

# Performance Review Body Monitoring Report

Norway - 2020

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## 1 OVERVIEW

### 1.1 Contextual information

National performance plan adopted following ESA Decision 069/22/COL of 6 April 2022

#### List of ACCs 3

Bodo ACC  
Oslo ACC  
Stavanger ACC

#### No of airports in the scope of the performance plan:

• ≥80'K 2  
• <80'K 2

#### Exchange rate (1 EUR=)

2017: 9.32776 NOK  
2020: 10.7208 NOK

#### Share of Union-wide:

• traffic (TSUs) 2020 2.3%  
• en route costs 2020 1.8%

#### Share en route / terminal costs 2020

72% / 28%

#### En route charging zone(s)

Norway

#### Terminal charging zone(s)

Norway

#### Main ANSP

• Avinor Flysikring AS (Avinor ANS)

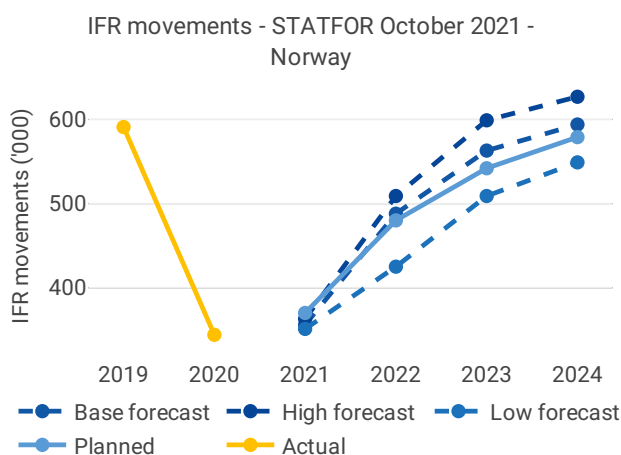
#### Other ANSPs

• Avinor AS  
• Saerco (Kjevik ANSP)

#### MET Providers

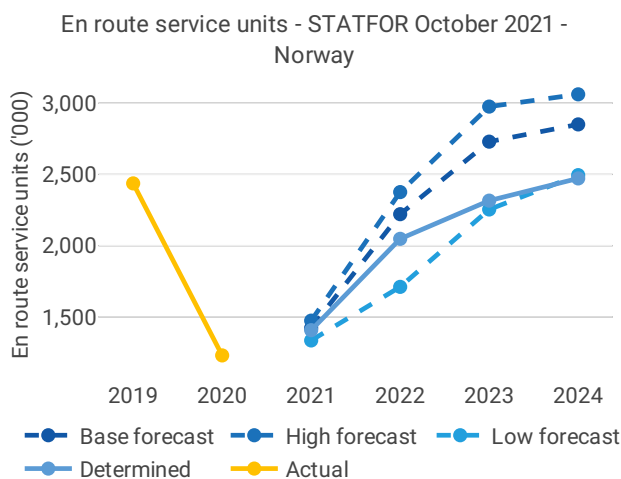
• The Norwegian Meteorological Institute (MET)

### 1.2 Traffic (En route traffic zone)



• Norway recorded 344K actual IFR movements in 2020, -42% compared to 2019 (591K).

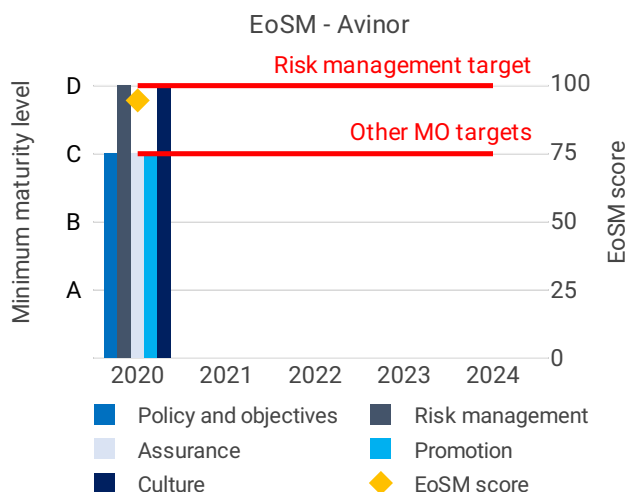
• Norway IFR movements reduced less than the average reduction at Union-wide level (-57%).



• Norway recorded 1,230K actual en route service units in 2020, -50% compared to 2019 (2,437K).

• Norway service units reduced less than the average reduction at Union-wide level (-57%).

### 1.3 Safety (Main ANSP)



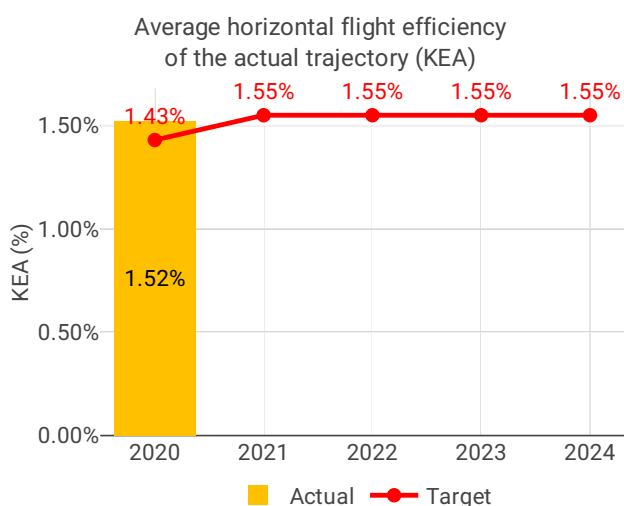
- Avinor achieved the RP3 EoSM targets in 2020, exceeding the target maturity for safety culture. The achieved levels are better than what was planned in the draft 2019 performance plan for 2020.

- The NSA explained that significant initiatives are underway in the area of performance monitoring and safety culture to ensure continuous improvement of Avinor's safety management function.

- Norway recorded a higher rate of SMIs and lower rate of RIs in 2020 compared to 2019. However, both rates remain above Union-wide averages again in 2020.

- Avinor should improve its SMS by implementing automated safety data recording systems.

### 1.4 Environment (Member State)



- Norway achieved a KEA performance of 1.52% compared to its reference value of 1.43% and therefore did not contribute positively towards achieving the Union-wide target.

- Norway stated that possible reasons for missing the targets includes airspace users flying inefficient routes to benefit from cheaper unit rates, airspace restrictions, weather and other factors.

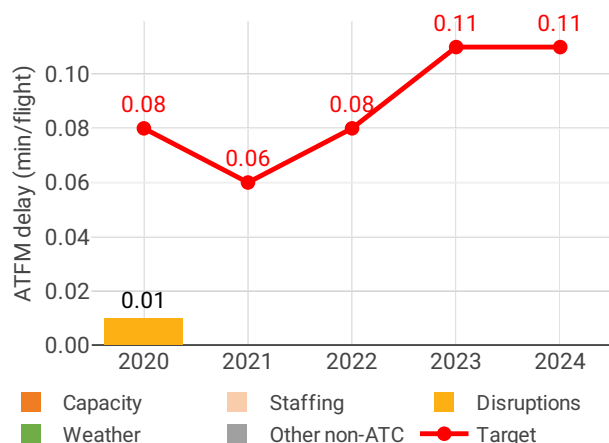
- Norway should investigate the reason in more detail as the given reasons are too broad. For example, the shortest constrained route has been at similar levels since 2018, suggesting that Norway has not been able to improve its airspace availability.

- Only one out of four Norwegian airports that are regulated reported the complete terminal data.

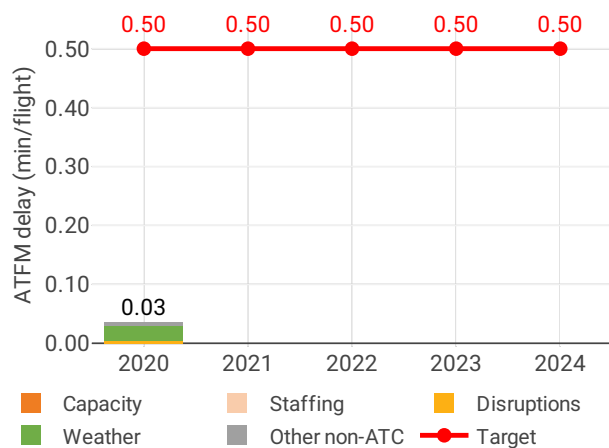
- The share of flights operating CCO/CDO at Norwegian airports improved in 2020 compared to 2019 and is one of the top performances Union-wide with 68% of flights conducting CDOs. The additional time airspace users spent taxiing or holding in terminal airspace reduced by 33% compared to 2019.

### 1.5 Capacity (Member State)

Average en route ATFM delay per flight by delay groups



Average arrival ATFM delay per flight by delay groups



- Avinor registered 0.01 minutes of average en route ATFM delay per flight during 2020, thus meeting the local breakdown value of 0.08.

- Delays must be considered in the context of the traffic evolution: IFR movements in 2020 were 42% below the 2019 levels in Norway.

- Norway reported some minor capacity issues due to technical equipment failure.

- It also reported a decrease of 20%, 30%, and 29% in ATCO FTE numbers in Bodo, Oslo, and Stavanger ACCs respectively in 2020 compared to 2019 values. These decreases were due to cost containment measures mostly in the form of furloughs and some voluntary redundancy agreements.

- Delays were mostly related to disruptions (system failure).

