2024

ANNUAL REPORT

ANA
Administration de la navigation aérienne

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CONTENT

ANA ANNUAL REPORT 2024

Total air Traffic
91 283
movements

IFR
Instrumental Flight Rules
72920 movements

VFR
Visual Flight Rules
18363 movements

Overflight movements
3229

International movements
75 365

Local movements
15 918

CONTROLLED FLIGHT HOURS
11 416 movements

CDO application percentage
67.40%

Cargo freight
825 651
tons

Passengers
5 209 656

INTRODUCTION OF ANDREA DRESCHER, CHIEF EXECUTIVE OFFICER

Since April 1, 2025, Andrea Drescher has taken up his position as Chief Executive Officer (CEO) of the Air Navigation Administration (ANA). His rich and diverse career, marked by high-level responsibilities in half a dozen industries, reflects strong expertise in strategic management and organizational transformation. He holds a master's degree in management sciences from Université Paris Dauphine-PSL.

Mr. Drescher's mission is to bring a clear and forward-looking vision to ANA. His appointment by the Ministry of Mobility and Public Works, is part of a dynamic process of modernization and capacity strengthening within the organization. The priorities include safety, service continuity, acceleration of strategic projects and improved collaboration with all stakeholders. His international experience and past assignments in the aviation sector are valuable assets in addressing the challenges of a modern and safe aviation world.

Under his leadership, the ANA aims to maintain and strengthen its vital role in the evolution of air traffic management in Luxembourg, relying on high standards of safety, performance and innovation.

MESSAGE
FROM THE CEO

Although I only took office as Chief Executive Officer (CEO) of ANA in April 2025, I am pleased to introduce the Annual Report 2024, reflecting a year of continued growth and modernization for our administration.

During the year 2024, the transformation of the former Safety Unit into the Safety Department underlined the central role of safety within our organization and the wider aviation sector. This new structure strengthens our ability to safeguard operations, reinforce resilience, and ensure that safety remains the foundation of everything we do.

Major infrastructure projects illustrate our progress. The Surveillance Chain Upgrade/ARTAS does expand sensor integration and strengthen performance, while the upgraded A-SMGCS enhances ground movement safety in all conditions. Preparations for the new Voice Communication System (VCS) are well underway, with full deployment planned for 2026. This system does introduce advanced coordination features and establish the technological base for future Voice over IP (VoIP) and System Wide Information Management (SWIM) integration. In parallel, the modernization of the Automated Weather Observation System (AWOS) does secure reliable, regulation-compliant weather data for years to come.

Sustainability remains a cornerstone of our strategy. Continuous Descent Operations (CDO), implemented in 2018, are being further optimized in close cooperation with stakeholders to maximize environmental benefits and fuel efficiency.

These achievements are the result of the dedication and professionalism of all ANA staff. Their commitment ensures the continuity of our services and fortifies the ground for the challenges ahead.

Looking forward, our priorities are clear: maintaining the highest safety standards, accelerating the delivery of strategic projects and reinforcing cooperation with internal and external partners. By fostering innovation and partnership, we commit to strengthen our position as a trusted and future-ready partner in European aviation.

Sincerely yours,

Andrea Drescher
Director

INTRODUCTION OF
THE CHIEF STRATEGIC OFFICER

As of July 1st, 2025, Tom Goris has joined ANA as Chief Strategic Officer and Accountable Manager. With a Master's degree in Aerospace Systems Engineering from the University of Southampton and an MBA from the Vlerick Business School, he brings strong technical and strategic foundation to the organization.

Prior to joining ANA, Mr. Goris served as Chief Operating Officer at LuxAirport, where he oversaw key operational developments and strategic initiatives. He also held the position of Head of Airside Services at Brussels Airport, where he was responsible for airside safety and the coordination of all services provided by the company. His career reflects a deep commitment to operational excellence and aviation safety.

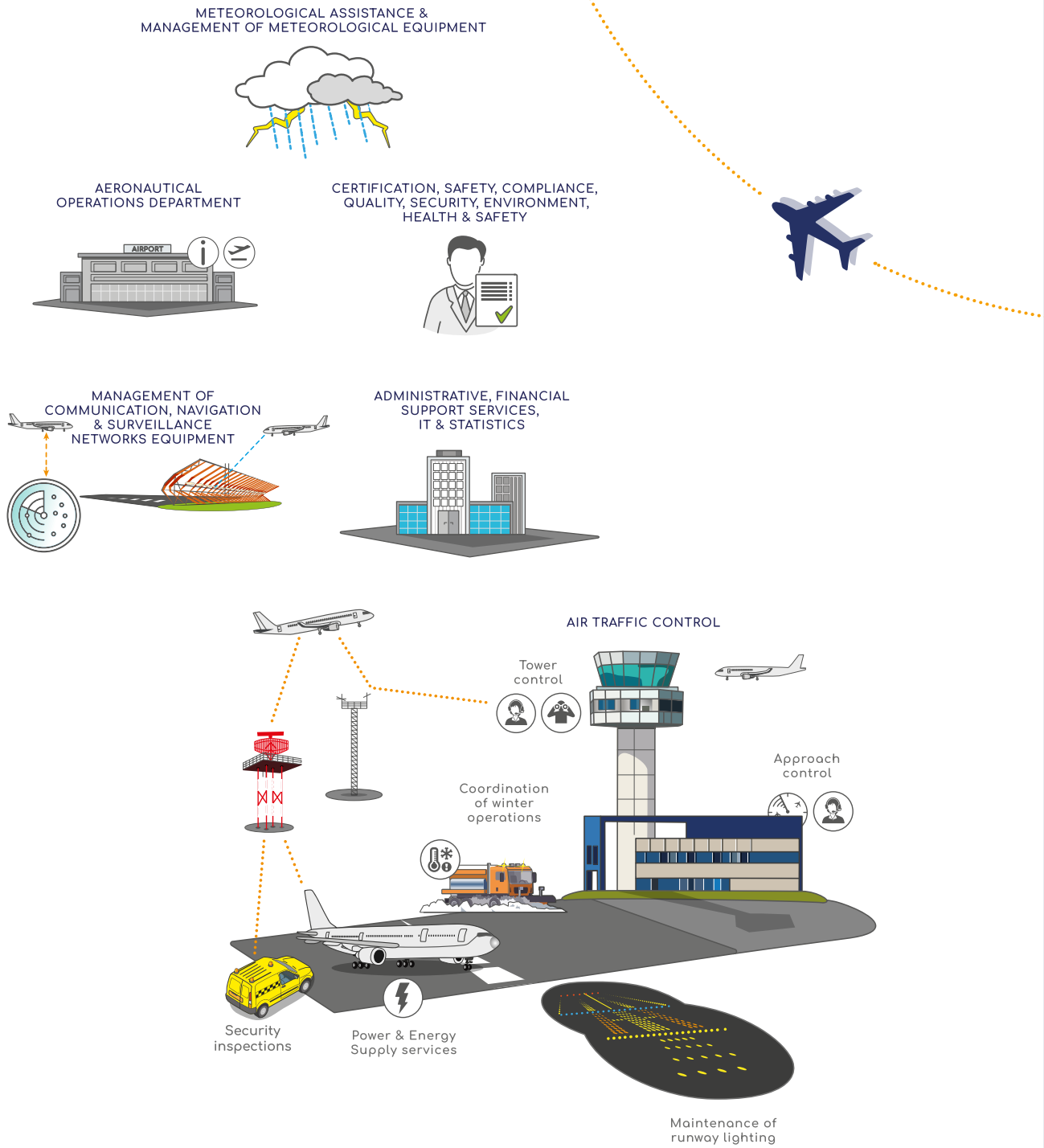
His appointment marks a significant step in strengthening our strategic capabilities and preparing the organization for future challenges in the air navigation sector.

MISSIONS & TASKS

ANA's mission is to ensure a safe, efficient, continuous and environmentally friendly flow of air and ground traffic, supported by modern technology, effective aeronautical information and competent personnel.

The ANA's core mission is defined in the Luxembourg law of 1. August 2018 and stipulates ANA's requirements as a provider of air traffic management services in its entirety, as a provider of air traffic services, air traffic flow and capacity management, airspace management and air traffic control in terminal airspace, on the airport and in certain parts of the regional airspace. ANA's mission includes technical and aeronautical services, aerodrome services and electrotechnical services on the maneuvering area and beyond. This mission applies to all service areas and departments and remains valid for the foreseeable future.

In addition, the amended Luxembourg law of 21 December 2007 stipulates as an additional mission the requirement for the ANA as the provider of national meteorological services, including weather warnings for the public and climate data management.



KEY FIGURES (AS OF 31/12/2024)

In 2024, ANA strengthened its operational management and deepened its commitment to aviation safety.

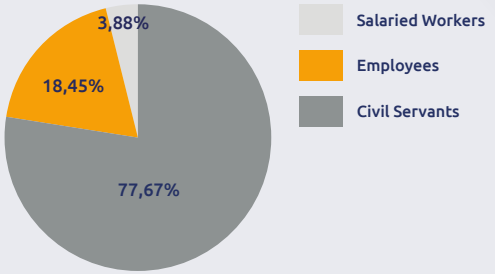
A Chief Operations Officer was appointed to optimize processes and support strategic decisions, while a Deputy Safety Manager joined to reinforce safety oversight. To support operations, six new Air Traffic Controller (ATC) trainees joined the approach unit. Across the administration, office, operational, and technical staff successfully completed planned training sessions, enhancing skills and qualifications. HR procedures were also revised to better address the evolving needs of our organization.

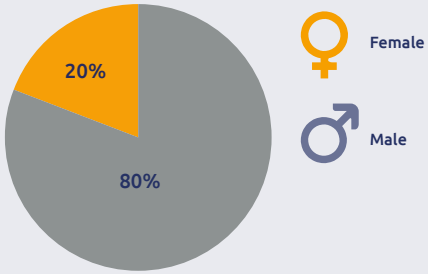
Total Headcount
206 AGENTS
as of 31.12.2024

16
NEW HIRES
in 2024

Average Age
41.3 years

Training budget
€500k



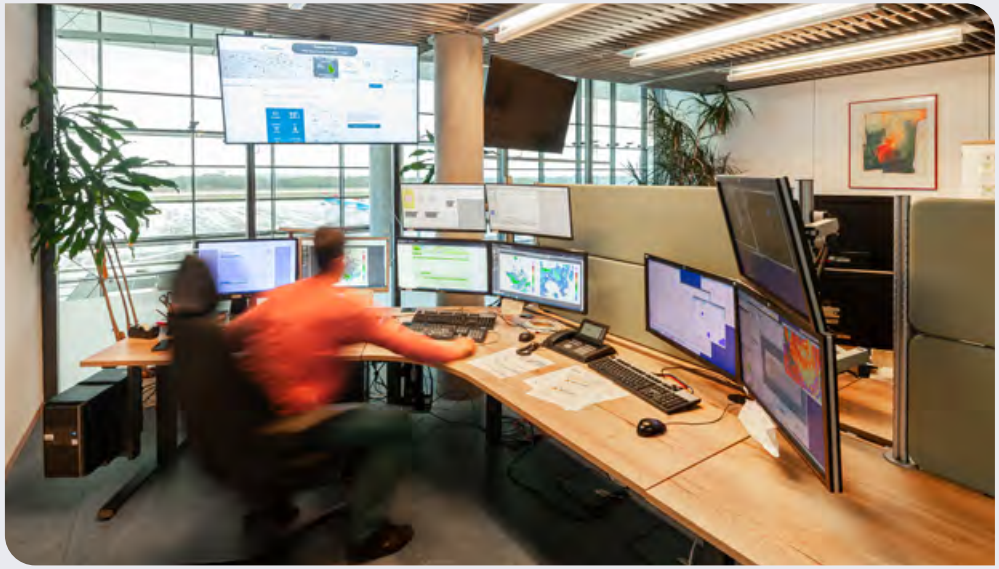


INTERNAL AND EXTERNAL PROJECTS – HR TRANSFORMATION

To build a modern and efficient administration, ANA pursued several initiatives:

- **Strategic recruitment optimization:**
  targeted communication to attract top talents, personalized candidate experience to maximize engagement, and a comprehensive onboarding and training plan for rapid integration.
- **Digitalization of HR processes:**
  streamlining, securing, and automating workflows; aiming to reduce paper archives by at least 80% by 2027; and automating routine tasks to increase productivity.

