ANA
Administration de la navigation aérienne

EMAS
LU - 000008

ENVIRONMENTAL STATEMENT

INCLUDING FACTS AND PERFORMANCE DATA FROM 2019 TO 2023

2024

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ANA ENVIRONMENTAL STATEMENT 2024

01

FOREWORD

As we reflect on the environmental milestones achieved in 2023, we are proud to present our 2024 Environmental Statement. This past year has been a significant one for our administration, marked by many advancements in our commitment to sustainability and environmental stewardship.

One of the year's highlights was assuming the chairmanship of FABEC. This esteemed role was both an honour and a significant responsibility, underscoring our dedication to excellence in air navigation services.

In our ongoing efforts to mitigate noise pollution, we implemented a key change in our noise abatement procedures. By raising the GTQ turning point from 2200ft to 2700ft, we have reduced the noise impact on surrounding communities. This adjustment demonstrates our commitment to minimizing the environmental footprint of our operations while maintaining the highest standards of safety and efficiency.

Furthermore, we are pleased to announce the renewal of our EMAS registration and our ISO 14001 certification. These certifications reflect our rigorous adherence to international environmental standards and our unwavering dedication to continuous improvement in our environmental performance.

In collaboration with Skeyes, our neighbour ANSP from Belgium, we proudly co-led the publication of the EASA/Eurocontrol report titled *"Step by Step Guide to Measure, Reduce & Report Your ANSP's Carbon Footprint"*, which provides an overview of actions ANSPs can take to reduce their environmental impact.

As we look ahead to 2024 and beyond, we remain steadfast in our commitment to environmental excellence. The achievements of 2023 set a strong foundation for future initiatives, and we will continue to innovate and lead in the pursuit of a greener, more sustainable aviation industry.

Sincerely,

Claudio Clori
Director ANA

Yves Becker
Environment Manager

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COMPANY PROFILE

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MISSION AND RESPONSIBILITIES

We, the Air Navigation Administration ANA, under the authority of the Ministry of Mobility and Public Works, are the Air Navigation Service Provider (ANSP) in Luxembourg, responsible for the safety and efficiency of flights.

ANA is responsible for the management and operation of a significant part of the airport surface area, where it provides air traffic control (ATC) services, operates the airport's radionavigation, surveillance and communication equipment, maintains electrical infrastructure and lighting, provides meteorological and aerodrome information services, and carries out daily inspections, winter operations and coordinates work on the manoeuvring area.

ANA's mission is to ensure a safe, efficient and environmentally friendly flow of traffic in national and delegated airspace, as well as on the airfield.

To ensure safe air traffic, ANA goes beyond the efficient allocation of skills, technologies and procedures. Our organisational culture fosters cohesion, serenity, satisfaction, pride, respect, openness, skills and personal development as important ´levers´ for motivation, commitment and performance in all important areas and activities. This includes the environment in which we live and operate as a strategic objective.

By fostering active participation, we encourage the innovation that is needed to respond effectively to current and future challenges of air traffic safety and for the sustainable development of our services.

02

SERVICES AND FUNCTIONS

The seven departments — Finance, Administration, Certification (including the Environmental Cell), Air Traffic Control, Technical, Aeronautical, and Meteorological — form an integrated management structure with allocated tasks.

In 2023, 19 new agents were recruited, and 7 people left ANA. This new recruits included:

- 8 ATSEPs (Air Traffic Safety Electronics Personnel) for the CNS (Communication, Navigation, and Surveillance) department
- 1 ATSEP for the Meteorological department
- 1 engineer for the IT department
- 1 new Health and Safety Officer
- 4 agents for the Certification department (3 in Quality and 1 in Safety)
- 1 economist to the Finance department
- 1 new Communications Manager
- 1 agent for the HR department
- 1 electrician for the ELE department

02

SERVICE LOCATIONS AND BUILDINGS

Actual locations

Since its creation in 1949, ANA has regularly changed the use and location of its buildings as a result of its different activities and growth. Today, ANA agents work in the following buildings.

Administration building

Built in 1949, the building, which at the time included the control tower, became operational on 15 February 1950. The construction of the airport's Terminal A in 1975, and later the construction of the new tower building (BTO) in 1993, led to a dispersal of services over different sites.