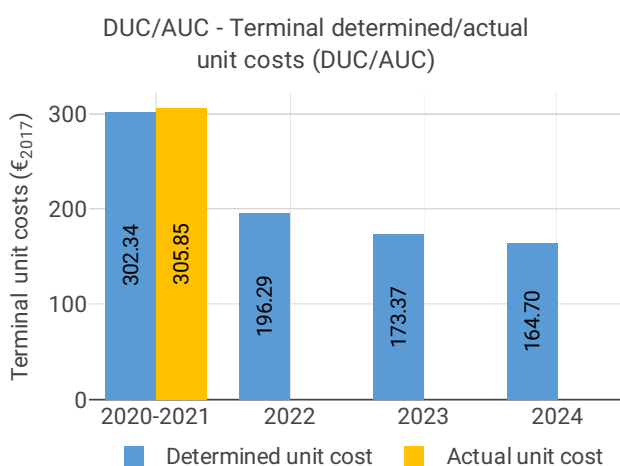
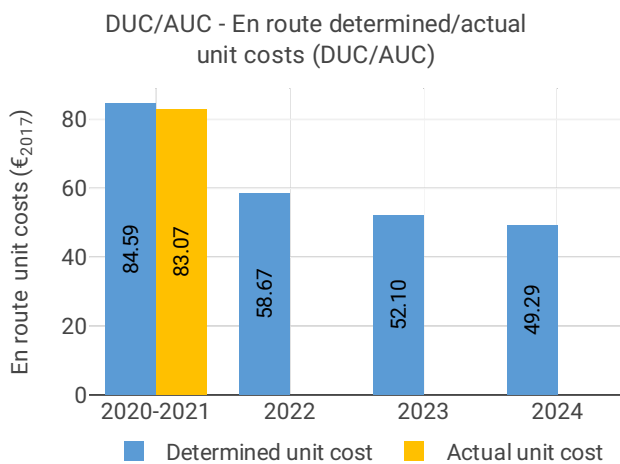
- The share of delayed flights with delays longer than 15 minutes in Norway increased by 8.42 p.p. compared to 2019.

- The yearly total of sector opening hours in Bodo ACC was 26,445, showing a 22.4% decrease compared to 2019. The yearly total of sector opening hours in Oslo ACC was 15,616, showing a 43.4% decrease compared to 2019. The yearly total of sector opening hours in Stavanger ACC was 13,969,

showing a 33.2% decrease compared to 2019.

- Bodo ACC registered 5.47 IFR movements per one sector opening hour in 2020, being 8.8% below 2019 levels.

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



- The 2020 actual service units (1,230K) were 50% lower than the actual service units in 2019 (2,436K), making Norway the second least affected Member State by COVID-19 in terms of service units.

- Norway reduced total costs in 2020 by 13 M€2017 (-11%) compared to 2019 actual costs. The main driver of this reduction is the 14 M€2017 lower staff costs (-17%), resulting from furloughs, reduction in staff and overtime, lower salaries for management, travel and consultancy fees.

- Depreciation increased by 2.5 M€ (+32%) due to a change in allocation method. Assets are now allocated to the services they are supporting instead of the cost-centre used in the ANSP asset base.

- Avinor spent 16 M€2017 in 2020 related to costs of investments, 11% more than planned in the 2019 draft performance plan (14 M€2017). The increase is induced by a higher depreciation and cost of capital than planned, due to a higher asset base and WACC than originally planned.

## 2 SAFETY - NORWAY

### 2.1 PRB monitoring

- Avinor achieved the RP3 EoSM targets in 2020, exceeding the target maturity for safety culture. The achieved levels are better than what was planned in the draft 2019 performance plan for 2020.

- The NSA explained that significant initiatives are underway in the area of performance monitoring and safety culture to ensure continuous improvement of Avinor's safety management function.

- Norway recorded a higher rate of SMIs and lower rate of RIs in 2020 compared to 2019. However, both rates remain above Union-wide averages again in 2020.

- Avinor should improve its SMS by implementing automated safety data recording systems.

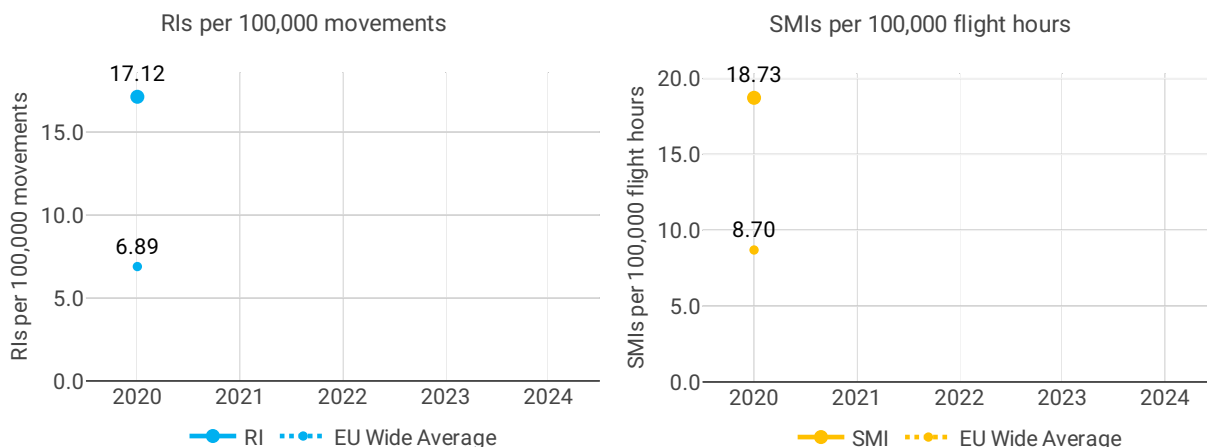
## 2.2 Effectiveness of Safety Management (EoSM) (KPI#1)



### Focus on EoSM

All five EoSM components of the ANSP meet, or exceed, 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 - NORWAY

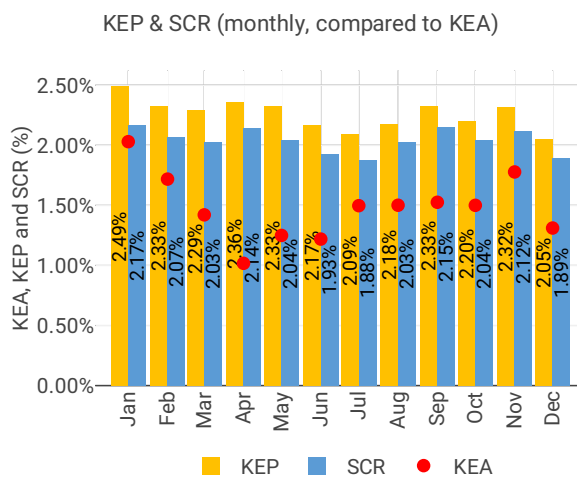
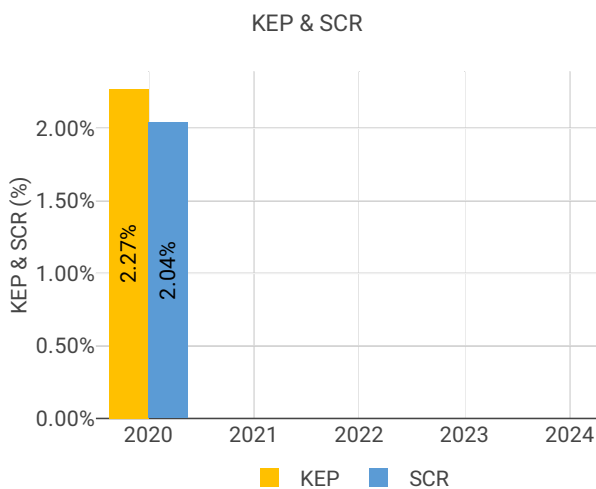
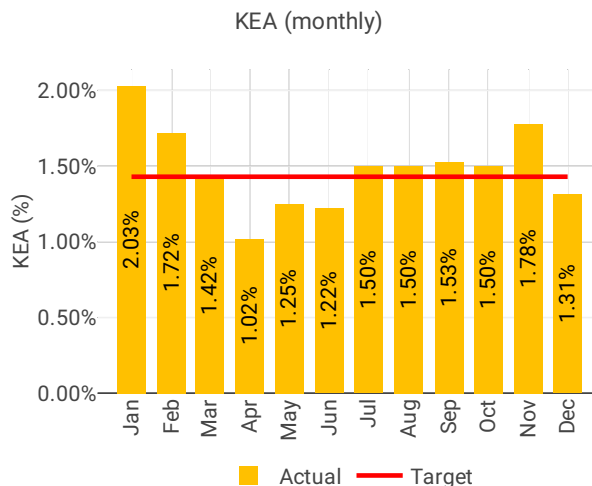
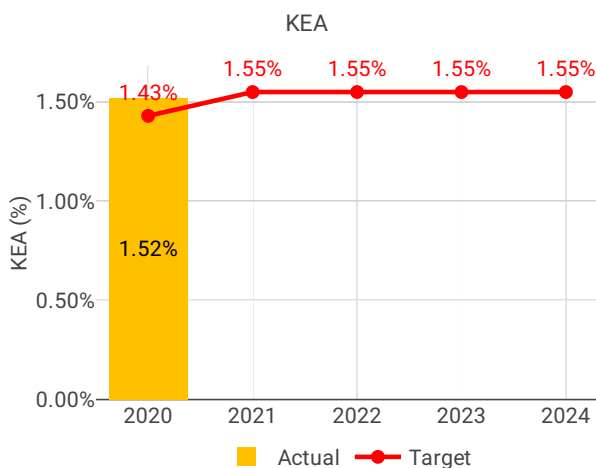
### 3.1 PRB monitoring

- Norway achieved a KEA performance of 1.52% compared to its reference value of 1.43% and therefore did not contribute positively towards achieving the Union-wide target.
- Norway stated that possible reasons for missing the targets includes airspace users flying inefficient routes to benefit from cheaper unit rates, airspace restrictions, weather and other factors.
- Norway should investigate the reason in more detail as the given reasons are too broad. For example, the shortest constrained route has been at similar levels since 2018, suggesting that Norway has not been able to improve its airspace availability.
- Only one out of four Norwegian airports that are regulated reported the complete terminal data.