FUTURE OUTLOOK



Looking ahead, **ANA will strengthen its corporate social responsibility approach by more closely integrating social concerns** and sustainable development challenges into its activities.

At the same time, **greater emphasis will be placed on human factors**, ensuring that staff well-being, performance, and safety remain at the core of operations. Finally, ANA will continue to build stronger relationships with stakeholders, fostering trust, transparency, and collaboration to meet shared objectives.

HR POLICY

ANA's Human Resources policy underpins the administration's strategic objectives by ensuring the effective use of personnel, fostering positive working relationships, and providing continuous training opportunities. It applies to all ANA staff **— trainees, civil servants, employees, and consultants —** and is aligned with both national legislation and international regulations as part of ANA's role as a European ANSP.

THE HR POLICY FOCUSES ON:

- **Recruitment and development of skilled staff** to meet operational and strategic objectives.
- **Commitment to fairness and equity**, ensuring respectful and transparent treatment of all staff through clear policies and procedures.
- **Professional growth and leadership**, with training and career development as key priorities.
- **Retention of talent**, by creating a motivating and supportive work environment.
- **Regular policy review**, to adapt to evolving needs and remain effective and relevant.
- Through this framework, ANA ensures that its **workforce remains motivated, competent, and aligned with its mission** of delivering safe, efficient, and sustainable air navigation services.

INTRODUCTION

In 2021, ANA launched an ambitious five-year Business Plan (2021–2025) aimed at enhancing operational efficiency, safety, and stakeholder engagement across all aspects of its operations. As the aviation sector continues to face evolving challenges, regularly assessing progress remains essential to ensure alignment with the dynamic demands of air traffic management and EU performance regulations.

This section highlights the progress made in 2024, showcasing achievements in safety, operational efficiency, environmental performance, and technological innovation. These developments also provide a steppingstone for **Reference Period 4 (RP4, 2025–2029)**, during which ANA commits to align its activities with European performance targets and the Single European Sky framework.

ASSESSMENT
OF 2024 STRATEGIC OBJECTIVES

*In 2024, ANA further advanced the **strategic objectives** of its **2021–2025 Business Plan**, with significant achievements in safety, environmental performance, technological innovation, and stakeholder collaboration. This assessment highlights progress made during the final year of Reference Period 3 (RP3 2020-2024) and outlines the foundation for Reference Period 4 (2025–2029).*

Safety and Operational Excellence

Safety remained the cornerstone of ANA's activities in 2024. **No critical Class A or B ATM incidents** were recorded, while runway incursions and airspace infringements both declined. EOSM maturity levels continued to improve, confirming the effectiveness of the Safety Department established in 2024. At the same time, **a rise in reported Separation Minima Infringements (SMIs)** and lower-category system incidents reflected both enhanced reporting practices and the need for continued mitigations, many of which are already being implemented.

Efficiency and Environmental Performance

In 2024, the utilisation of **Continuous Descent Operations (CDO)** rose to **67.40% of inbound flights**, demonstrating continued progress in reducing **fuel burn, emissions, and noise**. ANA also contributed to Luxembourg's updated **Noise Action Plan 2024**, providing critical operational data to improve noise mapping and supporting community dialogue through the Airport Consultative Commission.

Beyond operational measures, ANA launched two strategic initiatives to reinforce its sustainability framework:

- **A gap analysis for CANSO GreenATM accreditation,** with certification targeted for 2026
- The process to obtain the national **ESR (Environment and Social Responsibility) label** from INDR (Institut National pour le Développement durable et la Responsabilité sociale des entreprises).

Together, those actions underline ANA's commitment to long-term environmental stewardship.

Technological Advancements

2024 was a year of strong progress in ATM modernisation:

- **The A-SMGCS project** project advanced with infrastructure validation, preparing for Safety Net integration and full deployment foreseen by 2025.
- **The VCS replacement project** moved forward, with the tenderer selected, design finalised, and implementation foreseen in 2025.
- **The AWOS upgrade project** was initiated to align with ICAO and EU regulations and integrate SWIM capabilities, strengthening resilience and information-sharing.
- Further enhancements in the **surveillance chain (ARTAS)** and CNS infrastructure supported compliance with SESAR and SES performance targets.

Strengthened Partnerships

In 2024, ANA reinforced its active engagement within FABEC and deepened bilateral and multilateral cooperation with European partners. These efforts further strengthened Luxembourg's integration into the Single European Sky and ensured that national priorities remain fully aligned with EU objectives.

Robust Security Measures

Security and resilience were strengthened in 2024 through updated compliance with the NIS2 Directive (Network and Information Systems Directive), the CER Directive (Critical Entities Resilience Directive), and Part-IS (Information Security requirements under EU Regulation 2023/203).

Internal and external audits, along with vulnerability assessments, confirmed robust cybersecurity and physical security standards compliance. All audit findings were successfully addressed, reinforcing operational resilience and regulatory alignment.

STRENGTHENING ATM PERFORMANCE AND TRANSFORMATION

In 2024, ANA pursued a wide range of projects aimed at enhancing operational efficiency, safety, and sustainability. These initiatives underline ANA's commitment to aligning with international standards and fostering innovation in air navigation services. While some milestones were reached during the year, many projects remain ongoing and will continue to drive the modernization of Luxembourg's air navigation services in the years ahead

Driving Modernization through European Initiatives

Luxembourg also maintained its momentum under the Local Single Sky Implementation (LSSIP) framework. Progress was recorded in key areas such as airspace management, safety nets, digital information services, and performance-based navigation. At the same time, several modernization activities remain under development, particularly in the domains of airport safety systems, surveillance and communication infrastructure, and digital data exchange (SWIM).

Overall, the LSSIP confirms Luxembourg's determination to align national priorities with European ATM modernization and performance targets. The progress achieved in 2024 provides a solid foundation for the next steps, although further efforts will be required to accelerate digital transformation, enhance safety and resilience, and deliver full operational benefits in the years ahead.

Table 1 – Overview of Key Implementation Objectives (2024)

Area	2024 Status
Airspace Management (e.g. Free Route)	Implemented, aligned with FABEC developments
Safety Nets (En-route, TMA, airport)	Progress made, further work ongoing
Digitalisation (AMHS, NewPENS, Digital NOTAM)	Advancing, with further steps planned
PBN & Navigation	Implementation well advanced, further expansion planned
Airport Systems (A-SMGCS, safety nets, WAM (Wide Area Multilateration))	Ongoing
SWIM & Information Services	Early stages, to be accelerated in coming years
Safety Enhancements (Runway safety, infringements)WAM (Wide Area Multilateration))	Ongoing

KEY MODERNISATION PROJECTS

ARTAS: Strengthening the Surveillance Chain

The **integration of ARTAS (Eurocontrol's multi-tracker standard)** marks a major step in strengthening Luxembourg's surveillance infrastructure. This project reflects ANA's strategy of adopting European standards while ensuring operational resilience.

The initiative involves the integration of ARTAS into the **nominal LeadinSky air traffic control system**, carried out by the system provider. ARTAS will be fully configured for local needs, while the current multi-tracker (MRT) will be retained as **a fall-back solution** within the LeadinSky platform.

By adopting this new standard, ANA ensures that its surveillance chain is ready for future developments, with improved sensor integration, enhanced reliability, and alignment with European best practices.

A-SMGCS: Strengthening Safety on the Ground

The **Advanced Surface Movement Guidance & Control System (A-SMGCS)** is one of ANA's key modernisation projects, reflecting our CEO's vision of combining **safety and innovation**.

The system enhances the monitoring and management of aircraft and vehicle movements on the airport surface. After the successful deployment of **Level 1 (For Information Only)**, the next steps will introduce **Safety Nets**, providing controllers with automatic alerts to prevent conflicts. By 2025 A-SMGCS will evolve into a full **Control Tool**, supporting safe and efficient operations even in low visibility.

ONCE FULLY OPERATIONAL, A-SMGCS WILL:

- Improve **safety** by reducing runway incursion risks,
- Increase **efficiency** by optimising taxiing and sequencing,
- Support the **environment** by cutting emissions from unnecessary movements,
- Ensure **compliance with European SESAR standards**.

This project is a cornerstone of ANA's future-oriented strategy and underlines our determination to deliver **safe, efficient, and sustainable air navigation services**.

VCS: Modernizing Voice Communication

Reliable communication is essential for safe air traffic management. ANA is replacing its **end-of-life Voice Communication System (VCS)** in two phases.

Phase 1 was completed with the replacement of the fallback Local Radio System and RX/TX radios.

Phase 2, now ongoing, covers the replacement of the **main VCS** and the **Voice Recording System (VRS)**. The new system, to be deployed in **2025**, will be **VoIP-capable** and includes advanced features such as frequency **cross-coupling**, improving communication safety and efficiency.

This project ensures ANA's communication infrastructure remains **safe, resilient, and future proof**, fully aligned with European standards.

AWOS: Reliable Weather for Safe Operations

The **Automated Weather Observation System (AWOS)** is being upgraded to ensure continuous and accurate weather data for air traffic management. The upgrade aims to align the system with **EU Regulation and ICAO standards** while integrating **SWIM (System Wide Information Management)** capabilities for improved data sharing.

These enhancements will strengthen **safety** by providing reliable, real-time weather observations, ensure **regulatory compliance**, and deliver a **future-proof solution** that supports both operations and environmental performance.

MOVEMENTS, PASSENGERS, FREIGHT & SERVICE UNITS

The table below illustrates the evolution of air traffic in Luxembourg terminal airspace and at Luxembourg Airport during Reference Period 3 (RP3: 2020–2024).