Today, the building is mainly used as an office block. The management, the administrative departments, including general affairs, human resources, the certification department, including the environmental manager, the finance department and part of the meteorological department work in the administrative building.

In 2018, a containerised annex was added next to the administration building, housing the IT department, the technical meteorology department (METTECH) and the facilities department. ANA has been using 100% green, emission-free electricity for all its buildings for several years. The administrative building is still heated by an oil-fired boiler, which was replaced in 2015. Its tanks hold 6,000 litres of fuel.

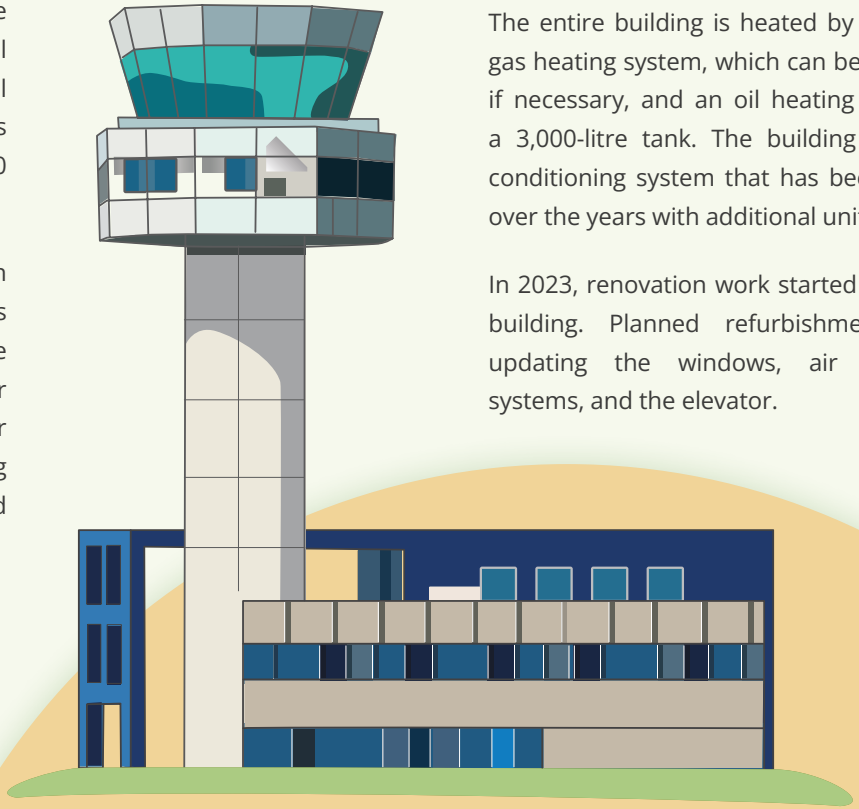
Most of the offices are equipped with an air-conditioning system, which is maintained as scheduled. The same maintenance interval is observed for the heating system. The container annex is heated by an air-conditioning system; electric radiators are installed for supplementary heating if required.

Tower building (BTO)

Construction of the current control tower and associated technical facilities began in 1989 and was inaugurated on 17 April 1993. The tower building (BTO) is ANA's main operational site. Approach and tower services operate from this building. In addition to air traffic services, the CNS (communication, navigation, surveillance) department is located here.

The entire building is heated by a petroleum gas heating system, which can be switched to, if necessary, and an oil heating system with a 3,000-litre tank. The building has an air-conditioning system that has been upgraded over the years with additional units.

In 2023, renovation work started in the tower building. Planned refurbishments include updating the windows, air conditioning systems, and the elevator.



ELE building

The ELE building was constructed in the 1980's. It houses offices for the ELE agents, a workshop, a meeting room and garages for the ELE fleet of cars. The building is heated by an oil-fired boiler renewed in 2016. Its fuel tanks hold 8000 litres of fuel and are located in the building next to the ELE building.

AER building

The AER building is a container building built in 2018. It comprises two office containers, one housing the inspectors, the other the department heads and a trainer. It also includes the driving license simulator and two garages for vehicles. It is heated by electric radiators and has a septic tank for the toilets. Air conditioning is installed and maintained by the container owner.

The container building is a temporary solution. AER inspectors will be integrated with Lux-Airport inspectors, and the development of a common building is still under discussion.

