFM slot compliance was 98.2%. With regard to the 1.8% of flights that did not adhere, 0.7% was early and 1.1% was late.

**ATC pre-departure delay**

The calculation of the ATC pre-departure delay is based on the data provided by the airport operators through the Airport Operator Data Flow (APDF) which is properly implemented at Stockholm.
However, there are several quality checks before EUROCONTROL can produce the final value which is established as the average minutes of pre-departure delay (delay in the actual off block time) associated to the IATA delay code 89 (through the APDF, for each delayed flight, the reasons for that delay have to be transmitted and coded according to IATA delay codes.
However, sometimes the airport operator has no information concerning the reasons for the delay in the off block, or they cannot convert the reasons to the IATA delay codes. In those cases, the airport operator might:
- Not report any information about the reasons for the delay for that flight (unreported delay)
- Report a special code to indicate they do not have the information (code ZZZ)
- Report a special code to indicate they do not have the means to collect and/or translate the information (code 999)

To be able to calculate with a minimum of accuracy the PI for a given month, the minutes of delay that are not attributed to any IATA code reason should not exceed 40% of the total minutes of pre-departure delay observed at the airport.
Finally, to be able to produce the annual figure, at least 10 months of valid data is requested by EUROCONTROL.
The share of unidentified delay reported by Stockholm was above 40% between April and June 2020, preventing the annual calculation of this indicator, as there were only 9 months of valid data. Stockholm usually has proper reporting.

**All causes pre-departure delay**

The total (all causes) delay in the actual off block time at Sweden in 2020 was 8.34 min/dep. The higher delays per flight were observed in May due to the lower traffic and extraordinary circumstances.
This performance indicator has been introduced in the performance scheme for the first time this year, so no evolution with respect to 2019 can be analysed.

# 5 COST-EFFIENCY - SWEDEN

## 5.1 PRB monitoring

• The 2020 actual service units (1,676K) were 56% lower than the actual service units in 2019 (3,789K).

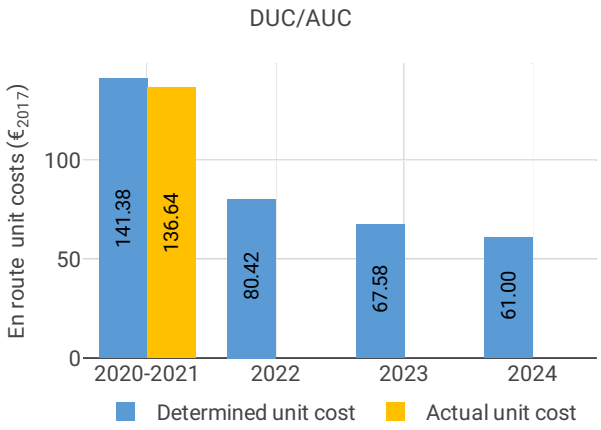
• Sweden increased total costs in 2020 by 50 M€2017 (+23%) compared to 2019 actual costs, being the Member States with the largest cost increase. Moreover, Sweden did not achieve the cost-efficiency targets in 2019.

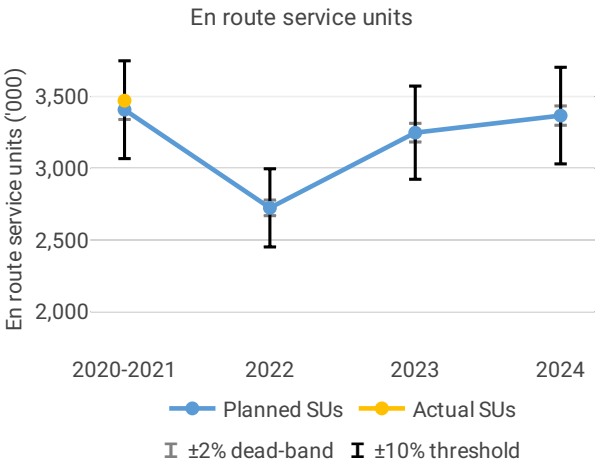
• Sweden increased staff costs by 58 M€2017 (+42%) due to notably higher pension costs. The increase is a lump sum and would only affect 2020.