Air traffic was significantly impacted by the COVID-19 pandemic at the beginning of RP3, with a sharp decline in passenger numbers in 2020. Cargo operations, however, remained relatively stable and even grew slightly during this period. As restrictions eased, traffic began to recover, showing strong momentum particularly from 2022 onwards.

In 2024, total movements reached 91,283, representing a slight decrease of 1.7% compared to 92,862 in 2023. International movements declined marginally by 0.6% to 75,365, while commercial movements fell by 2.0% to 68,532.

Passenger traffic continued its strong post-pandemic recovery. . After an 18.1% increase from 2022 to 2023, passenger numbers grew by a further 7.3% in 2024, reaching 5.21 million and surpassing pre-pandemic levels.

Cargo trends remained mixed. Cargo movements decreased by 0.7% compared to 2023, but freight tonnage rose by 3.9% to 825,651 tonnes, partially offsetting earlier declines

Overall, 2024 marked a phase of stabilization in traffic volumes, with growth in passenger demand balanced against slight declines in flight movements. Despite continued sensitivity to external shocks, ANA is adapting its operations to ensure resilience and sustainable service delivery in a volatile context.

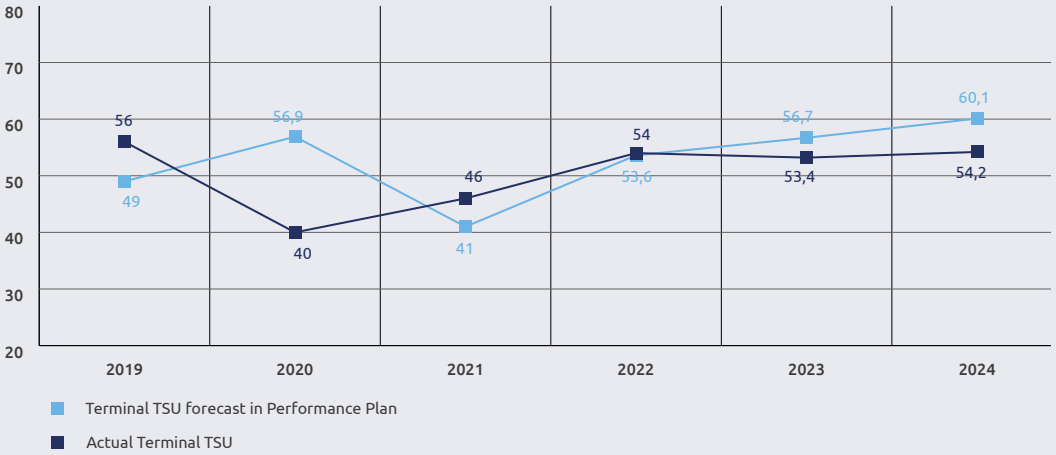
Table 2 - Traffic movement, passengers, freight & service units over RP3 (2020-2024) and 2023-2024 change

Year Reference Period	2020 RP3	2021 RP3	2022 RP3	2023 RP3	2024 RP3	Change 2023-24
Total movements	64.705	74.516	93.341	92.862	91.283	-1,7 %
International Movements	43.639	51.789	74.422	75.842	75.365	-0,6%
Commercial Movements	38.629	45.691	68.000	69.935	68.532	-2,0%
Passengers (Mio)	1,446	2,039	4,114	4,857	5,210	+7,3%
Cargo Movements	13.307	14.931	13.582	12.033	11.951	-0,7%
Freight (t)	905.223	1.088.441	969.962	794.884	825.651	+3,9%
Actual terminal Traffic Service Units (in .000)	40,0	46,0	54	53.4	54.2	+1.5%

Terminal Service Units (TSU)

The Terminal Service Unit (TSU) represents the chargeable volume of terminal air navigation services provided at Luxembourg Airport, calculated based on aircraft weight and movements. It serves as the basis for determining terminal navigation charges.

Figure 1 – Terminal TSU (Terminal Service Unit) forecast and actual values



Following the sharp decline in 2020 due to the COVID-19 crisis, Terminal Service Units (TSU) showed a steady recovery throughout RP3. Actual TSUs rose from 40,000 in 2020 to 54,200 in 2024, closely tracking the forecast trend.

After a strong rebound in 2022, TSU levels stabilized in 2023 and 2024, showing only a +1.5% year-on-year increase. This stability reflects the mature recovery of terminal traffic volumes, driven primarily by passenger growth and supported by stable cargo operations.

The small gap between forecast and actual TSUs demonstrates that capacity planning was well aligned with the pace of traffic recovery.

PERFORMANCE OVERVIEW: ACHIEVEMENTS AND CHALLENGES IN KEY PERFORMANCE AREAS (KPAS) FOR 2024

ANA continued its transition towards modernization to respond to the evolving ATM environment, as outlined in the foregoing chapters. This is again reflected in the mixed KPA results. While 2024 remained a challenging year for ANA, the outcomes show that progress has been made. Further efforts will be required in 2025 to consolidate the transformation and achieve more consistent performance improvements.

SAFETY

Safety is the cornerstone of our operations, and 2024 was marked by both significant achievements and notable challenges in **maintaining and enhancing our safety standards**.

Key performance indicators (KPIs) — the measurable benchmarks used to assess safety performance — were closely monitored throughout the year. These include:

- **Effectiveness of Safety Management (EOSM):** evaluates the maturity and effectiveness of the safety management system.
- **ATM System/Equipment (SE) incidents:** tracks occurrences linked to technical systems supporting air traffic management.
- **Separation Minima Infringements (SMIs):** monitors instances where the required minimum separation between aircraft is not maintained.
- **Runway incursions:** records unauthorized presence of aircraft, vehicles, or people on the runway.
- **Airspace infringements:** captures instances of aircraft entering controlled or restricted airspace without clearance.

ANA successfully met the goal of zero critical Class A and Class B1/B2 ATM incidents and recorded continued reductions in airspace infringements. However, SMIs increased in 2024, reflecting traffic peak patterns, weather-related influences, and a stronger reporting culture. Mitigation measures were introduced during the year and continue into 2025, with encouraging early results.

The incorporation of NSA (National Supervisory Authority) audit findings into EOSM evaluations and the impact of increased reporting rates demonstrate a proactive approach to addressing safety concerns. As a result, we significantly improved our EOSM scores, missing the RP3 targets by just one area.

Establishment of a Dedicated Safety Department within ANA

Strategic Response to Regulatory Guidance

ANA has significantly strengthened its commitment to safety by establishing **a dedicated Safety Department**. This initiative addresses a key recommendation from the DAC (Direction de l'Aviation Civile), which emphasized the need for the safety manager's hierarchical independence and the continued expansion of the safety team.

Background and Organizational Changes

Historically, the safety management roles were integrated within the CERT Department (Certification Department) of ANA, with a Safety Manager and a part-time assistant forming the entirety of the safety staff. Recruitment for additional safety personnel had already been initiated before the organizational split. However, DAC's recommendation to strengthen the structural independence and resources of the safety management function provided further momentum and a solid justification for this change, underlining that the Safety Manager required additional manpower to effectively fulfil the role.

As part of the reorganization, the Safety Manager — who was already reporting directly to the accountable manager in case of safety issues — was relieved of his performance management duties, allowing him to devote himself fully to safety.

Composition and Roles of the Safety Department

The newly established Safety Department reinforces ANA's commitment to keeping safety as the highest priority, independent from operational pressures. The department has been strengthened with a dedicated team comprising the following roles:

- **Safety Manager:** Leads the development and implementation of all safety strategies and protocols, monitors safety performance criteria and KPIs, and reports directly to the CEO.
- **Deputy Safety Manager:** Assists in driving safety initiatives and oversees day-to-day operational safety activities.
- **Technical Investigator:** Focuses on analyzing technical safety issues related to air traffic management infrastructure and equipment.
- **Operational Investigator:** Investigates operational practices and incidents to recommend improvements and prevent recurrences.
- **Safety Expert:** In charge of the EOSM and CANSO SOE processes, provides specialized knowledge for the development of the SMS and, enhancing the team's capability to address complex safety challenges.

Impact and Future Directions

The creation of the Safety Department within ANA at Luxembourg Airport is a pivotal development in advancing safety oversight and management. This department not only fulfills regulatory expectations but also signifies a proactive approach to enhancing the safety culture within Luxembourg's air navigation services. Moving forward, the department aims to continuously improve safety measures, ensuring ANA remains a benchmark for safety excellence in air navigation.

The Effectiveness of Safety Management (EOSM):

The Effectiveness of Safety Management (EOSM) scale evaluates safety across five critical Safety Management Objectives: **Safety Culture, Safety Policy and Objectives, Safety Risk Management, Safety Assurance and Safety Promotion.** Results for 2024 reflect the significant progress achieved in this area. ANA was able to substantially raise its scores, meeting or exceeding the RP3 targets in four out of five objectives. The only shortfall concerned Safety Risk Management, where two sub-areas remained at level C instead of the required level D.

Table 3 - Effectiveness of Safety Management (EOSM)

EOSM Component	Targets 2024	Results 2024	Interpretation
Safety Culture	C	3 elements at Level C	**On target –** safety culture established and maintained
Safety Policy & Objectives	C	4 elements at Level C, 3 at Level D	**Exceeding target –** policy implementation and monitoring strengthened
Safety Risk Management	D	2 elements at Level C, 1 at Level D	**Slightly below target –** continuous improvement ongoing
Safety Assurance	C	3 elements at Level C, 4 at Level D	**Above target –** data-driven assurance progressing
Safety Promotion	C	6 elements at Level C	**On target –** consistent safety communication and awareness

Note:

The EOSM scale ranges from A (Informal arrangements) to D (Assured).

The letters indicate the maturity level, while the numbers refer to the number of elements within each component assessed at that level.

ATM System/Equipment Incidents:

In 2024, ANA achieved its target of zero critical Class A ATM System/Equipment (SE) incidents, marking an important safety milestone. A higher number of Class B and non-safety-impacting Class C incidents were reported compared to 2023. This increase was mainly due to a strengthened reporting culture and external environmental factors, such as **temporary interference with ILS signals linked to nearby construction activities**. The situation was fully resolved in early 2025.