Additional rented offices

Eight additional office spaces are rented from Lux-Airport S.A.: Operations offices - one for the meteorological (MET) department and one for the aeronautical operations (OPS) department, offices for the head of MET and OPS, a terminal charges billing office, restrooms, a kitchen and a meeting room. These were inaugurated in April 2008 and are located in the Terminal A building at Luxembourg airport. Three other offices are located in the Lux-Airport administration building close to the ANA Administration building. All environmental aspects (heating, water and energy) are included in the fees paid by ANA under the responsibility of Lux-Airport and are not included in ANA's core indicators.

Technical buildings

All the 22 technical buildings on and around the airport perimeter contain highly sensitive technical equipment essential to the provision of air traffic management (ATM) services. These buildings are not equipped with ordinary heating systems, as the technical installations produce sufficient thermal energy. However, all technical buildings are equipped with an air-conditioning system. Electric heaters are used when required for maintenance purposes. Other technical stations are located at remote sites in Diekirch, Roodt-Syr, Berg and Leudelange.

A technical station, the ´Emission centre´, which houses radio equipment and transmission and reception antennae for ATC, situated north of the runway, is equipped with gas heating. The site's gas consumption is included in the figures for the respective measurements and basic performance indicators.

Emergency generators and their fuel tanks are located in 5 different stations. The quantity of fuel stored is a maximum of 32.810l, which is distributed in 9 different reservoirs.

Skypark project

ANA is participating in the 'Skypark' construction project in collaboration with its owner, Lux-Airport. Our aim is to relocate ANA's management and support teams to this new building by the end of 2025.

The new building, which is currently getting built with a timber frame, aims to be a benchmark for sustainability and environmental awareness. As such, it will incorporate the latest sustainable technologies such as photovoltaic energy supply, rainwater harvesting, ecological facades, green roofs and terraces, as well as energy reduction due to heat retention by a green layer. 'Skypark' will give ANA the opportunity to work in a motivating and rewarding environment, and to bring together in a single location a large number of agents currently spread across several buildings.

Relocation of ANA offices

The old buildings and annexes limit energy savings opportunities or the use of modern technologies to save energy and resources. Hence the new building concepts currently under development, with the objectives to bring services closer together, achieve synergies save resources and protect the environment. From 2025, ANA services will be relocated into the Skypark building.

New Tower building project

Another construction project currently under study involves moving the operational teams to a new control tower. The current control tower dates from 1993 and needs to be completely renovated. This would require a very substantial investment. Moreover, its current position, facing south (into the sun), is not optimal from an operational point of view.

Consequently, ANA, in agreement with its supervisory ministry, the Ministry of Mobility and Public Works, has decided to invest in a study to plan the construction of a new control tower. The objectives of this project are to guarantee high quality air traffic control operations with state-of-the-art equipment and technology. A further positive impact would be to reduce noise pollution for local residents by implementing a new standard circuit in the north, an area of land mainly covered by forests and fields.

The new tower is planned to be constructed on the southern side of the runway, near India intersection. Lux-Airport will be the project's contractor. Several coordination meetings between ANA and Lux-Airport have already taken place, and the proposed location has been verified to comply with existing runway protection zones. Initially, we aimed to have a preliminary project design ready by the end of 2025. However, due to delays in the location evaluation and authorization processes, this timeline has been adjusted to end of 2025.

03

ENVIRONMENTAL MANAGEMENT SYSTEM

03

ANA ENVIRONMENTAL POLICY

Policy

The Air Navigation Administration (ANA) is responsible for ensuring safe and efficient flight operations in its airspace as well as at Luxembourg airport.

ANA, within all areas and activities under its control, will seek to implement all measures and best practices to reduce its environmental impacts and improve its environmental efficiency while considering economic and sustainability aspects, in a manner that is consistent with its legal and regulatory obligations, and with its safety and quality policies.

ANA will motivate its agents, the airport community, airlines as well as local residents to ensure sustainability of resources and protection of the environment.

ANA's Environmental Approach is not only limited to those business activities, services and locations directly under the control of ANA but extends as well to all of its stakeholders.

The Environmental Management System, registered LU-000008 under EMAS regulation and ISO 14001 certified, is an integral part of the Integrated Management System and is in line with ANA policy, mission and vision.