- The share of flights operating CCO/CDO at Norwegian airports improved in 2020 compared to 2019 and is one of the top performances Union-wide with 68% of flights conducting CDOs. The additional time airspace users spent taxiing or holding in terminal airspace reduced by 33% compared to 2019.

### 3.2 En route performance

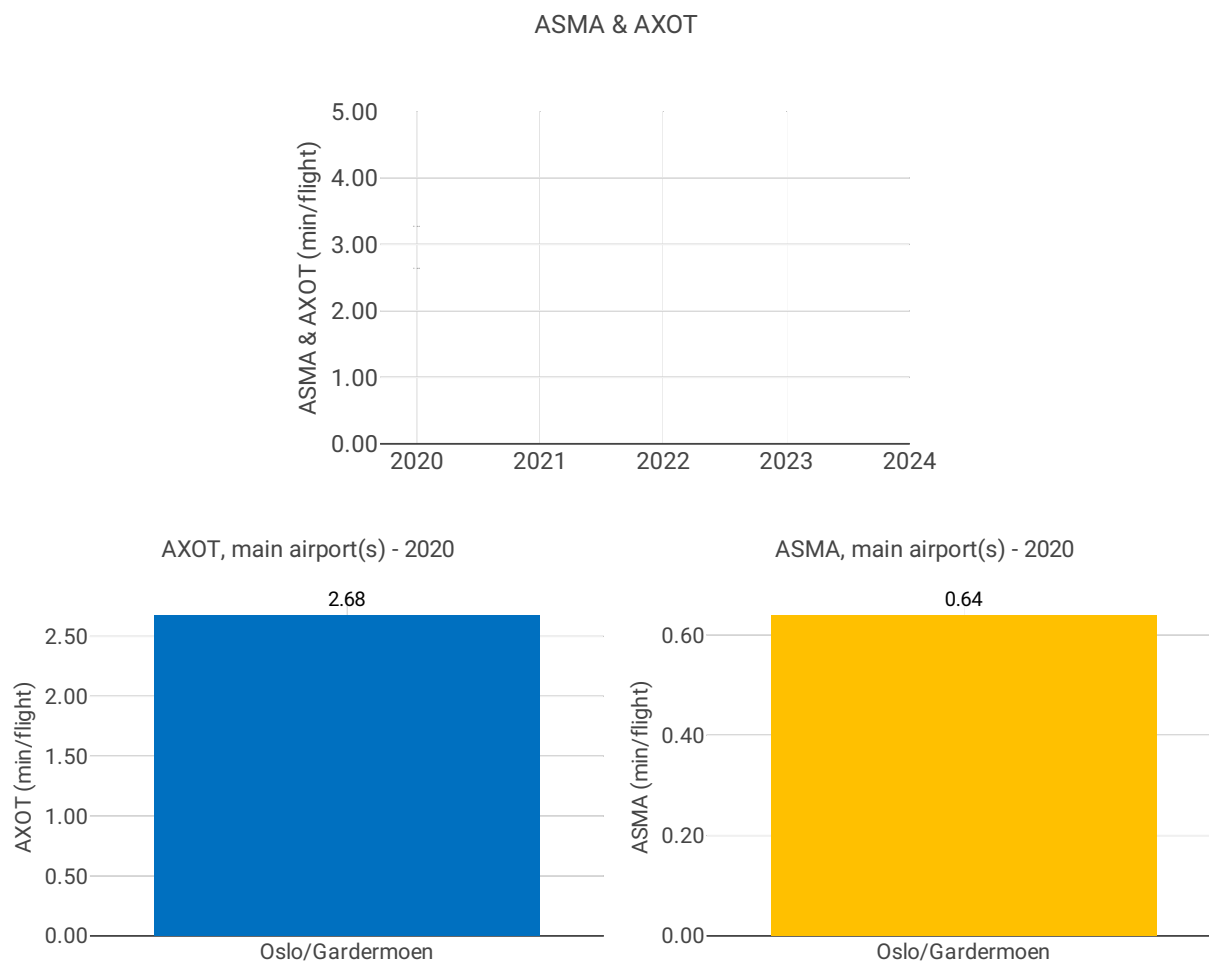
#### 3.2.1 Horizontal flight efficiency of the actual trajectory (KEA) (KPI#1), of the last filed flight plan (KEP) (PI#1) & shortest constrained route (SCR) (PI#2)





### 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

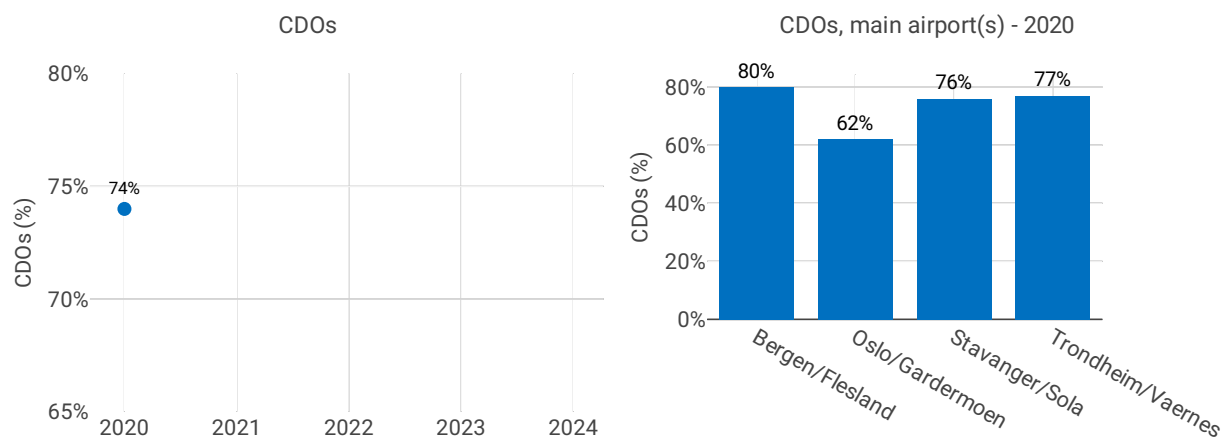
##### AXOT

The additional taxi-out times at Oslo decreased by 32% (ENGM; 2019: 3.92 min/dep.; 2020: 2.68 min/dep.) The annual average is influenced by the performance during the winter months due to de-icing, and in fact the longest additional times were observed in December, averaging then more than 7 min/dep. despite the lower traffic.

##### ASMA

Additional taxi-out times at Oslo (ENGM; 2019: 1.03 min/arr.; 2020: 0.64 min/arr.) experienced a drastic impact from the traffic during the months of April to August, when they averaged zero min/arr. At the end of the year these times increased again, but performance at Oslo remains best in class.

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



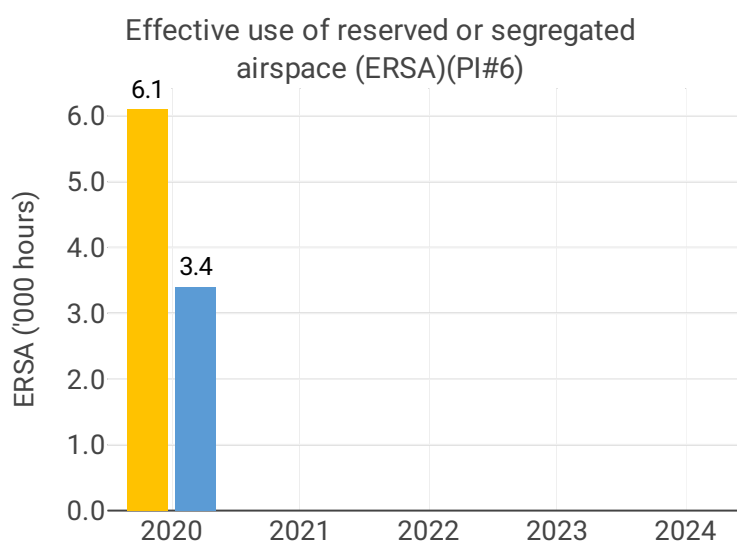
#### Focus CDOs

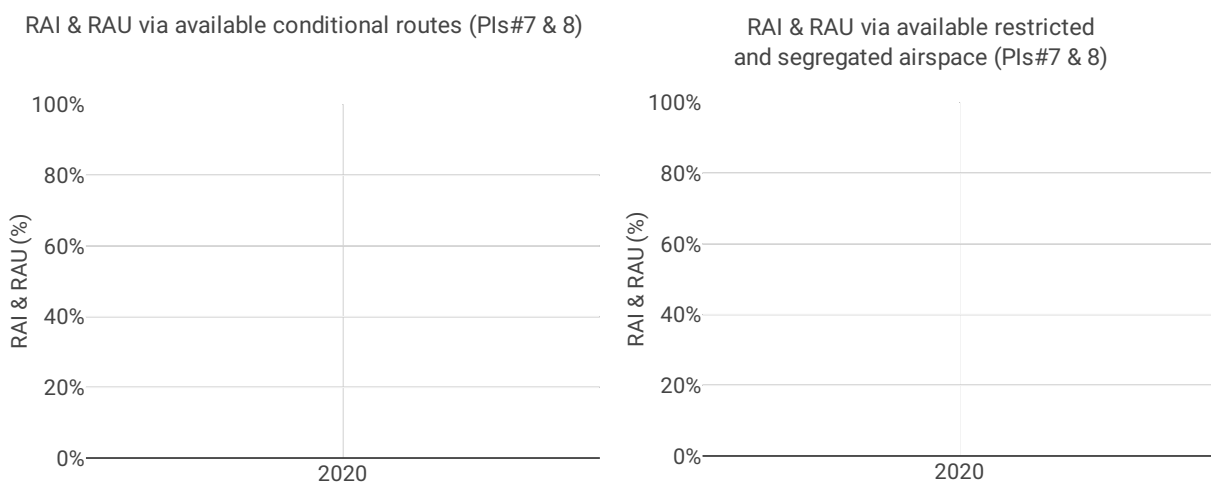
All airports have very high shares of CDO flights with 3 airports having more than double the overall RP3 value in 2020 (32.5%). Trondheim has the highest share of CDO flights of all airports monitored in 2020 (77.1%).