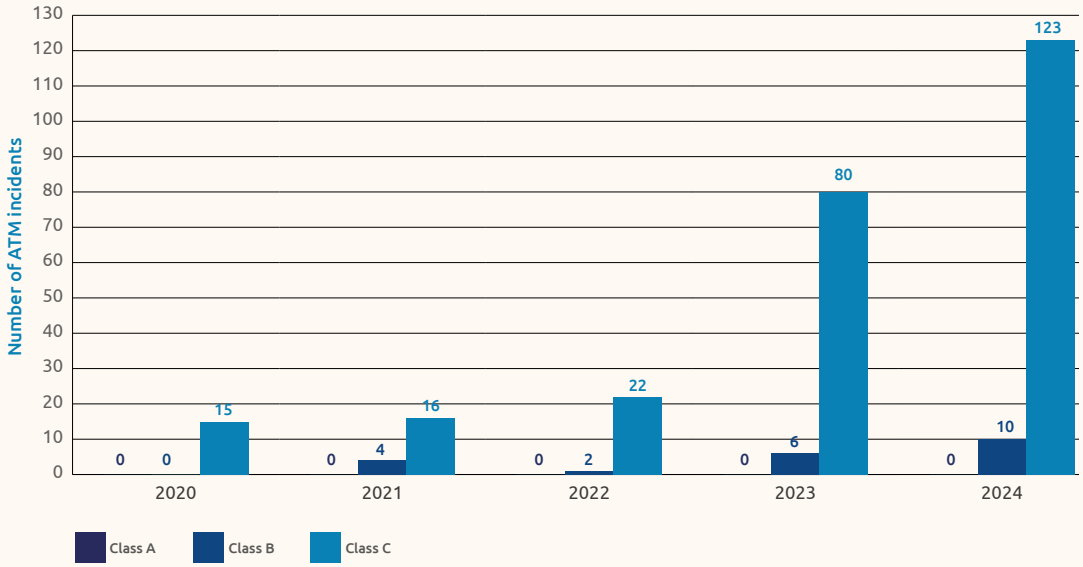
ATM SE Incidents Overview

The figure on the right illustrates the number of ATM System/Equipment incidents by severity class, as defined under European safety performance monitoring.

- **Class A** (critical) incidents must remain at zero, representing the top safety objective.
- **Class B** and **Class C** incidents are considered tolerable when properly mitigated and when they do not reveal underlying systemic risks.

ANA's **2024 results** remained **within the defined tolerable limits**, confirming that **overall system safety was not compromised**, despite the increase in reported lower-severity events. This trend reflects the **maturity of ANA's safety culture**, characterized by proactive reporting, transparency, and continuous monitoring.

Figure 2 - ATM SE incidents



Note:
The severity levels of ATM System/Equipment (SE) incidents are classified according to the EUROCONTROL Severity Classification Scheme for Safety Occurrences in ATM (EAM2-GUI1, Edition 1.0)

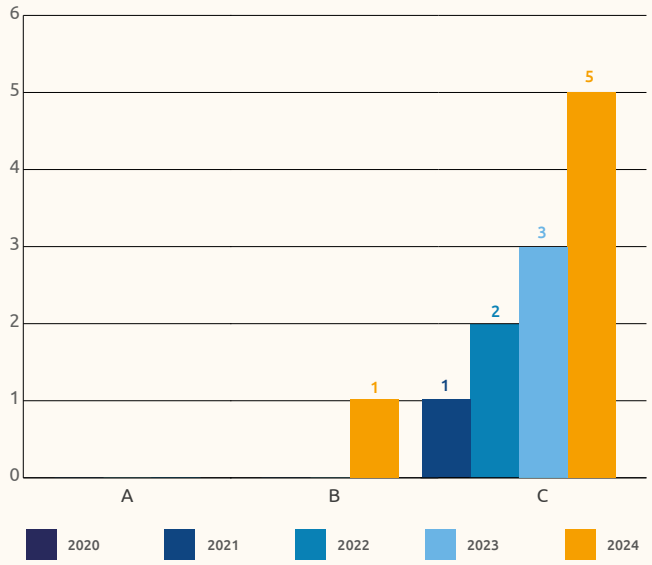
Separation Minima Infringements (SMIs):

In 2024, a total of **six Separation Minima Infringements (SMIs) were reported in airspace under ANA's control**, compared to three in 2023 and two in 2022.

With **11 416 controlled flight hours**, this corresponds to an overall SMI rate of **52.6 per 100 000 flight hours when all classes are considered.**

While this increase appears notable, it should be interpreted with caution and within the specific operational context of Luxembourg's airspace.

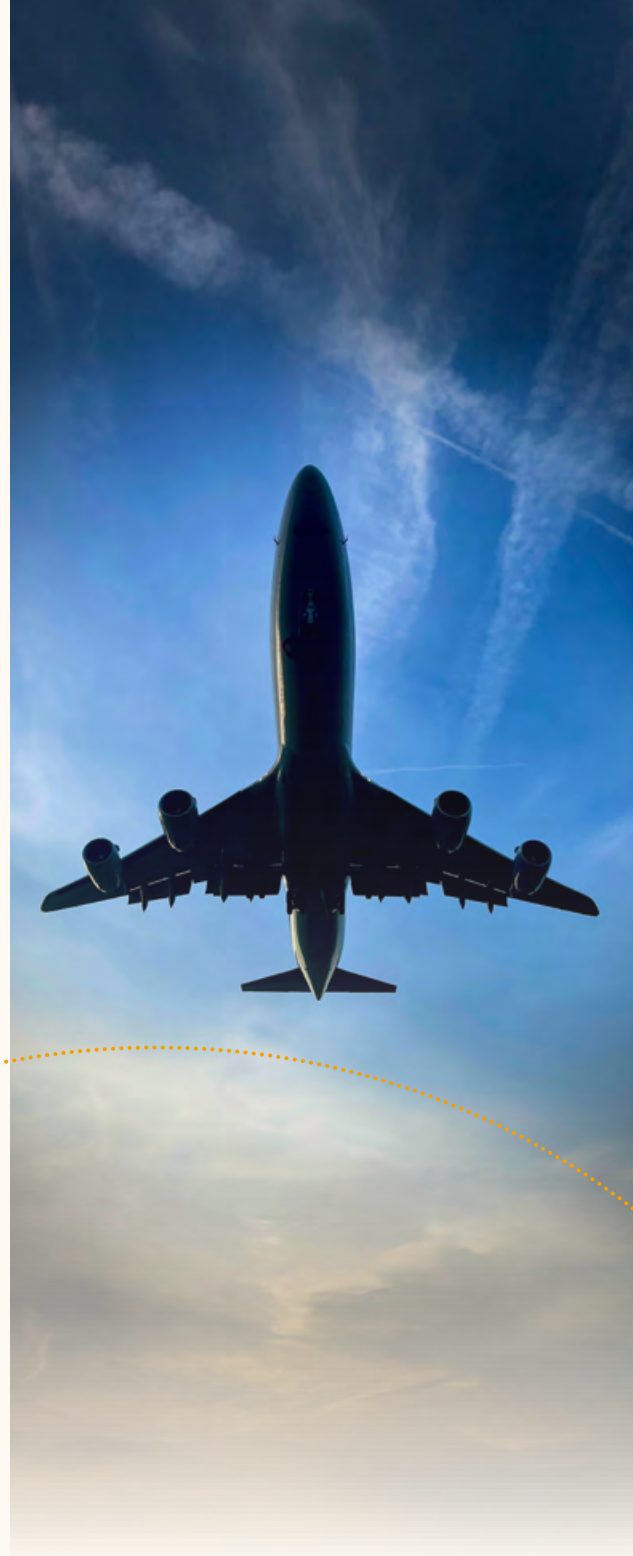
Figure 3 –Separation Minima Infringements by category



Contributing factors include **short-term traffic peaks, challenging meteorological conditions**, and a **reinforced reporting culture** encouraged by the Safety Management System (SMS).

Furthermore, Luxembourg continues to operate under the **5 NM separation standard**, as the 3 NM separation minima have not yet been implemented.

This wider standard, combined with the compact and complex structure of the national airspace, naturally results in a higher number of minor recorded deviations, even though overall system safety remains robust.



In 2024, **no Class A (serious) incidents occurred.**

A single Class B (major) event was reported, and the remaining five occurrences fell into Class C, involving limited losses of separation with no significant impact on safety.

All events were adequately mitigated, confirming that ANA maintained effective safety performance throughout the year.

In accordance with EU Regulation (EU) 2019/317, **the official European safety KPI for Separation Minima Infringements includes only Classes A and B**.

Based on zero Class A and one Class B event, Luxembourg's **2024 KPI rate equals 8.76 per 100 000 flight hours**.

For reference, the Union-wide average (all SMIs with safety impact) in 2024 was 9.7 per 100 000 flight hours. These figures confirm that Luxembourg's safety performance remains in line with overall European trends, with no serious (Class A) events and only one major (Class B) occurrence recorded in 2024.

Table 4 –
Number of Separation Minima Infringements (SMIs) at Luxembourg Airport (2022–2024)

Year	Controlled Flight Hours	Number of SMIs (Class A + B)	SMI Rate (per 100,000 flight hours)
2022	11,668	0	0.00
2023	11,608	0	0.00
2024	11,416	1	8.76

EU Reference Target (Classes A + B): ≤ 0.4 per 100,000 flight hours
(Commission Implementing Regulation (EU) 2019/317, Annex IV — Safety KPI)

Runway Incursions:

In 2024, the number of runway incursions at Luxembourg Airport decreased from four in 2023 to three, resulting in a **lower incursion rate per movement.**

This positive development follows the implementation of corrective measures and safety recommendations jointly undertaken by ANA and lux-Airport.

The runway incursion rate at Luxembourg Airport in **2024 was 3.29 per 100 000 movements**, compared to 4.31 in 2023.

Although this value is above the Union-wide average of 1.4 per 100 000 movements (PRB Annual Monitoring Report 2024), the difference reflects Luxembourg's limited traffic volume, where small variations in occurrences have a statistically amplified effect.

Overall, the trend remains stable and at a very low level, confirming that runway safety performance remains effectively managed.

Table 5 -
Number of Runway incursions on Luxembourg Airport (2020-2024)

Year	Runway Incursions	IFR and VFR Movements	Incursion Rate (per 100,000 movements)
2020	1	64705	1.54
2021	1	74516	1.34
2022	1	93341	1.07
2023	4	92862	4,31
2024	3	91283	3.29

Rate calculated as the number of runway incursions divided by total IFR and VFR movements.

Union-wide average (2024): ≈ 1.4 incursions per 100 000 movements (source: PRB Annual Monitoring Report 2024).

The increase from one incursion in 2022 to four in 2023 can be attributed to a series of isolated operational events, including readback misunderstandings and one vehicle-related case. These cases were not connected and do not indicate a systemic trend. Due to Luxembourg's relatively low traffic volume, even a small increase in occurrences results in a statistically amplified rate. All events were investigated, and safety barriers were proven effective, including timely ATC interventions and go-arounds where necessary.

Airborne Collision Avoidance System (ACAS) alerts:

In addition to the EU Performance Scheme indicators (Separation Minima Infringements, Runway Incursions, and ATM System/ Equipment incidents), **ANA** also monitors **Airborne Collision Avoidance System (ACAS) Resolution Advisories (RAs)** as part of its internal safety analysis.

These RAs are automatic alerts generated by the **Traffic Collision Avoidance System (TCAS)** when two aircraft come into potential conflict, prompting pilots to take immediate corrective action to maintain safe separation. Although Although ACAS RA (Airborne Collision Avoidance System – Resolution Advisory) are **not part of the formal EU safety performance indicators,** they provide valuable complementary information on **airborne separation risks** and help identify emerging safety trends.