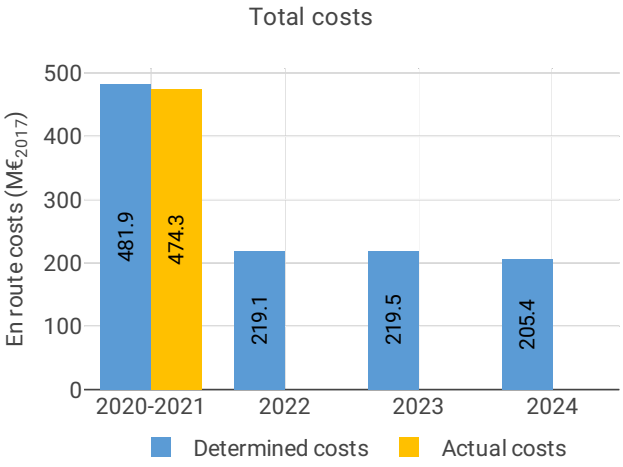
• LFV spent 15 M€2017 in 2020 related to cost of investments, 21% less than planned in the 2019 draft performance plan (19 M€2017). The decrease is due to the fact that Swedish government decided to charge a WACC without return on equity.

## 5.2 En route charging zone

### 5.2.1 Unit cost (KPI#1)

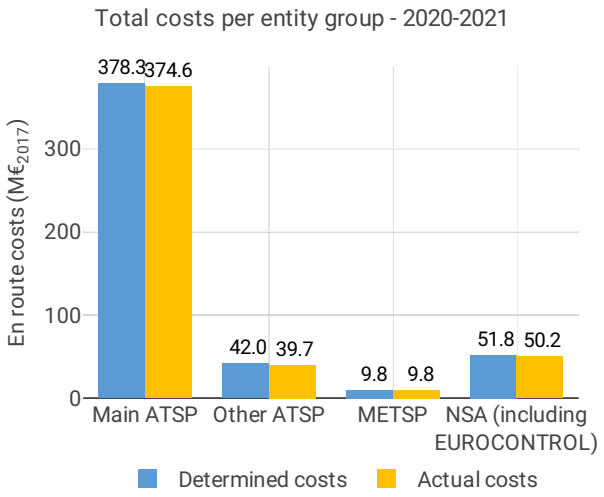


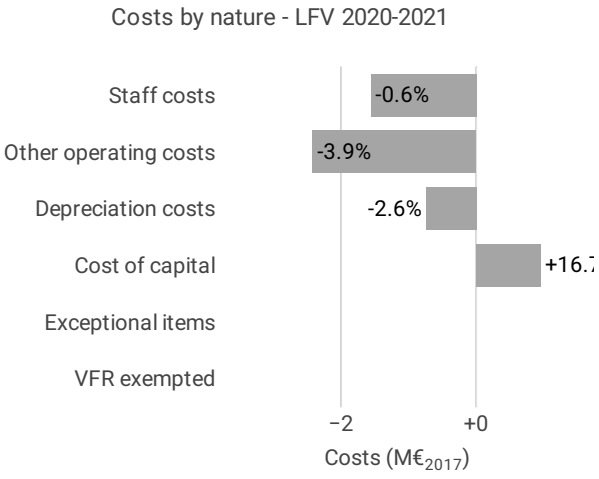




**Actual and determined data**

| Total costs - nominal (M€) | 2020-2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| Actual costs | 496 | NA | NA | NA |
| Determined costs | 502 | 240 | 245 | 232 |
| Difference costs | -6 | NA | NA | NA |
| **Inflation assumptions** | **2020-2021** | **2022** | **2023** | **2024** |
| Determined inflation rate | NA | 4.8% | 2.2% | 1.7% |
| Determined inflation index | NA | 112.4 | 114.9 | 116.9 |
| Actual inflation rate | NA | NA | NA | NA |
| Actual inflation index | NA | NA | NA | NA |
| Difference inflation index (p.p.) | NA | NA | NA | NA |




**Focus on unit cost**

**AUC vs. DUC**

In the combined year 2020-2021, the AUC was -3.4% (or -45.65 SEK2017, -4.74 €2017) lower than the planned DUC. This results from the combination of higher than planned TSUs (+1.8%) and lower than planned en route costs in real terms (-1.6%, or-72.8 MSEK2017, -7.6 M€2017).