#### Airport level

Airport Name	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
Bergen/Flesland	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80%	NA	NA	NA	NA
Oslo/Gardermoen	2.68	NA	NA	NA	NA	0.64	NA	NA	NA	NA	62%	NA	NA	NA	NA
Stavanger/Sola	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	76%	NA	NA	NA	NA
Trondheim/Vaernes	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77%	NA	NA	NA	NA

### 3.4 Civil-Military dimension





## Focus on Civil-Military dimension

### Update on Military dimension of the plan

There is a plan to start monitoring the military dimension of the plan as soon as the LARA tool is fully implemented and working as planned (as of now partially implemented). There will also be continued focus on the effectiveness of the booking procedures. After the implementation of the NEFRA there have been clear indications that the NM IFPS system has some limitations on offering alternative routings and the fact that information from UUP is not feed into the system. This shows that there is a need for the NM to be more future oriented regarding system support for more advanced FRA implementation.

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

Norway is currently conducting a revision of the AMC agreement which will establish new and larger areas in our southern airspace. The Civil/military airspace committee focus on the improvement of the booking procedures and the intention to improve the ratio between booked versus used reserved airspace. The LARA implementation will contribute to more efficient booking procedures.

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

Norway reports an improvement from 2019 (51%). Norway also reports that no data is available per ACC.

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

No data available

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

No data available

## 4 CAPACITY - NORWAY

### 4.1 PRB monitoring

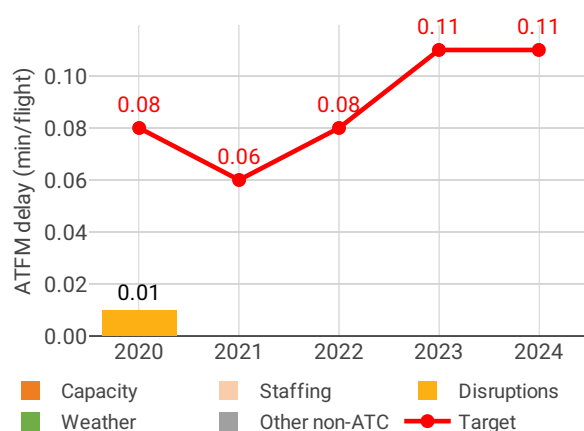
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- Norway reported some minor capacity issues due to technical equipment failure.
- It also reported a decrease of 20%, 30%, and 29% in ATCO FTE numbers in Bodo, Oslo, and Stavanger ACCs respectively in 2020 compared to 2019 values. These decreases were due to cost containment measures mostly in the form of furloughs and some voluntary redundancy agreements.
- Delays were mostly related to disruptions (system failure).

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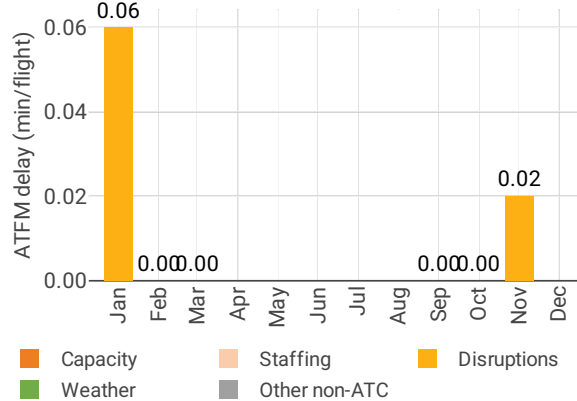
## 4.2 En route performance

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

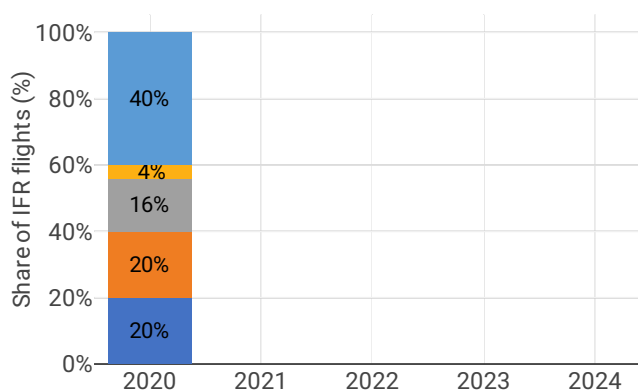
Average en route ATFM delay per flight by delay groups



Monthly distribution of en route ATFM delay by delay groups - 2020



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



## Focus on en route ATFM delay

### Summary of capacity performance

Norway experienced a traffic reduction of 42% from 2019 levels, to 346k flights. The traffic level was accommodated with less than 3,500 minutes of en route ATFM delays to airspace users, practically all of which was attributed to technical issues in January and November.

### NSA's assessment of capacity performance

The actual en route ATFM delay per flight of 0,01 min./flt. in 2020 significant below the national target set to 0,08 min./flt. The delay was connected with some technical issue in start of the year 2020, delay code T - Equipment (ATC). Actual performance is far better than capacity KPA, however at same level as 2019. No major change due to the pandemic.

## Monitoring process for capacity performance

Frequently at national level.

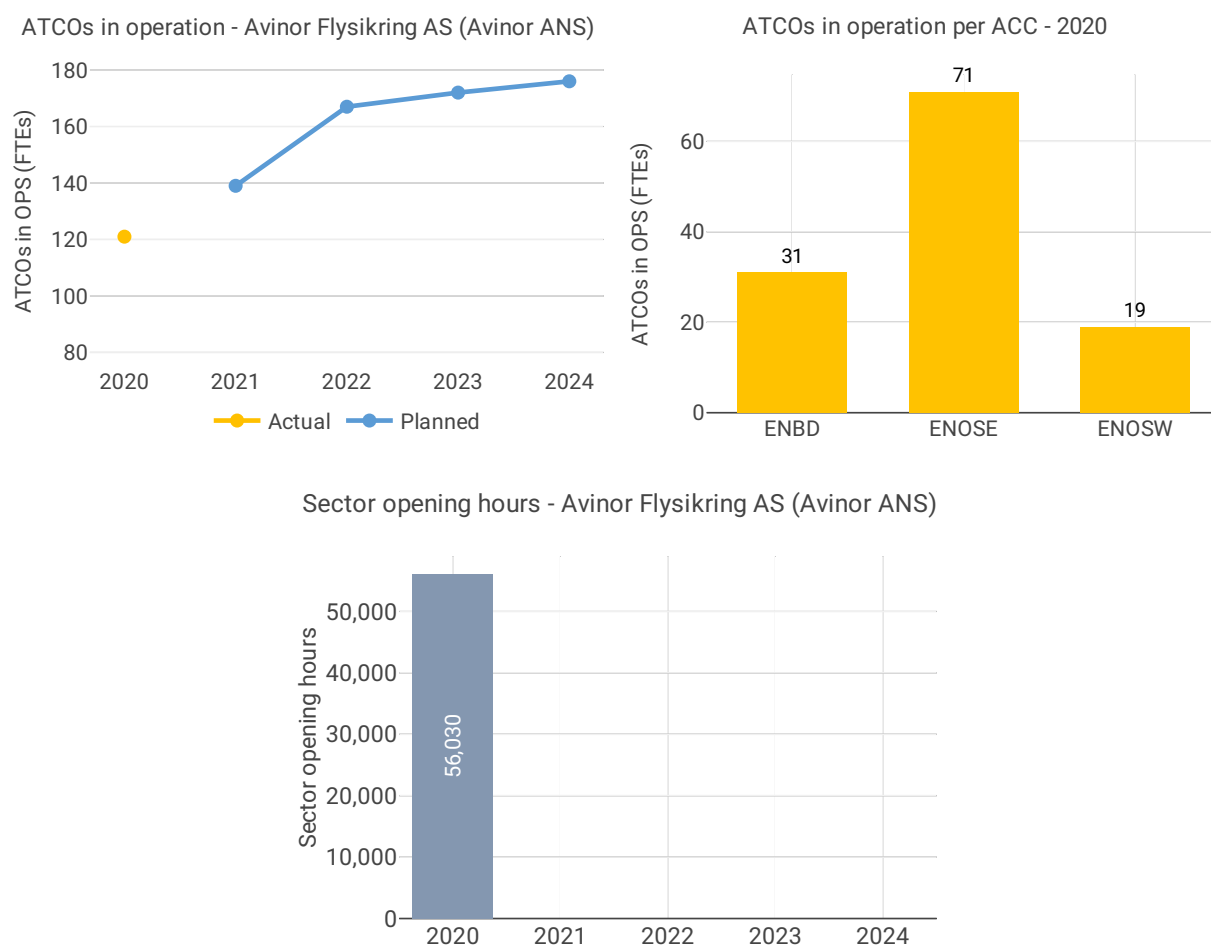
### Capacity planning

The reduction in the number of ATCO FTEs from 2019 to 2020 is due to cost efficiency measures as a consequence of COVID-19, mainly furloughs, but also voluntary redundancy agreements.