Table 6 -
Number of ACAS RA registered in Luxembourg Airspace 2020-2024

Year	ACAS RAs	IFR Movements	ACAS RA Rate (per 100,000 movements)
2020	2	41,564	4.81
2021	4	48,485	8.25
2022	3	70,644	4.25
2023	1	72,844	1.37
2024	4	72,913	5.49

Between 2020 and 2024, the number of RAs in Luxembourg airspace remained **very low**, fluctuating between one and four events per year (see Figure 4). The **rate per 100,000 IFR movements** also stayed below 9, indicating a stable safety level despite increasing traffic volumes.

Most ACAS RAs recorded in 2024 resulted from interactions between **VFR (Visual Flight Rules)** and **IFR (Instrument Flight Rules)** aircraft. Importantly, no **ACAS RAs occurred in the vicinity of Luxembourg Airport,** which demonstrates the effectiveness of the **safety measures implemented in terminal airspace**. ANA continues to analyze events occurring in bordering airspace sectors, in cooperation with neighboring air navigation service providers, to determine additional preventive measures and further reduce the risk of airborne conflicts.

Airspace infringements:

ANA actively monitors **airspace infringements** in cooperation with the **Direction de l'Aviation Civile (DAC)** to maintain situational awareness of unauthorized entries into controlled or restricted airspace.

Between **2020 and 2024**, the number of reported airspace infringements in Luxembourg airspace fluctuated between **six and thirteen per year. The rate per 100,000 total movements (IFR + VFR)** declined from **15.45 in 2020 to 6.57 in 2024**, reflecting the **positive impact of targeted awareness and engagement initiatives.**

Table 7 -
Number of registered Airspace Infringements in Luxembourg Airspace 2020-2024

Year	Airspace Infringements	IFR and VFR Movements	Incursion Rate (per 100,000 movements)
2020	10	64705	15.45
2021	9	74516	12.07
2022	13	93341	13.93
2023	11	92862	11.84
2024	6	91283	6.57

All reported cases are systematically reviewed to assess causal factors and to guide **preventive and educational measures** aimed at reducing future occurrences. For each infringement, the pilot involved is requested to complete a **dedicated questionnaire**, supporting both the identification of underlying causes and the promotion of **individual accountability.**

In parallel, ANA has **strengthened its outreach to the general aviation community** by extending information campaigns to **non-local flying clubs** and by **actively participating in local general aviation meetings**. These combined measures — consistent follow-up with pilots and closer engagement with the flying community — have contributed to **a steady and measurable reduction in infringements, supporting safer and more compliant use of Luxembourg's controlled airspace**.

CAPACITY

Arrival ATFM Delays

In **2024**, the **average arrival ATFM delay** decreased sharply to **0.55 minutes per flight**, a significant improvement compared with **1.36 minutes in 2023**.

The highest delay levels were recorded in **January (1.28 minutes per arrival)**, mainly due to **air traffic control disruptions**, which accounted for 64% of the total delay minutes.

During the first four months of the year, **landing operations were further constrained by ILS disturbances**, likely linked to the use of **cranes at the Skypark building construction site**, which contributed to elevated delay levels.

Following these early peaks, delays declined steadily throughout spring, reaching **very low levels by May**.

Temporary increases observed in **June** and **August** were primarily associated with **runway infrastructure issues**, including several hours of **runway closures** that led to reduced operational capacity.

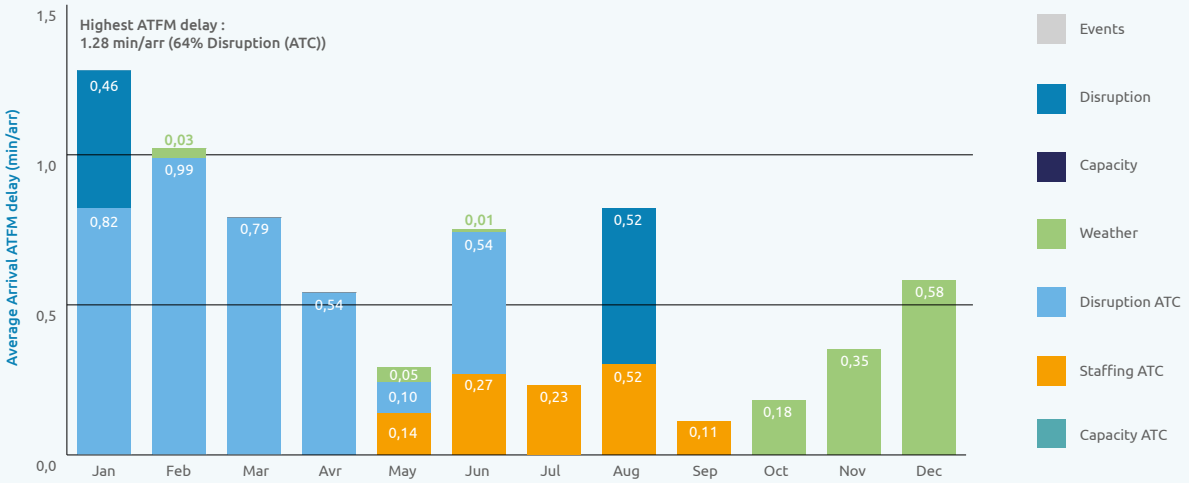
In the **final quarter, adverse weather conditions** became the main source of arrival delays.

Despite these fluctuations, the **overall downward trend** demonstrates the **effectiveness of mitigation measures and enhanced operational coordination**.

However, the average result remains above the **reference target of 0.05 minutes per arrival + 50%,** highlighting the need for continued efforts to minimize the impact of **capacity restrictions, staffing challenges**, and **weather-related disruptions.**

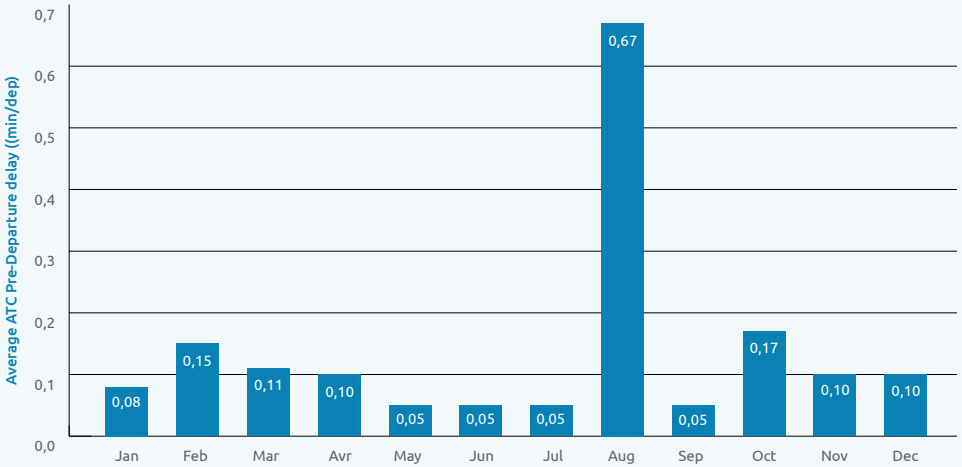
ATFM Delay Trends: Figure 5 highlights the monthly distribution of ATFM delays in 2024, emphasizing seasonal impacts and operational challenges.

Figure 4 – ATFM delay/month in 2024 (Source: Eurocontrol Network Manager)



Departure ATFM Delays

Figure 5 – Monthly Average ATC Pre-Departure Delay (Source: Eurocontrol Network Manager)



According to the Eurocontrol Network Manager, the **average ATC pre-departure delay rose slightly to 0.14 minutes** per departure in 2024, continuing a gradual upward trend from previous years.

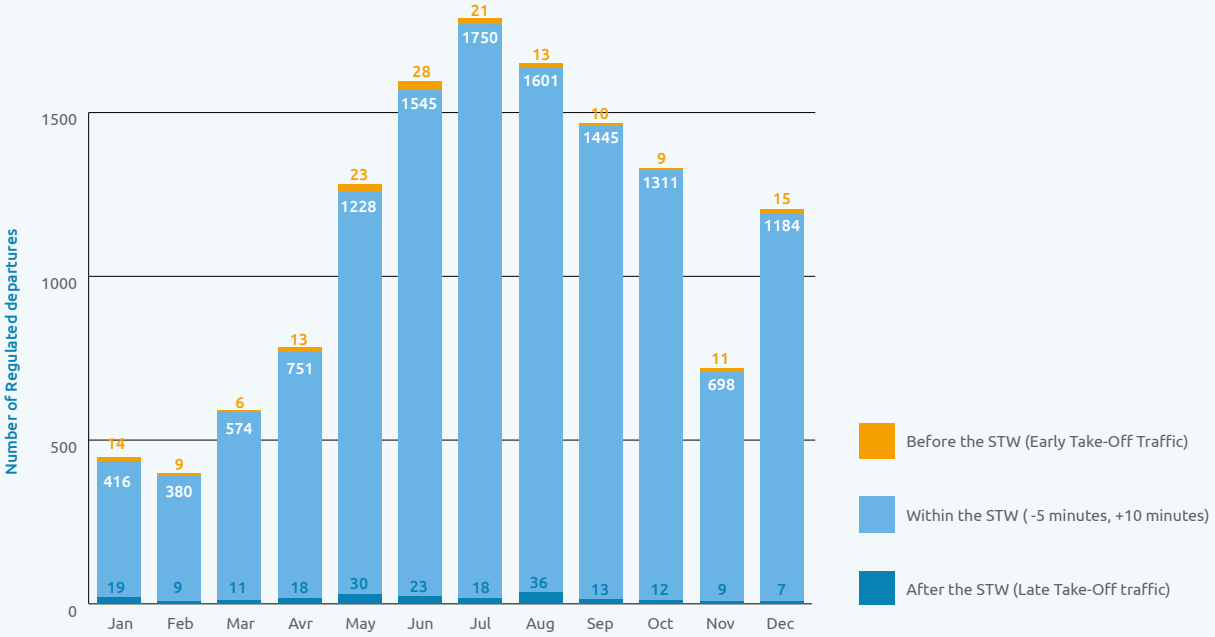
Although the figures remain relatively low, the increase reflects higher traffic demand and growing pressure on runway and taxiway capacity.

A notable peak in August coincided with **the same runway infrastructure issues that affected arrival operations**, including several hours of runway closure for maintenance and technical interventions.

This temporary reduction in airport capacity impacted both departures and arrivals, illustrating how even short-term infrastructure constraints can generate network-level delays at peak traffic periods.