03

Commitments:

- Foster a culture of environmental consciousness by encouraging agents to integrate sustainable practices into their work whenever possible.
- Co-operate with government authorities, the community and other stakeholders to improve environmental protection practices, encourage the use of sustainable resources, the protection of biodiversity and ecosystems and the adaptation to climate change.
- Prevent pollution and minimize the environmental impact caused by the operations within its areas of control, as well as by its administrative and procurement activities.
- Purchase energy from renewable sources as well as sustainable products wherever feasible (e.g. recycled, FSC or low environmental impact products) and manage internal projects by assessing their environmental impact.
- Prevent pollution that may arise as a result of its internal activities and minimise waste through the careful and efficient use of materials.
- Conduct environmental monitoring of ongoing operations at the airport of Luxembourg by setting environmental key performance indicators and ensure continuous improvement of its environmental performance.
- Reduce noise and gaseous emissions by adopting efficient operational procedures, resulting in less consumption of aircraft fuel.
- Ensure compliance with applicable environmental legislation and regulations, as well as achieving relevant environmental standards in all areas of internal operations.
- Reduce internal CO2 emissions to reach carbon neutrality by 2030, while contributing to the aviation industry's target of net zero by 2050.

OUR STAKEHOLDERS

In the context of the Green Deal and the Paris Agreement, both aimed at avoiding dangerous climate change, ANA participates in external environmental working groups, such as the EASA and Eurocontrol Environmental Transparency Working Group and the FABEC Working Group Environment.

The Environmental Transparency Working Group has developed proposals on how ATM/ANS providers can increase their collective disclosure and reporting of environmental performance using relevant and appropriate metrics and on how providers can improve their organisation's environmental footprint. The ATM/ANS Environmental Transparency Working Group was set up as part of the EASA-Eurocontrol Joint Work Programme to support EASA's Sustainable Aviation Programme. Its aim is to *"develop proposals on how ATM/ANS providers can increase their collective disclosure and reporting of environmental performance using relevant and appropriate metrics, share best practice for measuring environmental benefits and demonstrate their efforts to support the ambition of a net zero industry"*.

The *"Step by Step Guide to Measure, Reduce & Report Your ANSP's Carbon Footprint"* outlines what ANSPs can do to control their own environmental impacts, and provides readers with the knowledge, skills and tools to apply carbon foot printing to their own ANSP's business processes. ANA, in cooperation with Skeyes, as co-chairs of the Pillar 3 ATM/ANS Environmental Transparency Working Group, organized a series of sustainability-focused webinars that concentrated on improving ANSP's environmental footprint. The result of this fruitful collaboration was this report. Another report was also published: *"Critical review of ATM/ANS environmental performance measurements".* This is an inventory of existing and future environmental indicators that could be used to measure ATM/ANS environmental performance.

As already mentioned, ANA was also chairing the Functional Airspace Bloc Europe Central (FABEC) in 2023. Moreover, ANA is permanent member in the FABEC Working Group Environment (FABEC WG ENV). FABEC WG ENV is a body within the FABEC governance structure for ANSP cooperation within FABEC. The FABEC WG ENV is responsible for preparing FABEC's environmental policy and ensuring the integration of the environmental pillar into ATM system performance optimization.

National Stakeholders

Over the past few years, the Environmental Management System has pursued the common obligation to address the shared responsibilities of ANA and Lux-Airport, and their home-based carriers Cargolux and Luxair, on their environmental impact and in particular air, water, soil, flora and fauna, noise and energy. The aim is to develop measures and agree on mutual environmental performance indicators as part of the airport's ATM (Air Traffic Management) master plan and CDM (Collaborative Decision Making), and to work together on a common charter. The Luxembourg Airport Environmental Committee has been organized periodically since 2020.

In 2023, Luxembourg Air Rescue and CGDIS also became active members of the Luxembourg Airport Environmental Committee, reinforcing the collaborative efforts towards environmental sustainability.

ANA is also in constant dialogue with the local residents, and actively contributes to the "Noise Action Plan" and the "Airport Consultative Commission" of the Ministry of the Environment, Climate and Sustainable Development, in cooperation with the Environment Agency. Other regular meetings are organized with citizens' associations. ANA is also represented on the Aerodrome Safety Team (AST) and the Runway Safety Team (RST), together with all the players involved in the airport.