**En route service units**

The difference between actual and planned TSUs (+1.8%) falls within the ±2% dead band. Hence the resulting additional en route revenue is kept by the ANSPs.

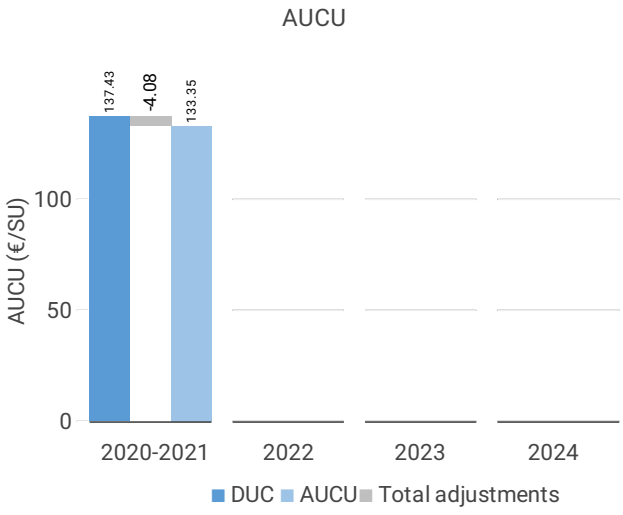
**En route costs by entity**

Actual real en route costs are -1.6% (-7.6 M€2017) lower than planned. This is driven by the main ANSP, LFV (-1.0%, or -3.8 M€2017), other ANSPs (-5.4%, or -2.3 M€2017) and NSA/EUROCONTROL (-3.0%, or -1.6 M€2017), while the actual costs of the MET service provider are close to the determined costs (+0.6%, or +0.1 M€2017).

**En route costs for the main ANSP at charging zone level**

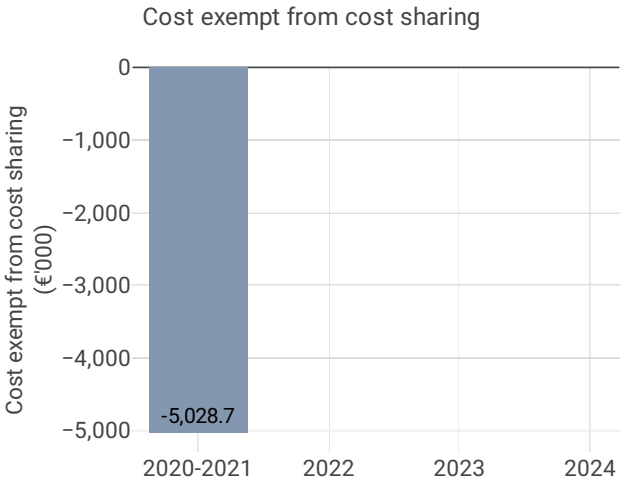
The lower than planned en route costs in real terms for LFV in 2020-2021 reflect a combination of:
- slightly lower staff costs (-0.6%); due to lower than planned pension costs. In addition, "staff costs were reduced by the revenues for staff participating in projects or other parts not financed by en route charges";
- lower other operating costs (-3.9%); "mainly due to lower costs for maintaining the systems and pandemic effects of less travelling and consultants";
- lower depreciation costs (-2.6%); reflecting "delayed investments as a result of the pandemic and lack of staff"; and,
- significantly higher cost of capital (+16.7%); linked with a higher interest rate on debt used to compute the cost of capital.