ATFM Slot Adherence

Figure 6 – Monthly ATFM Slot Adherence (Source: Eurocontrol Network Manager)

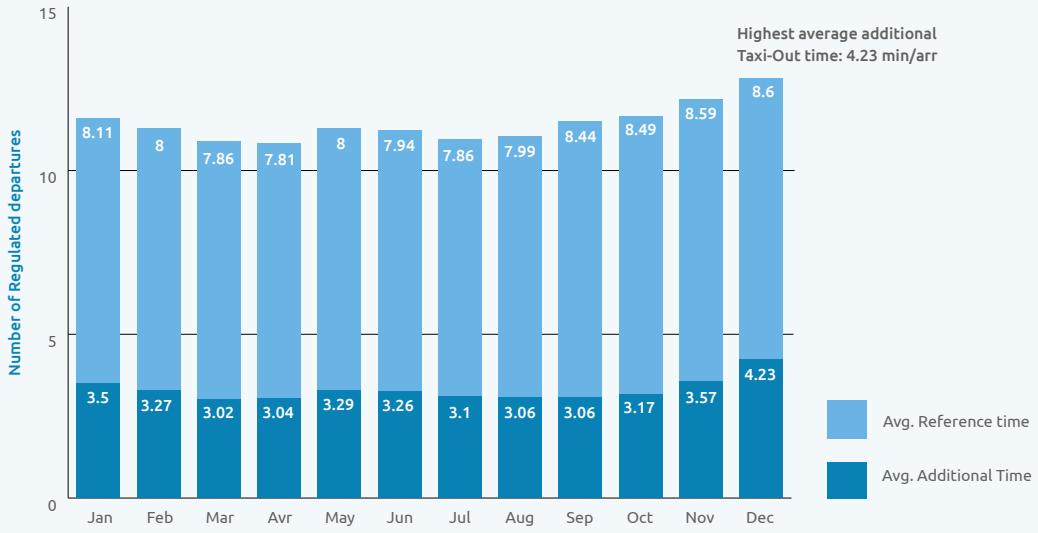


ATFM slot adherence reached **97.16% in 2024**, a marked improvement compared with **94.95% in 2023** and **well above the RP4 Performance Plan target of 80%**.

This result confirms the **efficiency of ANA's operational planning and coordination**, as well as the strong cooperation between **ATC units, airlines, and the Eurocontrol Network Manager**.

Taxi-Out Time

Figure 7 – Monthly Taxi-Out Time (Source: Eurocontrol Network Manager)



The **additional taxi-out time** increased to **3.27 minutes per departure in 2024**, compared with 2.99 minutes in 2023.

This continued rise is linked to both **traffic recovery** and the introduction of **more precise monitoring methods**, which provide improved visibility of surface operations but also reveal underlying inefficiencies.

Improving taxi-out performance will therefore require a comprehensive optimization of ground operations and enhanced coordination between ANA, Luxairport, and aircraft operators in the coming years.

ENVIRONMENT

Key Highlights

In 2024, ANA reinforced its environmental measures with a focus on **noise reduction, greener flight operations**, and **transparent engagement with communities. Four permanent noise monitoring stations** were in operation and a **fifth** was prepared for deployment. The collected data was made publicly available, supporting the refinement of abatement procedures and contributing to **Luxembourg's updated Noise Action Plan 2024 under the EU Environmental Noise Directive.**

Noise Maps: map.geoportail.lu

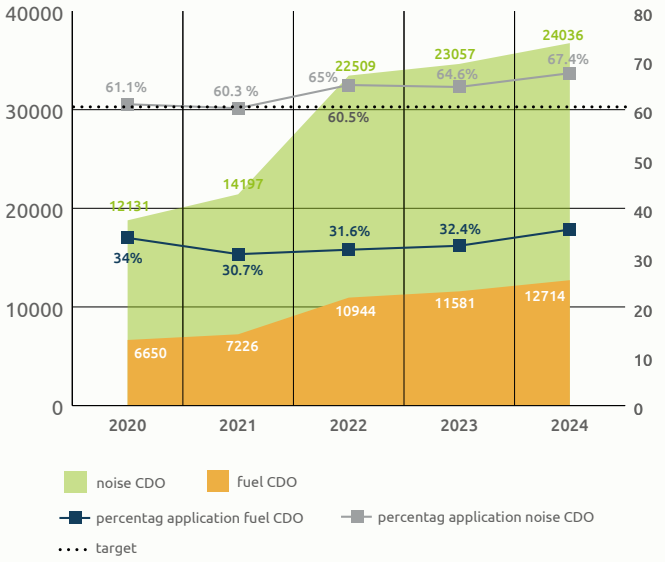
Noise Action Plan 2024: environnement.public.lu

Operational Insights

Continuous Descent Operations (CDO) have become a cornerstone of Luxembourg's environmental performance. In 2024, 67.4% of inbound flights were conducted as CDOs, compared to 65.2% in 2023 and 61.1% in 2020. This steady progress, achieved in cooperation with airlines and EUROCONTROL, has translated into lower fuel consumption, reduced CO_2 emissions, and quieter arrivals for residents.

Night flights continued to be tightly regulated. The curfew between 23:01 and 05:59 remained in force, with exemptions strictly limited to essential operations. During the year, ANA advanced discussions with Luxair to establish a framework for passenger flights, complementing the existing Cargolux charter for cargo operations.

Figure 8 – Number / rate of CDO application in Luxembourg airspace 2020-2024



Future Outlook

Environmental performance was also supported by the continued application of **environmental modulation of terminal charges**, in place since 2015, which differentiates fees based on aircraft noise certificates and departure times. Looking ahead, two strategic projects will shape the next stage of ANA's sustainability policy. A **gap analysis for CANSO GreenATM accreditation** was completed, paving the way for **certification by 2026** while the **application process for the national ESR label with INDR** was launched. Both initiatives will provide external validation of ANA's **commitment to sustainability and environmental responsibility**.

For further details on ANA's environmental actions and results, please refer to the Environmental Statement 2024 (available at: ana.gouvernement.lu – Environmental Statement 2024)

COST – EFFICIENCY

In 2024, ANA fulfilled its financial reporting obligations under the **Performance Plan for Reference Period 3 (RP3)** and prepared a **Draft Performance Plan for RP4**. The European Commission, however, considered the draft plan to be inconsistent with the **EU-wide CEF targets**, and a revision is currently underway.

This section provides an overview of **En-route and terminal costs and revenues**, highlighting ANA role in ensuring transparency and promoting cost-efficiency.

Summary of 2024 Performance

The performance results for 2024 show a **mixed level of achievement** in the Cost-Efficiency Key Performance Area (KPA). While financial integrity and billing procedures remained strong, the determined unit costs (DUC) for both En-route and Terminal services **exceeded target values** and were therefore **not fully achieved under KPI 12**. Specifically:

- **PI 1 – En-route DUC:**
  Target 2.35, Actuals 3.30 **Not achieved**
- **PI 2 – Terminal DUC:**
  Target 220.13, Actuals 315.44 **Not Achieved**
- **PI 3 – Terminal cost recovery:**
  Target 264.30, Actuals 240.00 **Achieved**

Under **KPI 13 – Effective finance and budget management**, results were mixed. Aerodrome cost-efficiency (PI 1) was reported with no target, while **budget performance for investments and operating costs (PI 2)** reached only **50% of the allocated amount**, demonstrating a **significant underspending of investments**. However, **PI 3 – Exceptional costs** remained within the limit (15%; target <20%), and was successfully achieved.

Under **KPI 14 – Integrity of financial management procedures**, all three performance indicators were **fully achieved:**

- Overdue receivables remained low (2.0%)
- Supplier recalls were limited (0.5%)
- No customer complaints regarding billing were recorded

Overall, **financial procedures, billing accuracy and compliance remained strong,** while **cost-efficiency objectives were only partially met**, mainly due to **higher-than-forecast unit costs and investment underspending.** Further efforts will be required in 2025 to stabilize cost levels and improve execution of budgeted CAPEX (Capital Expenditure).

En-route Costs & Revenues

Within the **common charging zone of the Brussels Flight Information Region (FIR)**—which covers both Luxembourg and Belgium—**Skeyes**, our Belgian partner, acts as the main ANSP responsible for En-route services. **EUROCONTROL MUAC (Maastricht Upper Area Control Centre)** manages Luxembourg's **upper airspace (above Flight Level 245)**, while **ANA** oversees the **lower airspace (below Flight Level 145/165)**.

Each of the three ANSPs (Skeyes, MUAC, and ANA) provides a transparent breakdown of its costs in separate cost tables. MUAC's costs are further divided into **MUAC Luxembourg and MUAC Belgium**. This report focuses primarily on ANA's cost contribution within the common En-route charging zone.

***Table 8** presents the calculation of ANA's unit rates for En-route services for the entire RP3 period (2020–2024), following adjustments for inflation, traffic, and other revenues. (only ANSP ANA)*

(in k€)	2020	2021	2022	2023	2024
Total determined costs	7.340	7.634	7.871	7.568	7.407
Carry-forward adjustments	125	211	76	226	1.182
Other revenues	-880	-974	-2.969	-1.217	-1.198
Remaining (chargeable costs)	6.585	6.871	4.978	6.577	7.391
Unit rate (in €/SU)	**2,39**	**2,44**	**2,41**	**2,69**	**2,89**

The Luxembourg State does not recover capital costs or investment depreciation through **En-route and Terminal Navigation Charges (TNC)**. Instead, these costs are recorded under the **"Other Revenues"** category.

After considering over-recoveries and carry-forward adjustments from previous years, **En-route users were charged a unit rate of €2.89 per service unit in 2024** on behalf of ANA. The total amount collected through the **EUROCONTROL route charges system** for Luxembourg decreased slightly, from **€11.2 million in 2023 to €10.7 million in 2024**.

In 2024, ANA **actual nominal** costs for **En-route services** amounted to **€8.793 million**, compared to **€8.165 million in 2023**, representing a **7.7% increase**. This rise was mainly driven by **higher staff costs of around €0.5 million**, linked to salary increases under the collective bargaining agreement and an expanded headcount.

These staffing needs stemmed from two key developments:

- Following a wave of resignations in 2022, **ANA restructured the CNS department**, introducing a middle-management layer and establishing four sub-departments. Without this reorganisation, ANA risked losing its ANSP certification.
- In parallel, the **CERT department including Safety** had to hire additional experts to meet new regulatory requirements, such as conducting mandatory audits of suppliers. Since most of these employees joined only in the second half of 2023, the full financial impact became visible in 2024.

In **real terms**, actual costs in 2024 **were 3.8% higher than in 2023** and exceeded the **determined cost (DC)** for 2024 by **17.8%**. The **unit cost attributed to ANA per service unit** in the common charging zone increased slightly, from **€2.80 in 2023** to **€2.83 in 2024**. This represents a 1.1% year-on-year increase, leaving the actual unit cost **20.4% above the determined level for 2024**.

***Table 9** presents the total costs—both actual and determined costs (DC)—expressed in real terms at 2017 price levels, along with the actual and forecasted Service Units (SUs), and the actual and determined unit costs (DUC), also in real terms. (only ANSP ANA)*

	2023 Actuals	2024 Determined Costs	2024 Actuals
Total costs (in real terms; Inflation index - Base = 100 in 2017 (in .000€)	6.843	6.029	7.102
Service Units (in .000)	2.446,5	2.560,0	2.513,6
Unit costs in real terms (in €/SU)	2,80	2,35	2,83
Remaining (chargeable costs)	6.585	6.871	4.978
Unit rate (in €/SU)	**2,39**	**2,44**	**2,41**

Terminal Costs & Revenues

Since 2015, ANA has applied a departure charging scheme designed to promote environmentally friendly operations. Charges are adjusted according to an aircraft's **Maximum Take-off Weight (MTOW)**, in line with **EU Regulation 391/2013, Article 16**—later repealed and replaced by **EU Regulation 2019/317, Article 32** for Reference Period 3 (RP3).