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

No data available

## 4.2.2 Other indicators

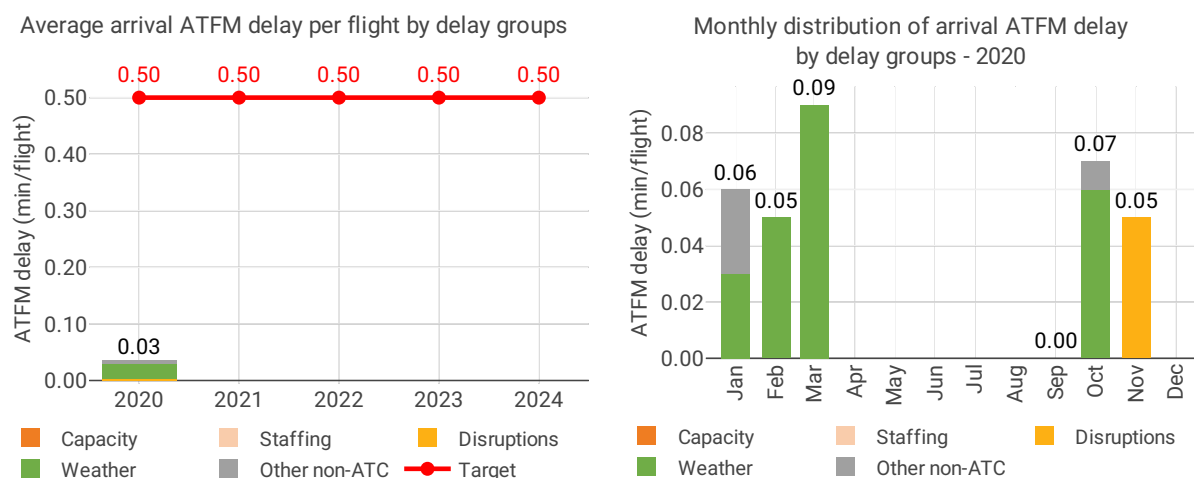


## Focus on ATCOs in operations

**Bodo ACC:** The reduction in the number of ATCO FTEs from 2019 to 2020 is due to cost efficiency measures as a consequence of Covid-19, mainly furloughs, but also voluntary redundancy agreements. **Oslo ACC:** The reduction in the number of ATCO FTEs from 2019 to 2020 is due to cost efficiency measures as a consequence of Covid-19, mainly furloughs, but also voluntary redundancy agreements. **Stavanger ACC:** The reduction in the number of ATCO FTEs from 2019 to 2020 is due to cost efficiency measures as a consequence of Covid-19, mainly furloughs, but also voluntary redundancy agreements.

## 4.3 Terminal performance

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



#### Focus on arrival ATFM delay

Norway has identified four airports as subject to RP2 monitoring. However, in accordance with IR (EU) 2019/317 and the traffic figures, only two of these airports (Oslo (EGNM) and Bergen (ENBR)) must be monitored for pre-departure delays. Oslo (A-CDM implemented) is the only Norwegian airport that has finished the full implementation of the Airport Operator Data Flow required for the monitoring of these pre-departure delays. As reported in RP2, it seems the ATM system is not ready to implement the APDF at Bergen. Avinor Flysikring AS, the service provider in Norway, is still considering alternate solution, but needs to take into account the additional cost required.

Traffic at the ensemble of these four Norwegian airports decreased by 43% in 2020 compared to 2019. Following the reduction in traffic, arrival ATFM delays decreased by 80% with respect to 2019. Slot adherence was well above 95% for these four airports and the all causes pre-departure delay at Oslo was the lowest in the SES area.

The national average arrival ATFM delay at Norwegian airports in 2020 was 0.03 min/arr, significantly lower than the 0.18 min/arr in 2019 (-80%).

At airport level, Oslo (ENGM; 2019: 0.31 min/arr; 2020: 0.05 min/arr) observed delays in the first trimester of the year all attributed to weather, but then some additional ATFM delays were recorded in October and November due to a mix of weather, aerodrome capacity and ATC equipment.

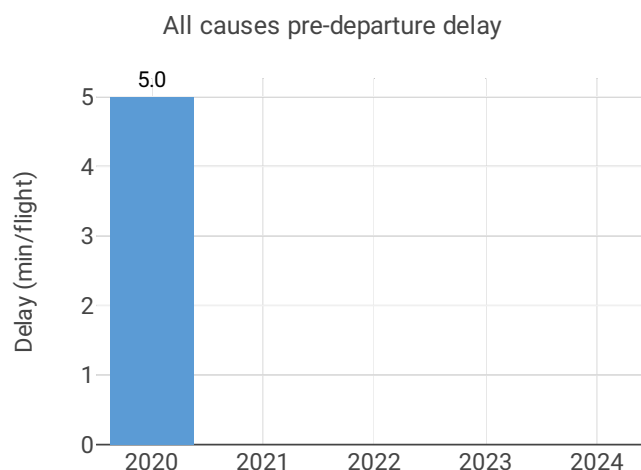
Bergen (ENBR) and Trondheim (ENVA) only had delays in February mostly attributed to weather.

Stavanger (ENZV) recorded delays only in January, associated with non-ATC equipment and other reasons.

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

Airport name	Avg arrival ATFM delay (KPI#2)				Slot adherence (PI#1)			
	2020	2021	2022	2023	2020	2021	2022	2023
Bergen/Flesland	0.01	NA	NA	NA	98.9%	NA%	NA%	NA%
Oslo/Gardermoen	0.05	NA	NA	NA	98.4%	NA%	NA%	NA%
Stavanger/Sola	0.03	NA	NA	NA	97.4%	NA%	NA%	NA%
Trondheim/Vaernes	0.03	NA	NA	NA	98.9%	NA%	NA%	NA%

Airport name	ATC pre departure delay (PI#2)				All causes pre departure delay (PI#3)			
	2020	2021	2022	2023	2020	2021	2022	2023
Bergen/Flesland	NA	NA	NA	NA	NA	NA	NA	NA
Oslo/Gardermoen	0.05	NA	NA	NA	5	NA	NA	NA
Stavanger/Sola	NA	NA	NA	NA	NA	NA	NA	NA
Trondheim/Vaernes	NA	NA	NA	NA	NA	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 Norwegian airports (that was already low around 3-4% in the first trimester) virtually disappeared as of April. The annual figures are therefore driven by the performance in the first trimester.

All Norwegian airports showed adherence above 95% and the national average was 98.4%. With regard to the 1.6% of flights that did not adhere, 0.5% 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 Oslo but not implemented at Bergen. Therefore the monitoring of this indicator in Norway is limited to Oslo.

The performance at Oslo was already good and has improved with respect to the previous year (ENGM; 2019: 0.14 min/dep.; 2020: 0.05 min/dep.) due to the reduction in traffic.

#### All causes pre-departure delay

The calculation of the All causes 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 Oslo but not implemented at Bergen. Therefore the monitoring of this indicator in Norway is limited to Oslo.

The total (all causes) delay in the actual off block time at Oslo in 2020 was 5.01 min/dep. which is the lowest delay among the SES monitored airports. The higher delays per flight were observed in February and December.

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.