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



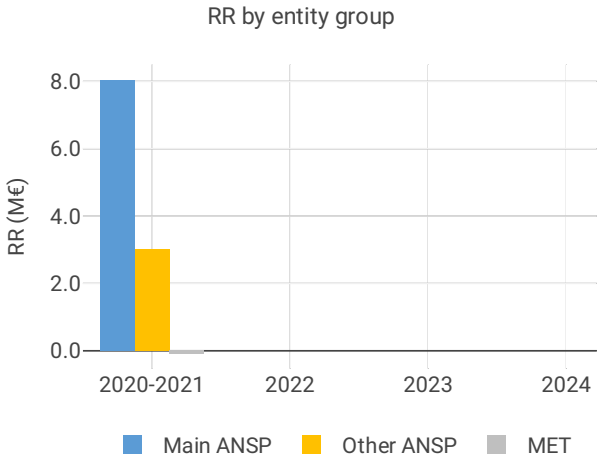

**AUCU components (€/SU) – 2020-2021**

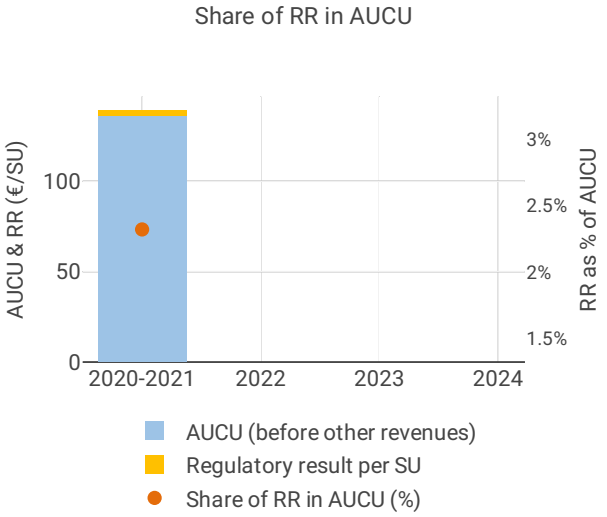
| Components of the AUCU in 2020-2021 | €/SU |
|---|---|
| **DUC** | **137.43** |
| Inflation adjustment | 0.57 |
| Cost exempt from cost-sharing | -1.45 |
| Traffic risk sharing adjustment | 0.00 |
| Traffic adj. (costs not TRS) | -0.33 |
| Finantial incentives | 0.00 |
| Modulation of charges | 0.00 |
| Cross-financing | 0.00 |
| Other revenues | -2.87 |
| Application of lower unit rate | 0.00 |
| Total adjustments | -4.08 |
| **AUCU** | **133.35** |
| **AUCU vs. DUC** | **-3.0%** |

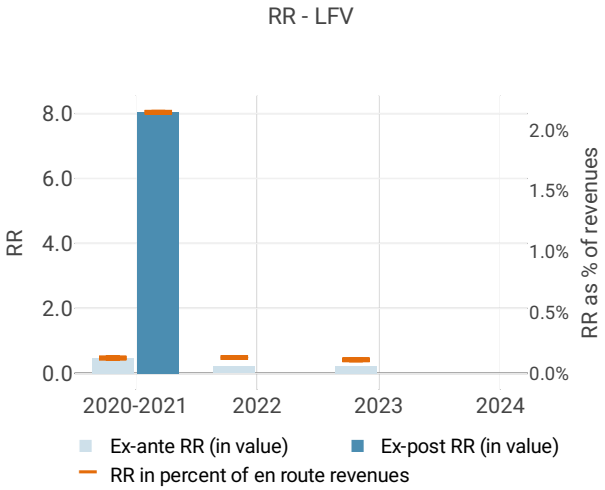


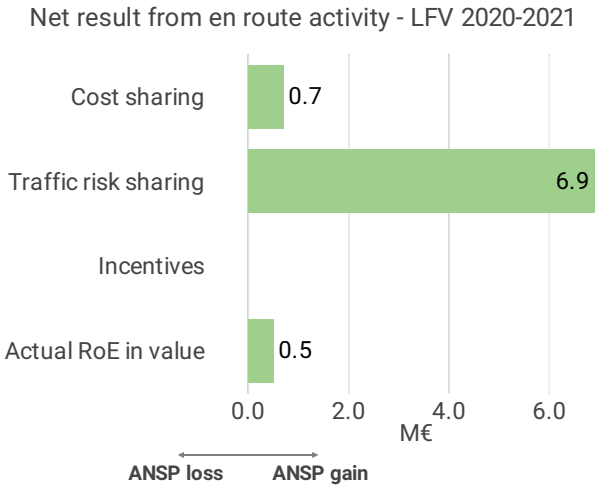

| Cost exempt from cost sharing by item - 2020-2021 | €'000 | €/SU |
|---|---|---|
| New and existing investments | -748.9 | -0.22 |
| Competent authorities and qualified entities costs | -128.6 | -0.04 |
| Eurocontrol costs | -1,359.2 | -0.39 |
| Pension costs | -2,791.9 | -0.80 |
| Interest on loans | 0.0 | 0.00 |
| Changes in law | 0.0 | 0.00 |
| **Total cost exempt from cost risk sharing** | **-5,028.7** | **-1.45** |