The scheme incentivises airlines to operate quieter aircraft by linking charges to the aircraft's **noise emission certificate**, divided into **four categories (factor E)**. In addition, charges are differentiated by **time of departure**: flights departing during daytime hours benefit from lower fees compared to those departing late in the evening or after midnight. This modulation is applied across **three time-based categories (factor D).**

ANA's charging and billing office calculates and issues all charges and invoices. At the end of each billing year, traffic volumes and the effects of environmental modulation are assessed. If the **total revenue collected exceeds the Determined Cost (DC)**, the surplus is applied to reduce user charges in the **second subsequent year (year n+2),** ensuring fairness and cost-efficiency for airspace users.

***Table 10** presents the unit rates for terminal services for the entire RP3 period (2020–2024) and for the years 2025–2026, following adjustments for inflation, traffic, other revenues, and modulation.*

(in k€)	2020	2021	2022	2023	2024
Total determined costs	7.340	7.634	7.871	7.568	7.407
Carry-forward adjustments	125	211	76	226	1.182
Other revenues	-880	-974	-2.969	-1.217	-1.198
Remaining (chargeable costs)	6.585	6.871	4.978	6.577	7.391
Unit rate (in €/SU)	**2,39**	**2,44**	**2,41**	**2,69**	**2,89**

Considering the costs covered by the State of Luxembourg and the various carry-forward adjustments related to traffic and modulation, the **unit rate for 2024** was set at **€259.80 per service unit**, a marked increase compared to **€224.11 in 2023.**

In 2024, the **actual nominal costs** for terminal air navigation services (ANS) amounted to **€17.9 million**, representing an **8.2% increase** over the **€16.5 million recorded in 2023**. This rise was mainly driven by higher staff costs of approximately **€1 million.**

Compared to the **determined costs (DC) of €15.8 million**, actual costs were about **13.4% higher**. In **real terms**, costs were **6.2% above 2023** levels and **13.1% above the DC for 2024**.

As a result, the **ANSP unit cost per terminal service unit (TSU)** rose to **€275.99 in 2024**, up from **€263.87 in 2023**. In real terms, this reflects a 4.6% increase year-on-year, leaving the unit cost **25.4% above the determined level for 2024**.

***Table 11** presents the total costs—both actual and determined costs (DC)—in real terms at 2017 price levels, along with the actual and forecasted service units (SUs), and the actual and determined unit costs (DUC), also in real terms. (only ANSP ANA)*

	2023 Actuals	2024 Determined Costs	2024 Actuals
Total costs (real terms; Inflation index - Base 100 in 2017) (in .000€)	14.092	13.240	14.970
Service Units (in .000)	53,4	60,1	54,2
DUC in real terms (in €/TSU)	**263,87**	**220,13**	**275,99**

Investments – ATM/ANS & Aerodrome Services

In 2024, ANA continued to prioritise **strategic investments** aimed at enhancing the delivery of **Air Traffic Management (ATM)** and Air Navigation Services (ANS), as well as improving aerodrome infrastructure at Luxembourg Airport. Investments focused on key domains such as **Communication, Navigation, and Surveillance (CNS), Aeronautical Information, Meteorological Services**, and critical aerodrome infrastructure upgrades.

However, due to an urgent **reorganisation of the CNS unit** and procedural changes in the **procurement process** following ANA's transition to a traditional administrative structure, total **Capital Expenditure (CAPEX)** in 2024—covering ANSP, aerodrome, and non-aeronautical services—declined significantly and fell well below the level projected in the revised **Performance Plan**.

Total investments amounted to **€2.029 million in 2024**, compared to **€1.047 million in 2023**.

Table 12 – ATM/ANS and Aerodrome Investments in 2024

Department/Service - Project Title	Expense 2024 (€)
MET (Meteorology Department) - Acquisition of a surface and wind measurement system	190.842
CNS (Communication, Navigation and Surveillance) – Supply and of the ARTAS tracker	163.800
ELE (Electrical Engineering Department) Implementation of the ILCMS (Integrated Lighting Control and Monitoring System)	152.662
MET – Development of critical precipitation thresholds and alerts	28.652
ELE - Renewal of constant current regulators for the runway	14.832
Sub-total project related expenses	**550.788**
Sub-total non-project related expenses	**1.478.203**
Grand Total	**2.028.991**

Table 13 below presents the CAPEX related to the performance plan (ANSP portion only), which, based on the applicable cost allocation principles, may be assigned either to ER or TNC. Annual and cumulative investment costs within the scope of the Performance Plan (in. 000)

	2023 Actuals RP3 – Year 4 of 5	2024 Actuals RP3 – Year 5 of 5
Total ANSP investments (k€) actuals vs planned (for the year)	599 / 4.960	1.046 / 2.332
Total ANSP investments (k€) cumulated actuals vs planned (for the total 5 years of the RP)	6.412 / 14.340	7.458 / 14.340
% of CAPEX target achievement for the RP	45%	52%

In 2024, ANA further reinforced its governance and compliance framework to ensure full alignment with evolving national and European regulatory requirements. The year was marked by significant progress in adapting internal processes, strengthening management systems, and maintaining the highest levels of accountability and transparency.

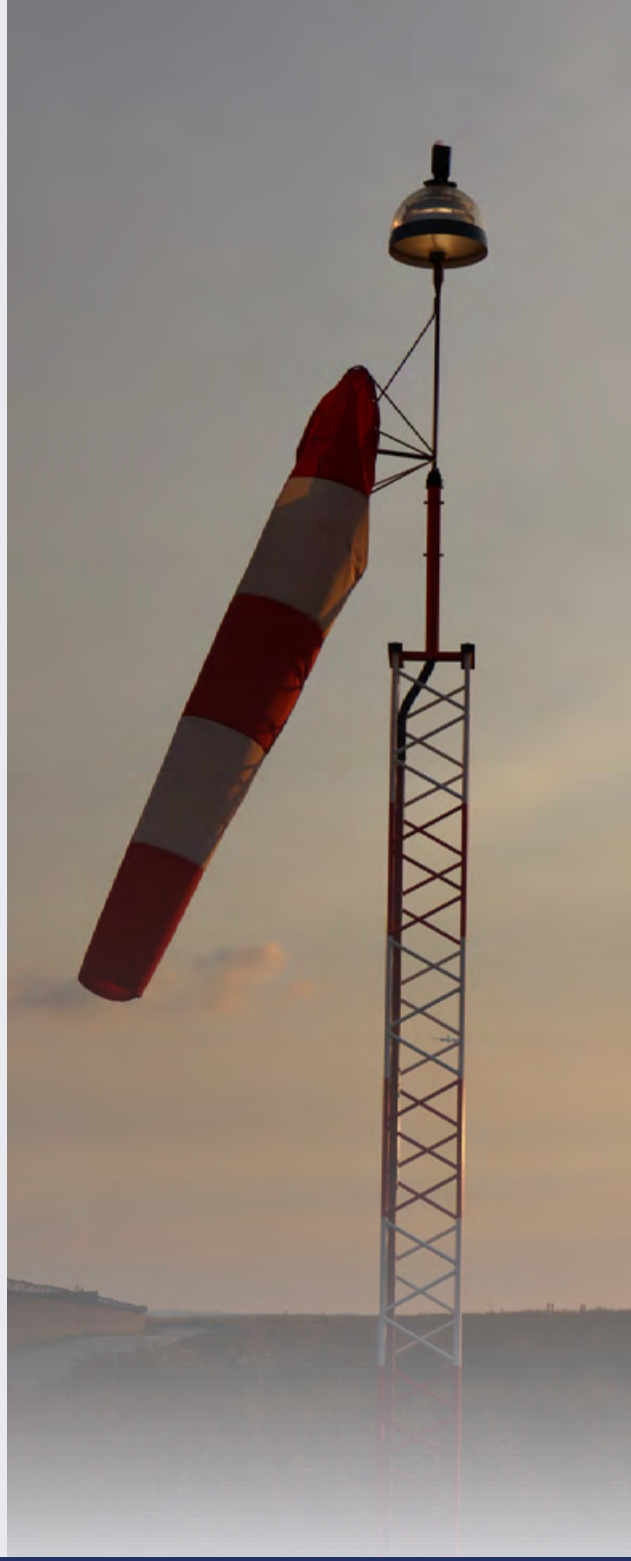
Close cooperation with the regulator and internal stakeholders enabled ANA to anticipate new obligations and implement them effectively, particularly in the domains of regulatory adaptation, security management, risk control, and program coordination. These efforts were complemented by an extensive internal audit program, enhanced supplier oversight, and the renewal of ANA's ISO and EMAS certifications. Collectively, these initiatives demonstrate ANA's ongoing commitment to operational excellence, compliance, and continuous improvement.

The year 2024 was characterized by extensive regulatory activity and the introduction of new European and national requirements:

- Several **addenda to the 2023 regulations** were published, with a strong focus on the **conformity assessment of ATM/ANS ground equipment**.
- At the **ATC level**, ANA worked extensively on the newly revised and amended ATCO (Air Traffic Controller) regulation.
- **Information security** remained a major priority throughout 2024, with new rules introduced for both information protection and associated risk management, and will continue to be a focus in 2025.
- **Aerodrome safety** and occurrence reporting were also key topics, supported by targeted regulatory updates.

At the European level, **Union-wide performance targets** for the ATM network covering the period **1 January 2025 to 31 December 2029** were published in mid-2024, followed later in the year by the adoption of the new **Single European Sky (SES) implementation regulation**, aiming to deliver a more efficient and sustainable airspace.

As part of its ongoing regulatory watch, ANA continued throughout 2024 to monitor, analyse, and implement new requirements, with the support of its specialised units, ensuring compliance and alignment with evolving EU and national frameworks.



Security Management: Enhancing Protection and Resilience

In 2024, ANA further strengthened its **Security Management System (SeMS)** to safeguard personnel, facilities, and information assets, while maintaining operational continuity in an evolving threat environment. The SeMS integrates physical security and cybersecurity under a unified risk management framework, ensuring resilience and compliance across both domains.

Physical security was reinforced through stricter access control standards at all main airside sites. Regular inspections, audits, and tests confirmed full compliance with procedures and effectively prevented unauthorized access. Continuous cooperation between the Security Management and Technical Departments ensured proper maintenance and ongoing improvement of all security installations.

Cybersecurity resilience was enhanced through regular vulnerability assessments and penetration testing, both internal and external, confirming that ANA maintains a strong cybersecurity posture.