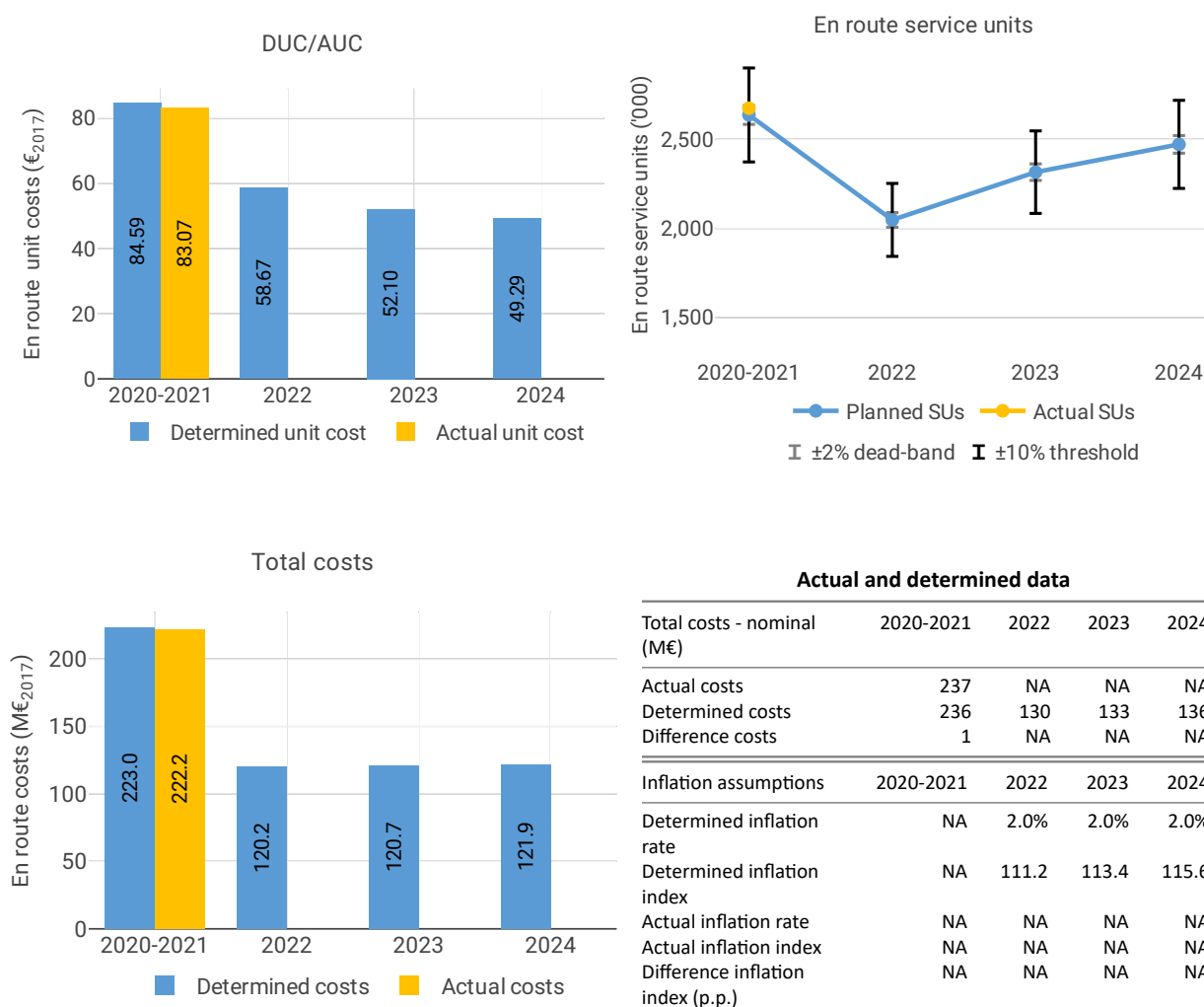
## 5 COST-EFFICIENCY - NORWAY

### 5.1 PRB monitoring

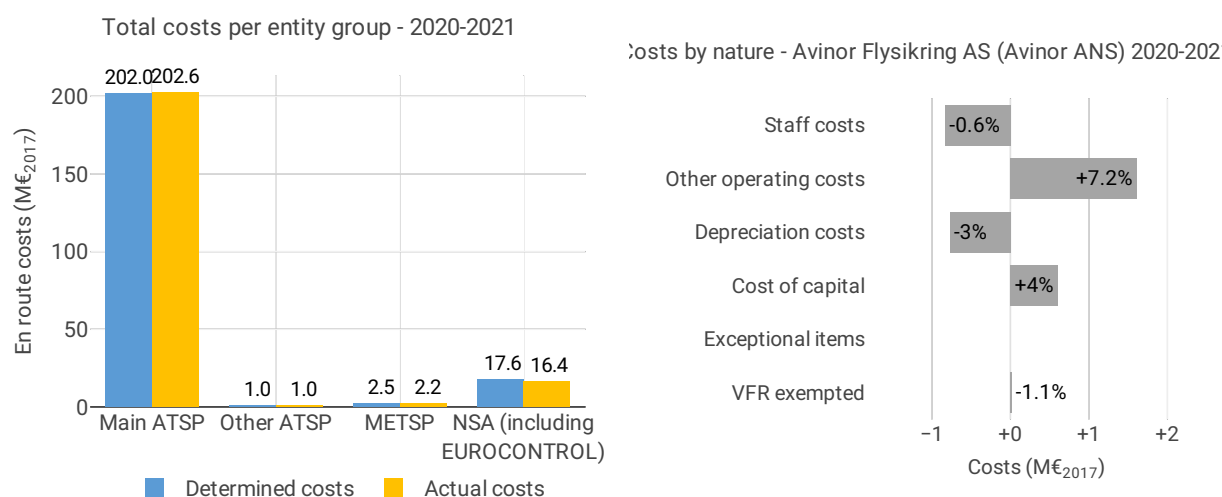
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- Depreciation increased by 2.5 M€ (+32%) due to a change in allocation method. Assets are now allocated to the services they are supporting instead of the cost-centre used in the ANSP asset base.
- Avinor spent 16 M€2017 in 2020 related to costs of investments, 11% more than planned in the 2019 draft performance plan (14 M€2017). The increase is induced by a higher depreciation and cost of capital than planned, due to a higher asset base and WACC than originally planned.

### 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 en route AUC was -1.8% (or -14.16 NOK<sub>2017</sub>, -1.52 €<sub>2017</sub>) lower than the planned DUC. This results from the combination of higher than planned TSUs (+1.5%) and slightly lower than planned en route costs in real terms (-0.4%, or -7.3 MNOK<sub>2017</sub>, -0.8 M€<sub>2017</sub>).

### En route service units

The difference between actual and planned TSUs (+1.5%) falls within the  $\pm 2\%$  dead band. Hence the resulting additional revenue is kept by the ANSPs.

### En route costs by entity

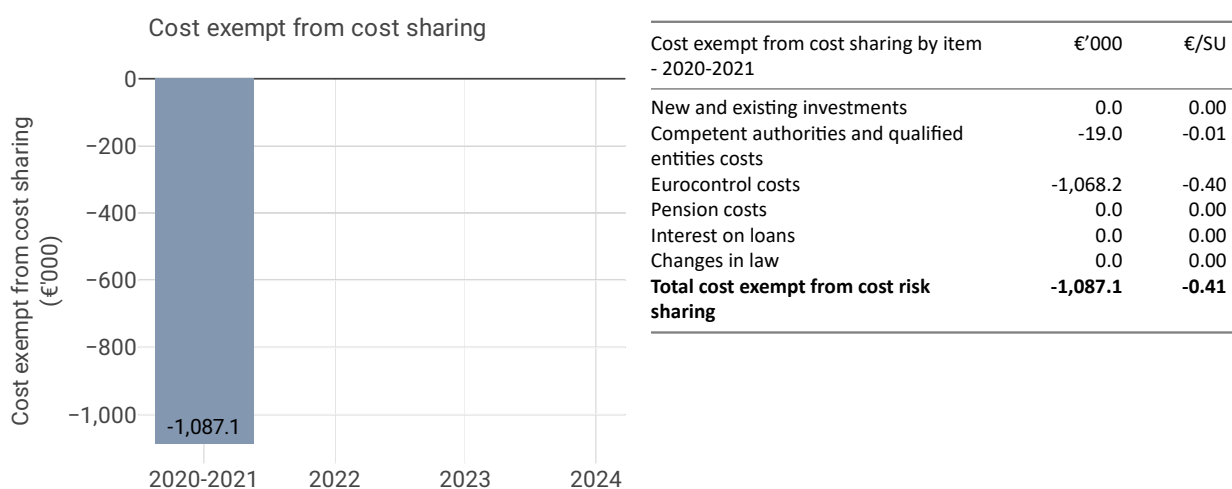
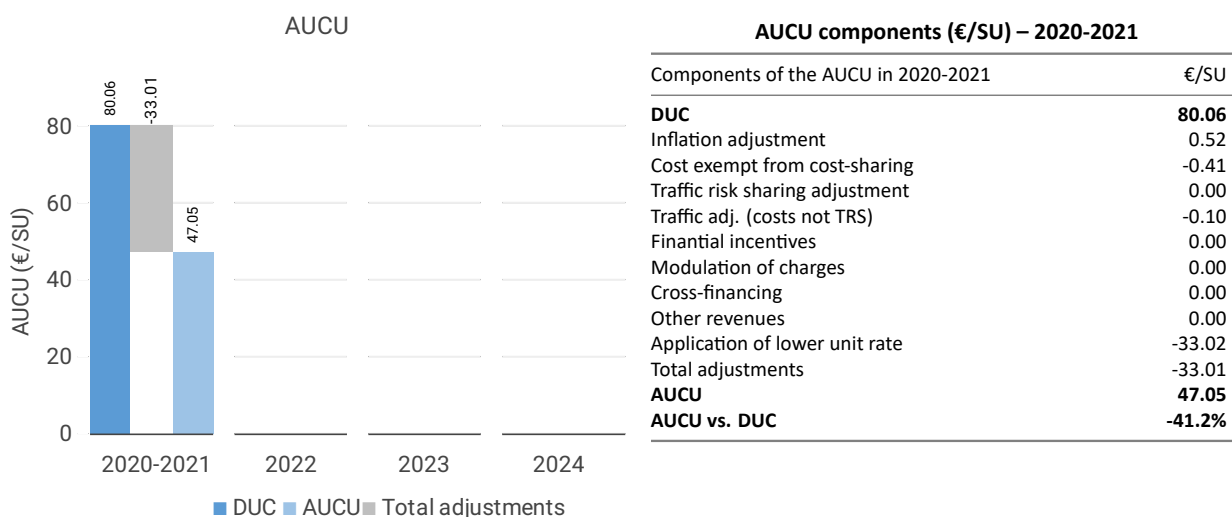
Actual real en route costs are -0.4% (or -0.8 M€<sub>2017</sub>) lower than planned. This is driven by the NSA/EUROCONTROL (-6.7%, or -1.2 M€<sub>2017</sub>) and the MET service provider (-8.0%, or -0.2 M€<sub>2017</sub>), while actual costs of the main ANSP (Avinor) and the other ANSP (KJE) are close to planned costs (+0.3% and -0.7%, respectively).