### 5.2.3 Regulatory result (RR)



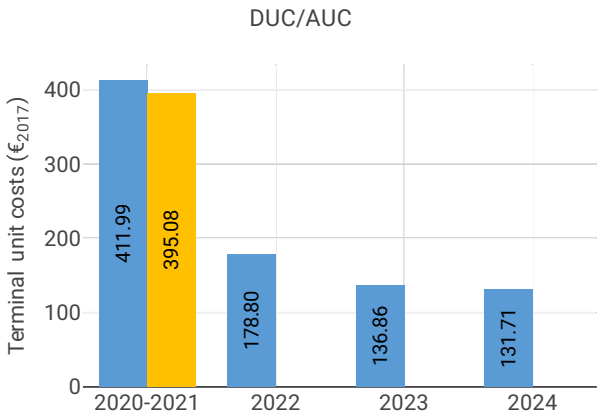

**Focus on regulatory result**

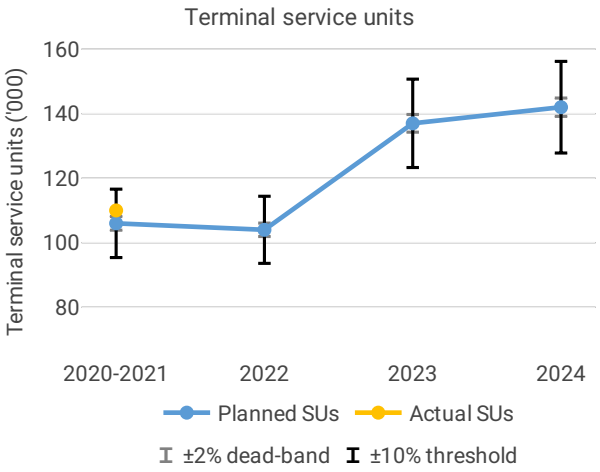
**LFV net gain on en route activity in the Sweden charging zone in the combined year 2020-2021**
LFV generated a net gain of +76.5 MSEK, as a combination of a gain of +6.9 MSEK arising from the cost sharing mechanism and a gain of +69.6 MSEK arising from the traffic risk sharing mechanism.

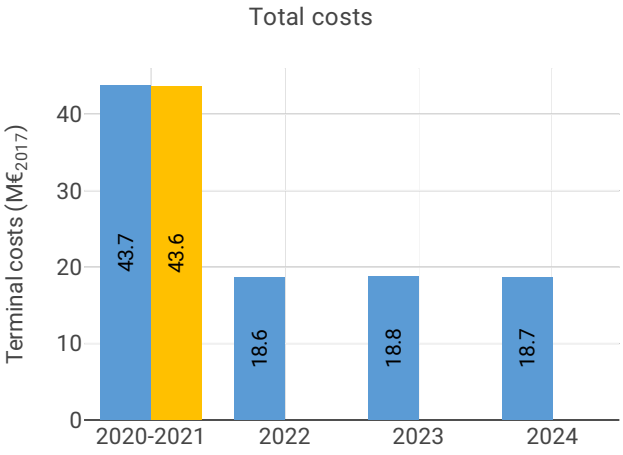
**LFV overall regulatory results (RR) for the en route activity**
Ex-post, the overall RR taking into account the net gain from the en route activity mentioned above (+76.5 MSEK) and the actual RoE (+5.1 MSEK) amounts to +81.6 MSEK (2.1% of the en route revenues). The resulting ex-post rate of return on equity is 7.6%, which is higher than the 0.5% planned in the PP.