03

RESPONSIBILITIES OF THE ENVIRONMENTAL MANAGEMENT SYSTEM

Our Environmental Management System (EMS) has been ISO 14001:2015 certified since November 2017. In November 2023, ANA's environmental management system was successfully recertified to EMAS and ISO 14001:2015. The next surveillance audits are scheduled in 2024 and 2025. ANA was EMAS registered in December 2020, with registration number LU-000008. The next environmental declaration will be published on by December 1, 2025.

ANA's director has appointed a management representative for the environment, a function known as the "Environmental Manager". With the support of the management team, the Environmental Manager is responsible for the ongoing progress of the system. Each department head has specific objectives linked to the environmental aspects of their activities. The Environment Manager ensures the improvement, maintenance and review of internal environmental management structures, procedures and processes in all departments and at all levels of ANA, and reports directly to the director.

Internal environmental audits

The internal audit, the cornerstone of the EMS, is defined with the following objectives:

- Determine whether the environmental management system meets the requirements of ISO 14001 and the EMAS Regulation,
- And has been correctly implemented and kept up to date,
- Ensure that the organisation's management obtains the information it needs to review the organisation's environmental performance,
- Verify the effectiveness of the environmental management system.

We carry out audits on an annual basis, as this helps to demonstrate that we are in control of our significant environmental aspects, with all activities audited over a three-year cycle on the organisation's environmental performance and compliance in line with the requirements of EMAS and ISO 14001.

Management review

Based on the information provided by the environmental manager, management carries out annual management reviews, presenting issues that need to be revised or adapted, and agreeing new initiatives, objectives and actions.

The Environmental Review takes place biannually ensuring that each topic of the standing agenda is reviewed at least once a year, at either one or the other meeting. The items covered as a follows:

- Compliance status of our EMS
  - External audits, certification & registration
  - Results of internal audits including evaluation of legal compliance
- Environmental action plan
  - Status of corrective and preventive actions
  - Follow-up to previous Environmental Review
- Environmental Direct and Indirect Aspects Analysis
- Communication and Communication Plan
- Complaints: Noise plan and citizen complaints
- EMS Stakeholders list and feedback
- Environmental Risk & Opportunities analysis
- ANA's core environmental performance indicators
- Regulatory compliance
- ANA's carbon footprint calculation
- Update on related projects
- Recommendations for improvement, next steps & environmental objectives

To improve the environmental system, the committee will together determine the priorities and allocation of financial and human resources required for this purpose.

Environmental risk management

The analysis of environmental risks and opportunities is reviewed yearly by assessing the effectiveness of the measures taken, based on a series of performance indicators, and by determining whether any new risks or opportunities have arisen. Residual risks were recalculated, and the environmental action plan was redefined according to priorities. The results of this review were validated at the half-yearly environmental review.