Identified improvement areas were promptly addressed, while close coordination with IT ensured that network monitoring, system patching, and incident response procedures followed best-practice standards.

Significant progress was also achieved in **regulatory compliance**, with the adaptation of internal frameworks to meet evolving **NIS2 (EU Directive on Network and Information Systems), CER (EU Critical Entities Resilience Directive)**, and **Part-IS (Information Security)** requirements. Targeted training and awareness initiatives prepared staff for the expanded obligations introduced by these European directives.

All internal and external audit findings were successfully closed during 2024, demonstrating ANA's capacity to respond rapidly and effectively to oversight, while maintaining high levels of compliance and risk control.

Key achievements in 2024 included:

- Strengthened access control systems and full compliance with security procedures;
- Proven cybersecurity resilience through testing and continuous improvement;
- Full closure of all physical and cybersecurity audit findings;
- No major security incidents affecting personnel, infrastructure, or data.

Looking ahead, ANA will continue to **raise security standards** by further enhancing access control and surveillance systems, expanding the scope and frequency of cybersecurity testing, and maintaining strict compliance with European and national security regulations.

By embedding resilience across both **physical** and **digital** domains, ANA remains well prepared to address emerging threats and ensure the continued protection of its people, assets, and operations.

Risk Management System Overview

ANA risk management system focuses on seven principal risks: aviation safety, business continuity, security, occupational health, environment, reputation and finance.

System Maturity and Performance

In 2024, ANA assessed the maturity of its risk management system using a KPI aligned with ISO 31000:2018 standards, achieving a maturity level of 84% — a result that confirms steady and continuous progress.

2024 Key Initiatives

1. **Information Security Risk Assessment and Network Protection:** Strengthened evaluation of physical and information security risks using a same methodology and a unique tool in compliance with the NIS directive and EU Directive 373/2017.
2. **Internal audit performed on Risk Management System.**

Program Management:
Maximizing Benefits through Strategic Coordination

ANA program management framework ensures the effective coordination of related projects to optimize resource utilization, minimize conflicts, and improve organizational performance. Project performance is monitored regularly by ANA management and the Strategic Management Team (SMT), focusing on three key areas:

- **Project Scope Compliance**
- **Resource Management**
- **Adherence to Deadlines**

Future Focus

To address underperformance in project completion, ANA will enhance resource allocation and streamline project management processes in 2024. Strengthened coordination and additional support for complex projects will be key to improving performance.

Oversight and Audits

2024 represented a key milestone for ANA, as significant efforts were dedicated to resolving long-standing nonconformities. An exhaustive oversight plan was carried out by the regulator, focusing on critical areas such as Air Traffic Services (ATS), ANSP organisation, ATCO competence, and the conformity assessment of technical equipment.

This close collaboration enabled ANA to identify weaknesses and strengthen its processes, thereby consolidating compliance and resilience. Thanks to the strong commitment and support of all teams, 2024 concluded with the resolution of an unprecedented number of findings.

Internal Audits and Continuous Improvement

In 2024, comprehensive internal audits were conducted across critical operations, reinforcing ANA's commitment to continuous improvement, quality enhancement, and regulatory compliance. These audits ensured that corrective actions were effectively implemented, strengthening preparedness for evolving regulatory requirements and further embedding a culture of safety and operational excellence.

Supplier Oversight

A new subcontractor supervision process was introduced in 2024 to ensure alignment with ANA's rigorous safety and quality standards. This initiative improved oversight of external operations, enhancing accountability and reinforcing ANA's supply chain management framework.

ISO Certifications and EMAS Regulation

In 2024 ANA successfully renewed its ISO 9001, ISO 14001 and EMAS certifications. This renewal reaffirms ANA's commitment to quality management, environmental responsibility and sustainability, and highlights its continued alignment with international standards and stakeholder expectations.

ANA's Stakeholder Engagement in 2024

In 2024, ANA prioritized proactive collaboration with both national and international stakeholders to ensure alignment with strategic objectives and regulatory requirements. Through transparency and regular dialogue, ANA strengthened trust and reinforced its role as a reliable partner in air navigation services.

National Coordination

Close coordination with the Ministry of Mobility and Public Works ensured consistency between ANA's operational initiatives, strategic planning, and financial frameworks and the government's policy objectives. Regular exchanges allowed ANA to integrate national priorities into its service delivery.

Collaboration with airlines and lux-Airport remained a cornerstone of stakeholder engagement. The Annual Airport User Committee (AUC) once again provided a transparent forum to discuss financial performance and Terminal Navigation Charges (TNC). In 2024, ANA presented its financial results and outlined the cost structure and unit rate calculations for 2025, ensuring clarity for all stakeholders.

International Representation

ANA actively engaged in major international aviation forums, including:

- **Functional Airspace Block Europe Central (FABEC)**
- **EUROCONTROL**
- **Civil Air Navigation Services Organization (CANSO)**
- **International Civil Aviation Organization (ICAO)**
- **Maastricht Upper Area Control Centre (MUAC)**

Through participation in working groups, committees, and workshops, ANA contributed to advancing air navigation services and supporting Luxembourg's regulatory objectives. Virtual meetings allowed ANA to expand its presence and enhance its influence across these international initiatives.

Commitment to Transparency

ANA's stakeholder engagement approach emphasized clear communication and collaboration. By integrating stakeholder input into its operational strategies, ANA demonstrated its commitment to addressing shared challenges and advancing common goals.

This comprehensive engagement strategy highlights ANA's role as a proactive partner in air navigation, ensuring alignment with both national and international priorities.

In 2023, ANA transitioned from operating as a separately managed administrative service to a **traditional administrative structure**, bringing substantial changes to its processes, internal controls, and decision-making procedures.

Under the previous model, ANA received an **annual lump sum from the State** and managed its own liquidity, which allowed for more flexible, needs-based spending. Independent audits were carried out retrospectively on a biannual basis.

With the new structure, implemented in 2023 and continuing in 2024, ANA's **budget is allocated to specific State budget accounts**, with funds strictly earmarked for designated expense categories. In addition, every transaction now requires **prior approval from the financial controller**. While this transition has reduced operational flexibility and lengthened procurement timelines, ANA has successfully adapted by reinforcing internal procedures and aligning its processes with the new budgetary framework.

Financial Evolution and Support

In 2024, the Luxembourg State continued its **financial support for ATM-related investments**, ensuring that the associated depreciation costs were not passed on to airspace users. This support generated savings of approximately **€1.6 million in terminal costs and €0.6 million in En-route ANS services**.

During the same year, **En-route service units grew by 2.7%**, while **terminal activity increased by 1.5%**. As a result, total fees collected from both **En-route and Terminal Navigation Charges (TNC)** reached **€22.9 million**.

2024 Results

The **2024 accounts** provide a consolidated overview of ANA's financial position. Following ANA's **transition in 2023** from a separately managed administrative service to a **traditional administrative structure**, both the 2023 and 2024 accounts have presented complex issues and remain under audit. Once finalised and approved, they will be published on the ANA website in the **'Publications'** section.

A-SMGCS
Advanced Surface Movement Guidance and Control System – a system providing routing, guidance, and surveillance for the control of aircraft and vehicles on the aerodrome movement area.

ACAS
Airborne Collision Avoidance System

ANA
Administration de la Navigation Aérienne – Luxembourg's Air Navigation Service Provider.

ARTAS
ATM Surveillance Tracker And Server

ANSP
Air Navigation Service Provider – organisation responsible for the provision of air traffic control and related services within a defined airspace.

ATC
Air Traffic Control – service provided for the purpose of preventing collisions and expediting and maintaining an orderly flow of air traffic.

ATCO
Air Traffic Controller

ATM
Air Traffic Management – the dynamic, integrated management of air traffic and airspace, including air traffic services, airspace management, and air traffic flow management.

AUC
Airport User Committee - a formal body representing airlines and other operational users of an airport. The AUC is typically consulted on matters such as airport charges, operational performance, quality of service, and infrastructure planning.

AWOS
Automated Weather Observation System – provides continuous, real-time weather data to support flight operations.

CANSO
Civil Air Navigation Services Organisation – global association representing ANSPs.

CCA
Commission Consultative Aéroportuaire – advisory commission representing residents, municipalities, and the Ministry of the Environment on airport-related matters.

CDO
Continuous Descent Operations – a flight procedure that enables aircraft to descend with minimal engine thrust to reduce noise and fuel consumption.

CANSO
Civil Air Navigation Services Organisation – global association representing ANSPs.

CSO
Chief Safety Officer – responsible for overseeing the Safety Management System and safety performance.

EOSM
Effectiveness of Safety Management – a performance indicator within the European Performance Scheme assessing the maturity of an ANSP's safety management system.

EUROCONTROL
European Organisation for the Safety of Air Navigation – intergovernmental organisation supporting the implementation of the Single European Sky.

FABEC
Functional Airspace Block Europe Central – cooperation framework among ANSPs of Belgium, France, Germany, Luxembourg, the Netherlands, and Switzerland.

FIR
Flight Information Region

ICAO
International Civil Aviation Organization – United Nations specialised agency responsible for international civil aviation standards.

ISO
International Organization for Standardization – develops and publishes international standards such as ISO 9001 and ISO 14001.

KPI
Key Performance Indicator – quantifiable measure used to evaluate performance in specific areas (e.g. safety, capacity, environment, cost-efficiency).

LSSIP
Local Single Sky Implementation Plan – national-level plan detailing progress toward implementing the Single European Sky objectives.

MON
Minimum Operational Network – set of essential navigation, surveillance, and communication systems ensuring service continuity in case of system degradation.

NM
Network Manager – operational unit within EUROCONTROL responsible for optimising network-wide air traffic management performance.

NSA
National Supervisory Authority

NIS2
Network and Information Systems Directive (EU)

Part-IS
Information Security requirements under EU Regulation 2023/203

RA
Resolution Advisory (mandatory manoeuvre issued by ACAS/TCAS)

RP3 / RP4
Reference Periods 3 and 4 – multi-year cycles (2020–2024 and 2025–2029) of the EU Performance and Charging Schemes for Air Navigation Services.

SE
System/Equipment (referring to SE incidents)

SES
Single European Sky – EU initiative aimed at improving the efficiency, capacity, and safety of European air traffic management.

SMI
Separation Minima Infringement – an occurrence in which the required minimum separation between aircraft is not maintained.

SMS
Safety Management System – a systematic approach to managing safety, including organisational structures, accountabilities, policies, and procedures.

SWIM
System-Wide Information Management – framework for the exchange and management of aeronautical, flight, and meteorological data within the ATM network.

TCAS
Traffic Collision Avoidance System

TMA
Terminal Manoeuvering Area

TNC
Terminal Navigation Charges – fees applied to recover the costs of terminal air navigation services provided to aircraft during approach and departure phases.

VCS
Voice Communication System – infrastructure allowing secure and efficient communication between air traffic controllers and pilots.

Tonnes (t)
Metric unit of mass equal to 1,000 kilograms. Used as the standard measure for freight and emissions in European aviation reporting.

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