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

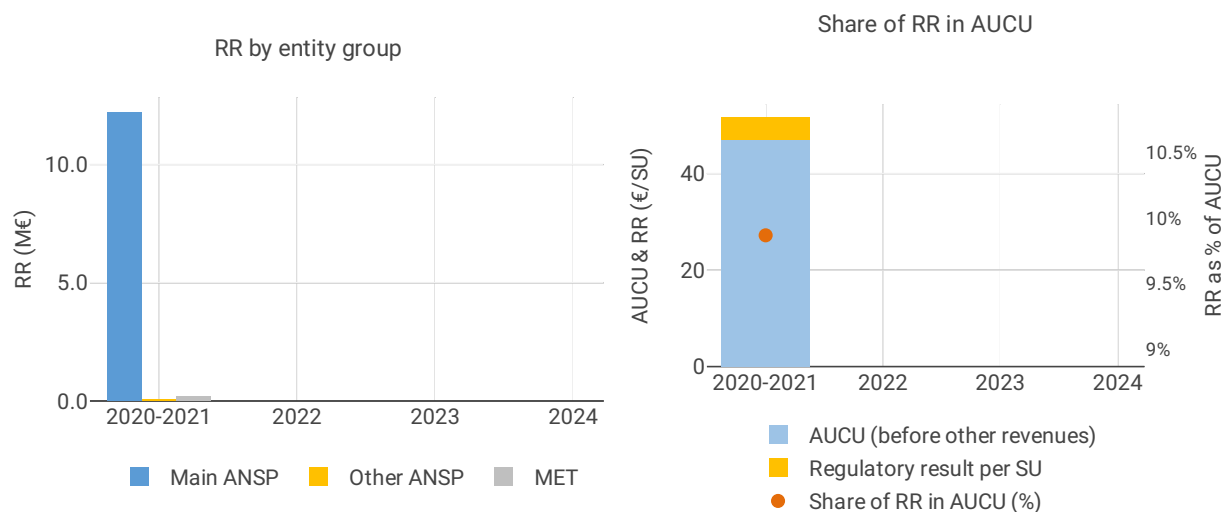
The slightly higher than planned en route costs in real terms for Avinor (+0.3%, or +0.6 M€<sub>2017</sub>) result from the combination of:

- slightly lower staff costs (-0.6%);
- higher other operating costs (+7.2%), mainly explained by the decommissioning of radar components (one-off effect), increase in rent at Bodo ACC relating to security and capitalisation of ADQ-investment (capitalized in the mother company Avinor AS and accounted as an intercompany purchase/other operating costs in Avinor ANS);
- lower depreciation (-3.0%), mainly due to the radar components decommissioning;
- higher cost of capital (+4.0%), driven by a higher investment level mainly relating to the new ATM system and the NORWAM project; and,
- slightly lower than planned deduction for VFR exempted flights (-1.1%).

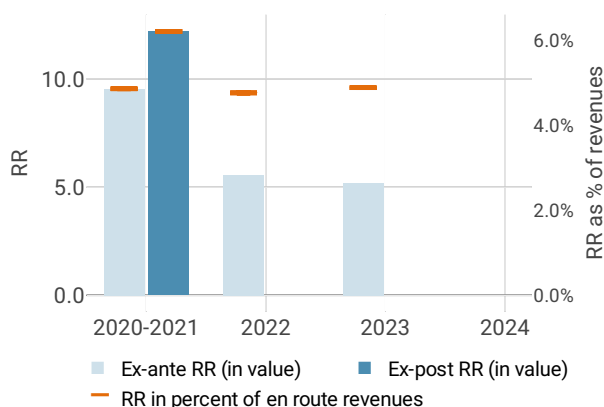
## 5.2.2 Actual unit cost incurred by the users (AUCU) (PI#1)



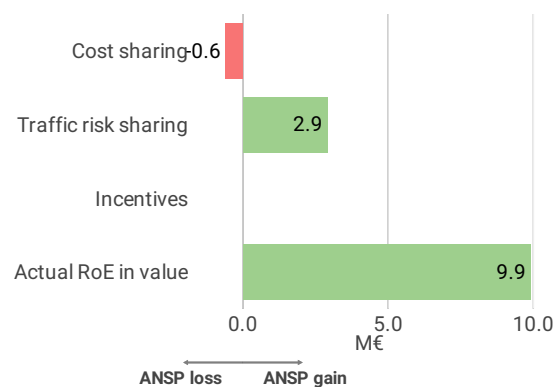
## 5.2.3 Regulatory result (RR)



RR - Avinor Flysikring AS (Avinor ANS)



t from en route activity - Avinor Flysikring AS (Avinor ANS) 2



## Focus on regulatory result

### Avinor net gain on activity in Norway en route charging zone in the combined year 2020-2021

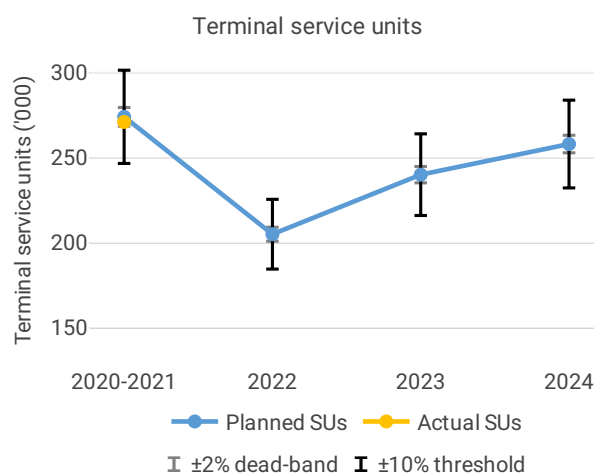
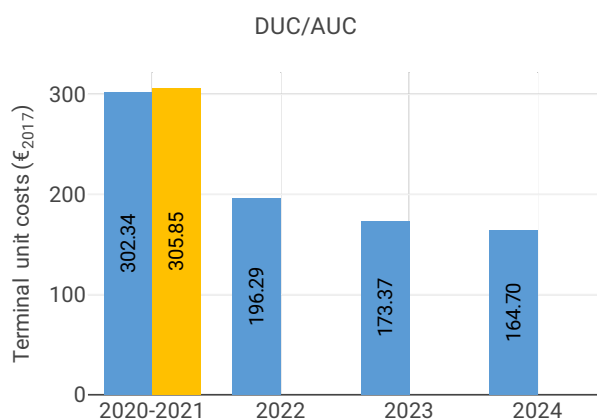
A net gain of Avinor of +26.5 MNOK (+2.6 M€), results from a combination of a loss of -2.9 MNOK arising from the cost sharing mechanism and a gain of +29.4 MNOK arising from the traffic risk sharing mechanism.

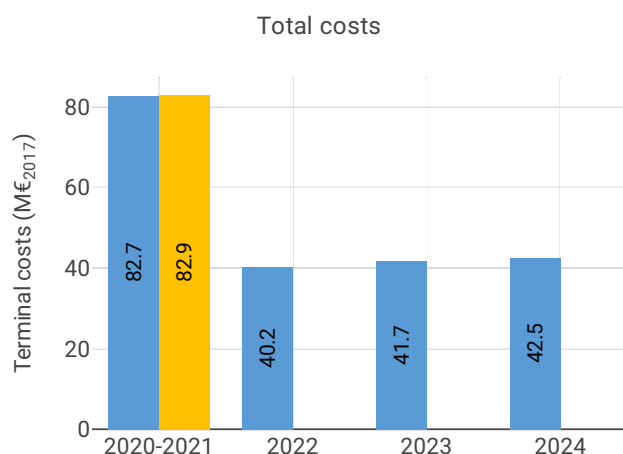
### Avinor overall regulatory results (RR) for the en route activity

Ex-post, the overall RR corresponding to the net gain from the en route activity mentioned above (+26.5 MNOK) and the RoE (+103.2 MNOK) amounts to a gain of +129.7 MNOK (6.3% of the en route revenues). The resulting ex-post rate of return on equity is 12.8%. Please see also **Note 2** above.

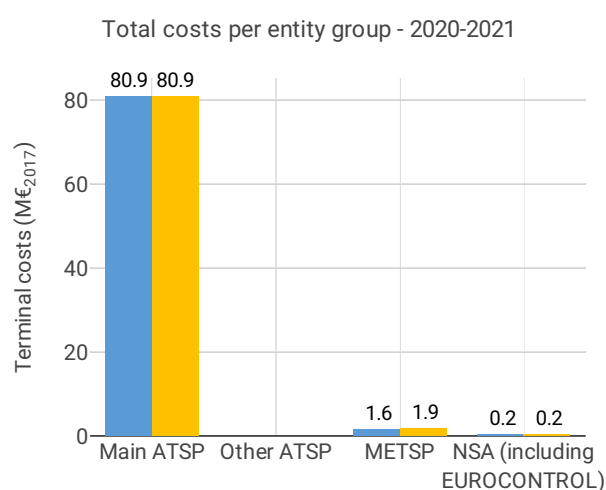
## 5.3 Terminal charging zone

### 5.3.1 Unit cost (KPI#1)

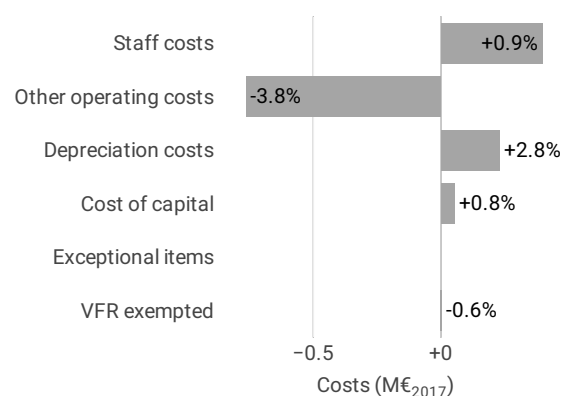




Actual and determined data				
Total costs - nominal (M€)	2020-2021	2022	2023	2024
Actual costs	89	NA	NA	NA
Determined costs	88	44	46	48
Difference costs	1	NA	NA	NA
Inflation assumptions				
Inflation assumptions	2020-2021	2022	2023	2024
Determined inflation rate	NA	2.0%	2.0%	2.0%
Determined inflation index	NA	111.2	113.4	115.6
Actual inflation rate	NA	NA	NA	NA
Actual inflation index	NA	NA	NA	NA
Difference inflation index (p.p.)	NA	NA	NA	NA



Costs by nature - Avinor Flysikring AS (Avinor ANS) 2020-2021



## Focus on unit cost

### AUC vs. DUC

In the combined year 2020-2021, the terminal AUC was +1.2% (or +32.83 NOK<sub>2017</sub>, +3.52 €<sub>2017</sub>) higher than the planned DUC. This results from the combination of slightly lower than planned TNSUs (-0.9%) and slightly higher than planned terminal costs in real terms (+0.3%, or +2.0 MNOK<sub>2017</sub>, +0.2 M€<sub>2017</sub>).