## 5.3 Terminal charging zone

### 5.3.1 Unit cost (KPI#1)

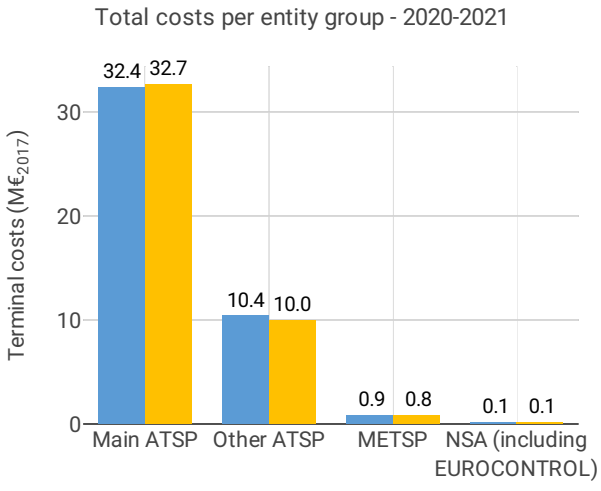


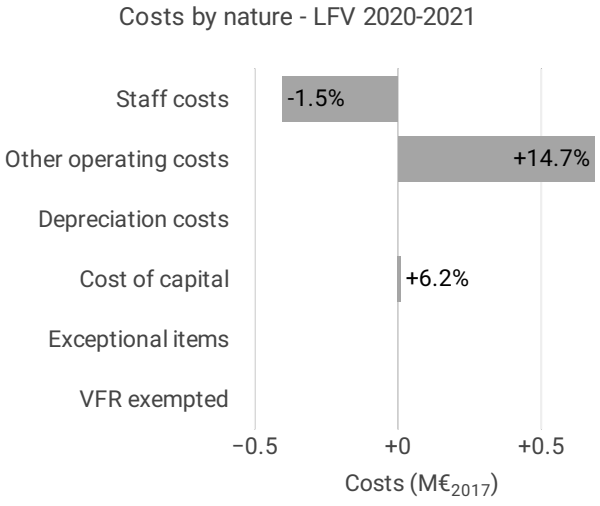




**Actual and determined data**

| Total costs - nominal (M€) | 2020-2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|
| Actual costs | 46 | NA | NA | NA |
| Determined costs | 46 | 21 | 21 | 22 |
| Difference costs | 0 | NA | NA | NA |
| **Inflation assumptions** | **2020-2021** | **2022** | **2023** | **2024** |
| Determined inflation rate | NA | 4.8% | 2.2% | 1.7% |
| Determined inflation index | NA | 112.4 | 114.9 | 116.9 |
| Actual inflation rate | NA | NA | NA | NA |
| Actual inflation index | NA | NA | NA | NA |
| Difference inflation index (p.p.) | NA | NA | NA | NA |




**Focus on unit cost**

**AUC vs. DUC**

The AUC was -4.1% (or -162.86 SEK2017, -16.91 €2017) lower than the planned DUC resulting from the combination of higher than planned TNSUs (+3.9%) and slightly lower than planned terminal costs in real terms (-0.4%, or -1.6 MSEK2017, -0.2 M€2017).

**Terminal service units**

The difference between actual and planned TNSUs (+3.9%) falls outside the ±2% dead band. Hence the resulting additional terminal revenue is shared between the ANSPs and airspace users, with the main ANSP (LFV) retaining an amount of 8.4 MSEK (0.8 M€).

**Terminal costs by entity**

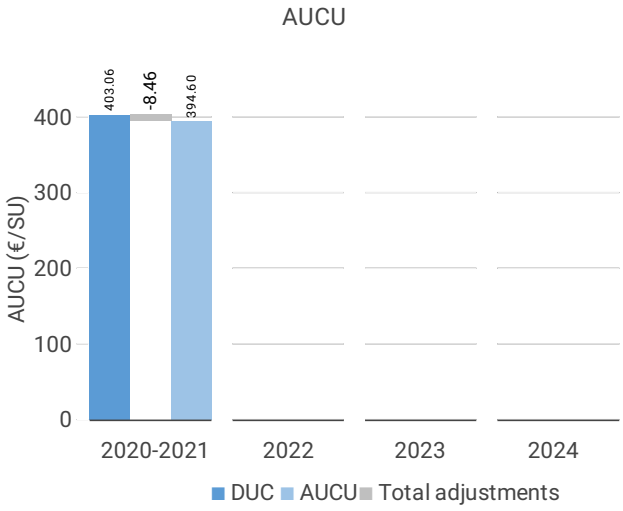
Actual real terminal costs are slightly lower than planned (-0.4% or -0.2 M€2017). This is driven by the other ANSP, Swedavia (-3.8%, or -0.4 M€2017) and MET SP (-7.7%, or -0.1 M€2017), while the actual costs of the main ANSP, LFV are slightly higher than planned (+0.9%, or +0.3 M€2017). NSA costs are close to the planned costs (-0.5%).