### Terminal service units

The difference between actual and planned TNSUs (-0.9%) falls within the  $\pm 2\%$  dead band. Hence the resulting loss in terminal revenue is borne by the ANSPs.

### Terminal costs by entity

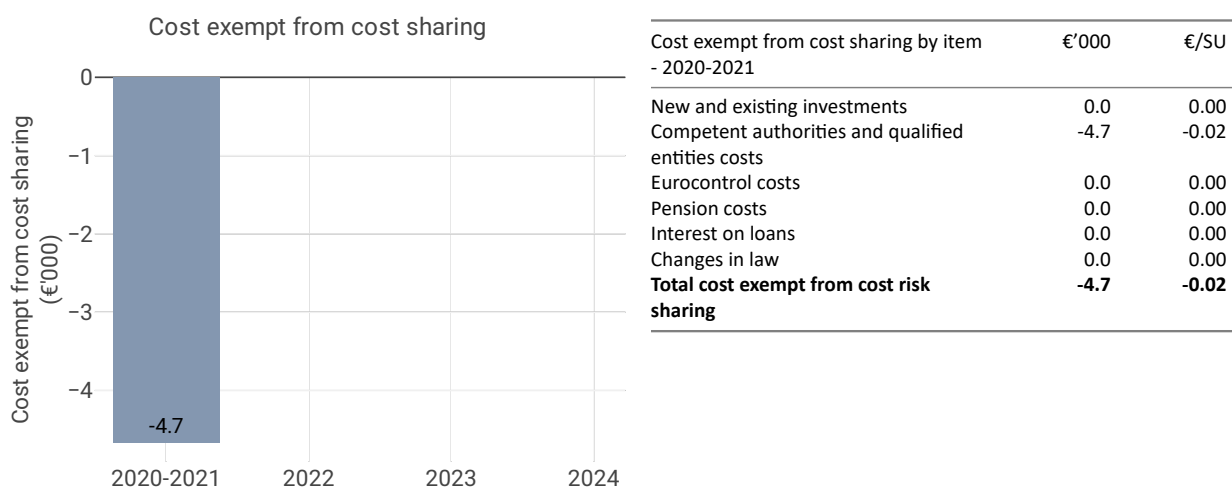
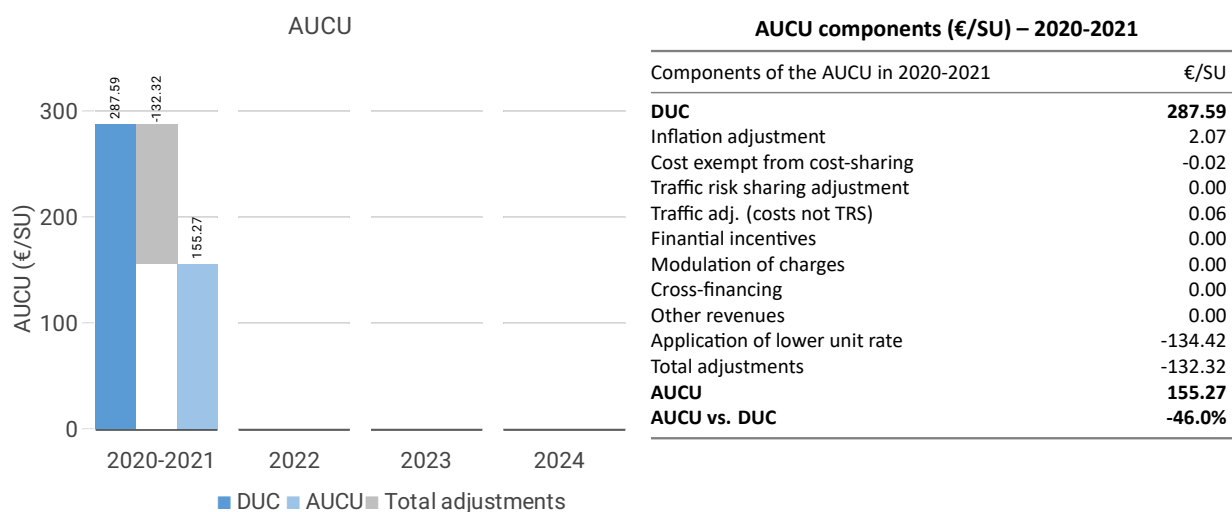
Actual real terminal costs are +0.3% (or +0.2 M€<sub>2017</sub>) higher than planned. This is driven by the MET service provider (+18.9%, or +0.3 M€<sub>2017</sub>), while the actual costs of the main ANSP (Avinor) and the NSA are close to the determined costs (-0.1% and -2.8%, respectively).

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

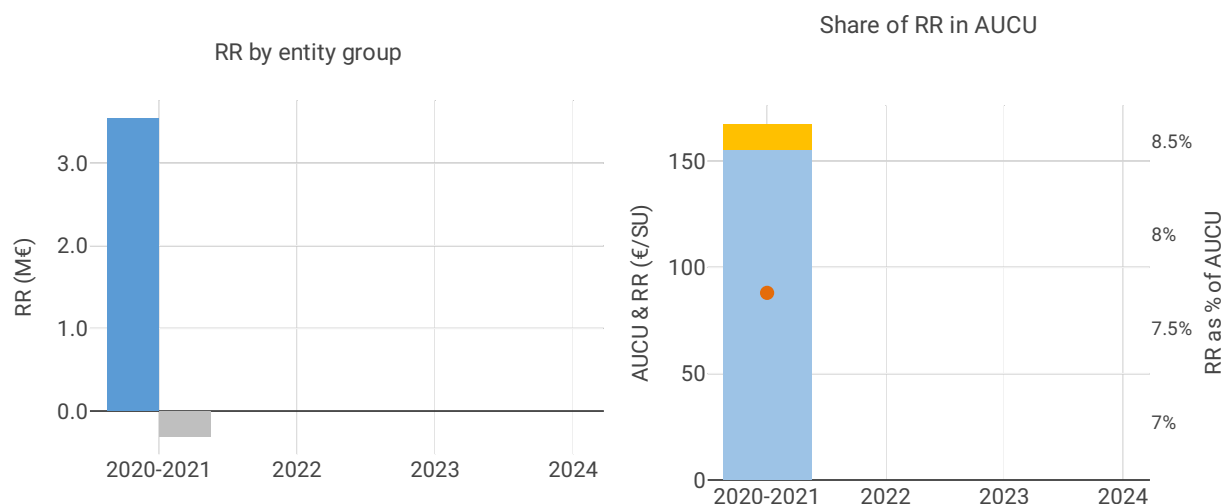
The slightly lower than planned terminal costs in real terms for Avinor (-0.1%, or -0.1 M€<sub>2017</sub>) result from the combination of:

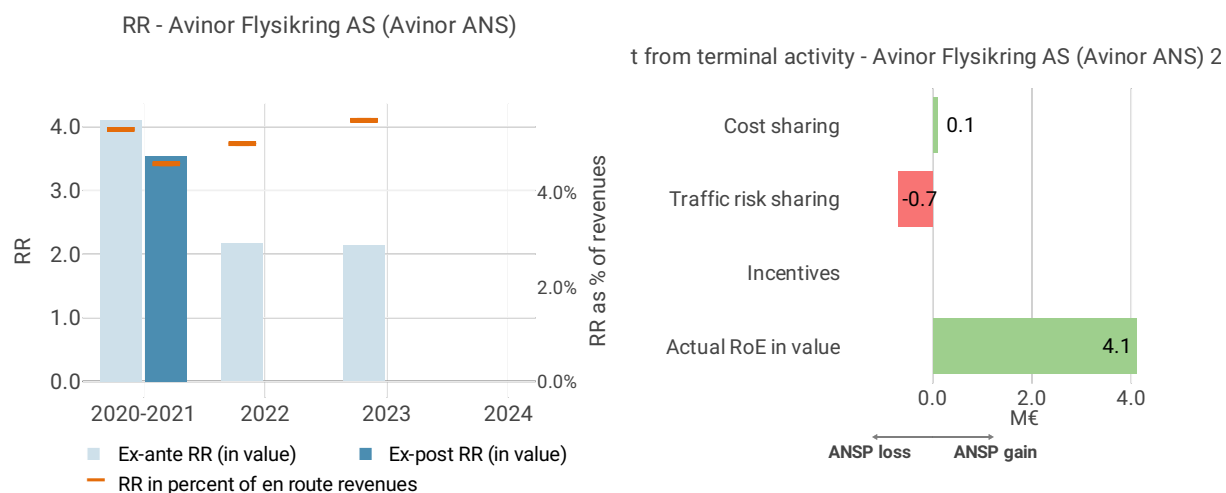
- slightly higher staff costs (+0.9%);
- lower other operating costs (-3.8%), mainly due to cost-savings in travel expenses and external support;
- slightly higher depreciation and cost of capital (+2.8% and +0.8%, respectively), due to the higher cost of investment relating to the new radar at Oslo airport and IT equipment; and,
- slightly lower than planned deduction for VFR exempted flights (-0.6%).

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



### 5.3.3 Regulatory result (RR)





## Focus on regulatory result

### Avinor net loss on activity in Norway terminal charging zone in the combined year 2020-2021

Avinor incurred a net loss of -3.4 MNOK (-0.3 M€), resulting from a combination of a gain of +3.8 MNOK arising from the cost sharing mechanism and a loss of -7.2 MNOK arising from the traffic risk sharing mechanism.

### Avinor overall regulatory results (RR) for the terminal activity

Ex-post, the overall RR corresponding to the net loss from the terminal activity mentioned above (-3.4 MNOK) and the RoE (+43.1 MNOK) amounts to a gain of +39.8 MNOK (4.9% of the terminal revenues). The resulting ex-post rate of return on equity is 9.4%. Please see also **Note 2** above.