**Terminal costs for the main ANSP at charging zone level**

The slightly higher than planned terminal costs in real terms for LFV in 2020-2021 reflect a combination of:

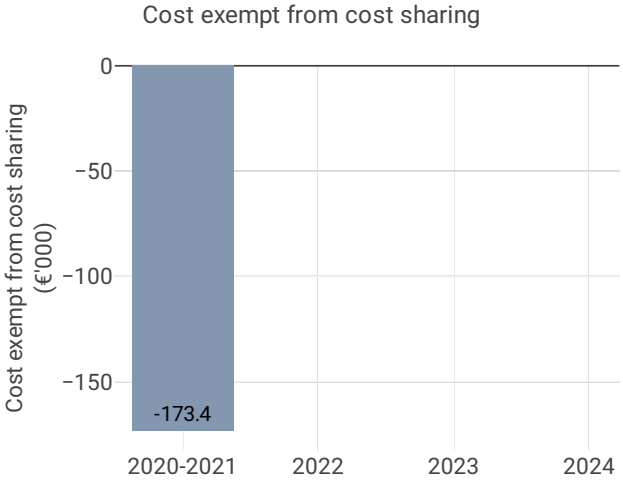
- lower staff costs (-1.5%); due to lower than planned pension costs. In addition, "staff costs were reduced by the revenues for staff participating in projects or other parts not financed by terminal charges";
- significantly higher other operating costs (+14.7%); mainly due to higher training costs;
- no depreciation costs are reported for LFV since these costs are fully borne by the other ANSP (Swedavia, airport operator) owning the CNS infrastructure at Arlanda;
- nevertheless, LFV reports the cost of capital (computed on costs exempt from cost sharing from RP2), which turned out higher than planned (+6.2%); linked with a higher interest rate on debt used to compute the cost of capital.

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



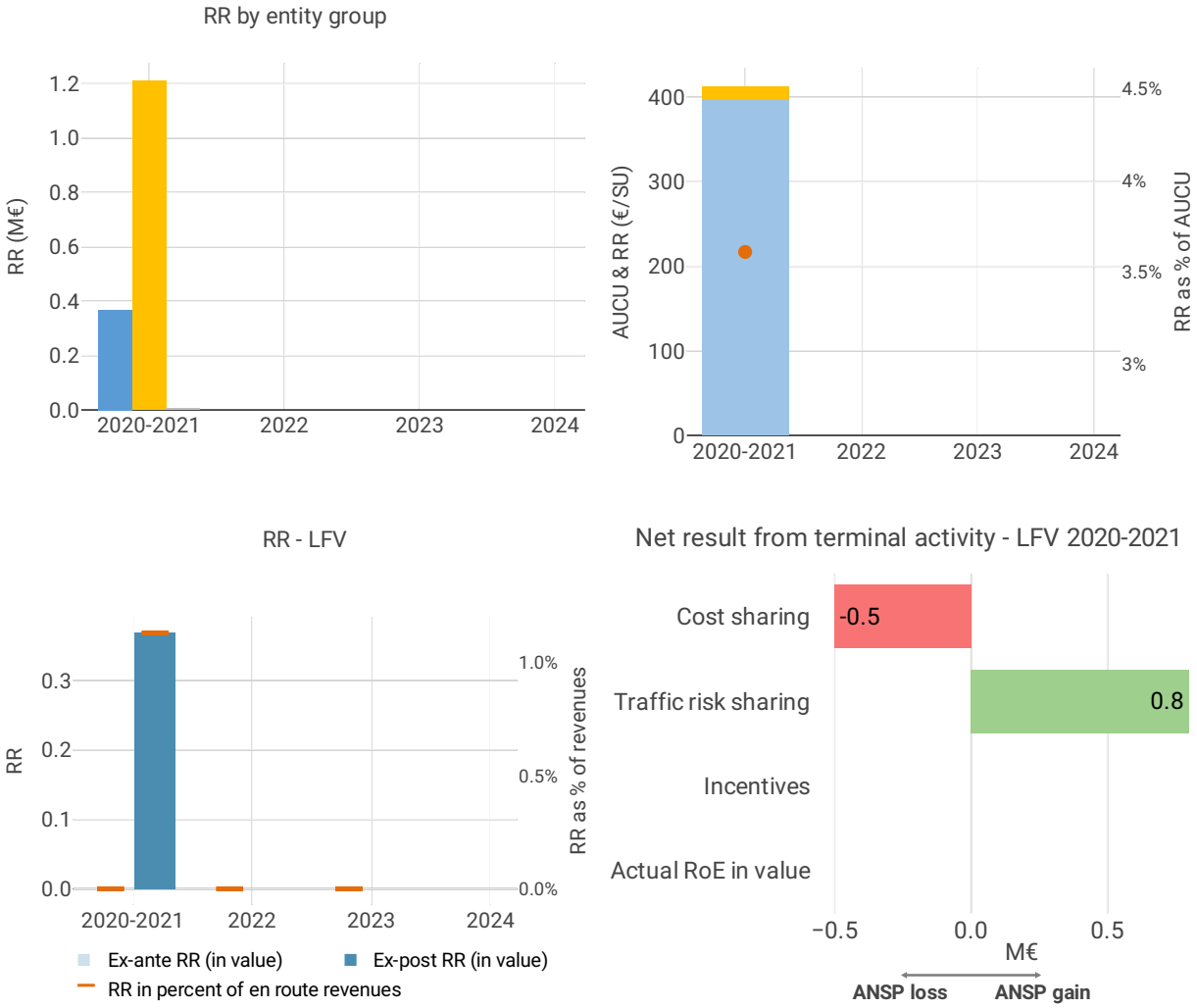

**AUCU components (€/SU) – 2020-2021**

| Components of the AUCU in 2020-2021 | €/SU |
|---|---|
| **DUC** | **403.06** |
| Inflation adjustment | 1.91 |
| Cost exempt from cost-sharing | -1.57 |
| Traffic risk sharing adjustment | -5.11 |
| Traffic adj. (costs not TRS) | -0.33 |
| Finantial incentives | 0.00 |
| Modulation of charges | 0.00 |
| Cross-financing | 0.00 |
| Other revenues | -3.37 |
| Application of lower unit rate | 0.00 |
| Total adjustments | -8.46 |
| **AUCU** | **394.60** |
| **AUCU vs. DUC** | **-2.1%** |




| Cost exempt from cost sharing by item - 2020-2021 | €'000 | €/SU |
|---|---|---|
| New and existing investments | 43.9 | 0.40 |
| Competent authorities and qualified entities costs | -0.4 | 0.00 |
| Eurocontrol costs | 0.0 | 0.00 |
| Pension costs | -216.8 | -1.97 |
| Interest on loans | 0.0 | 0.00 |
| Changes in law | 0.0 | 0.00 |
| **Total cost exempt from cost risk sharing** | **-173.4** | **-1.57** |

### 5.3.3 Regulatory result (RR)




**Focus on regulatory result**

**LFV net gain on terminal activity in the Sweden-Arlanda terminal charging zone in the combined year 2020-2021**

LFV generated a net gain of +3.8 MSEK (+0.4 M€), as a combination of a loss of -4.6 MSEK arising from the cost sharing mechanism and a gain of +8.4 MSEK arising from the traffic risk sharing mechanism.

**LFV 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 and amounts to +3.8 MSEK (1.1% of the terminal revenues). The resulting ex-post rate of return on equity is 10.5%, which is higher than the 0.0% RoE planned in the PP.