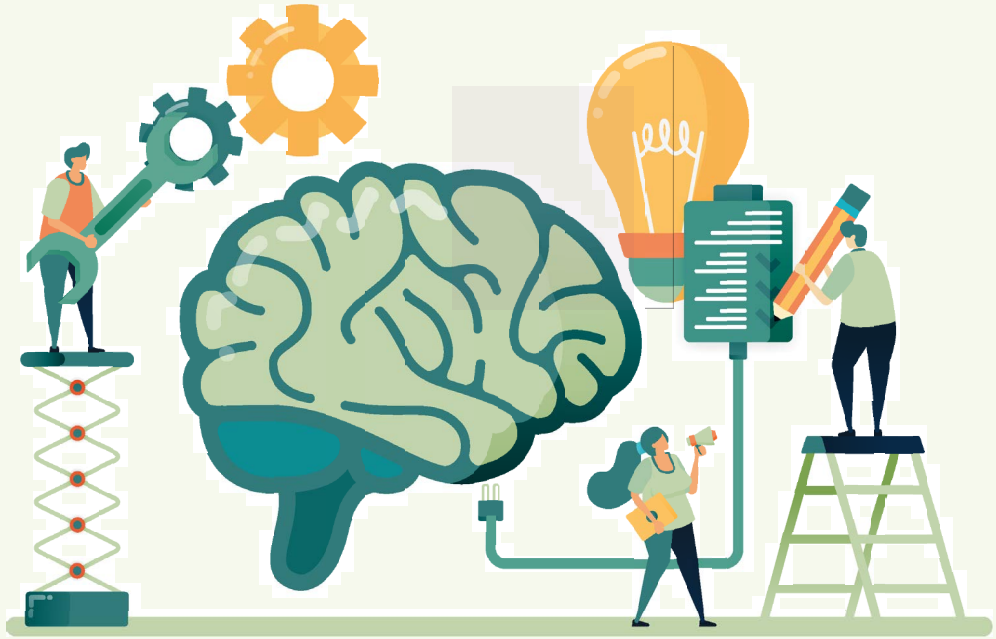
Awareness-raising

We continually invest in improving environmental awareness among all agents. An awareness booklet has been developed to share best practices related to individual carbon footprints. The awareness booklet can be downloaded from our website, and was also shared with external stakeholders. The ongoing research and implementation of more sustainable consumables has been and will be discussed, and we will assess whether dedicated workshops for ANA agents can be organized to understand the key issues of climate change, take appropriate action and focus on raising awareness of energy and resource consumption. We have designed the EMS as a dynamic system. Every agents can and must participate in the EMS development process and must contribute to the achievement of environmental objectives.

As part of the EMAS registration, ANA organizes annual trainings on the subject of environmental protection and the environmental management system for all agents, including management.

In addition, environmental newsletters are published regularly, presenting environmental issues, information and news.

Moreover, we are improving environmental awareness among our suppliers. An information flyer on the respect for the environment is handed over to all suppliers during a short environmental briefing. Furthermore, environmental clauses were added in our submission requirements and in our project request forms.



04

DIRECT AND INDIRECT ENVIRONMENTAL ASPECTS AND IMPACTS

04 Table of direct aspects and their environmental impacts

Environmental Aspect	Impact	Means of Influence or Control
Purchasing of ANA ANSP equipment	Emissions	• Purchasing procedures, Project management
	Material	
	Waste (equipment lifecycle)	
	Energy	
Purchasing of ANA office materials	Emissions	• Purchasing procedures, Project management
	Material	
	Waste	
	Energy	
Implementation, use & maintenance of ANA ANSP equipment	Emissions	• Purchasing procedures, Project management, Maintenance procedures, equipment follow up
	Material	
	Waste (equipment lifecycle)	
	Energy	
Car fleet management	Material	• Water for cleaning recycled (if possible) or filtered
	Emissions	• Measure consumption
	Waste (equipment lifecycle)	• Waste policy
	Energy	• Use of vehicle
Use of hazardous products	Material	• Measure consumption, chemicals procedure, waste procedure
	Waste	
	Water	
Use of Office	Material	• Measure consumptions, Waste procedure, resources procedure, Training & Communication
	Waste	
	Water	
	Energy	
Facility management & maintenance	Material	• Measure consumptions, Waste procedure, resources procedure, maintenance procedure
	Waste	
	Water	
	Energy	
	Emissions	
Internal transport (on airport / between ANA facilities)	Material	• E-bikes for agents, purchasing policy for vehicles (e- or plug-in hybrid), communication
	Emissions	
Business travels	Emissions	• switch to public transport or green mobility
	Material	• internal policy (car vs. planes), measure Co_2 impact and resources used*

The table of aspects and impacts has been revised and divided into two tables. The first table groups direct aspects, for which the ANA has direct responsibility and control, enabling it to focus on the identified actionable items. The second table presents indirect aspects, resulting from interaction with third parties, including other stakeholders and subcontractors over whom the ANA may have influence.

The logic, in the direct and indirect environmental aspects and impacts analysis and in all other environmental documentations, is to follow the EMAS environmental pillars – Energy, Material, Water, Waste, Biodiversity and Emissions.

Table of indirect aspects and their environmental impacts

Aspect	Impact	Means of Influence or Control
Aircraft approach, take off, VFR traffic	Emissions	• ATC, airlines procedures, Charging fee per aircraft type, Night curfew quota, CDO/PBN procedures
	Energy	
Aircraft on ground (taxiing, reverse thrust, engine test, auxilary power supply)	Emissions	• ATC, airlines, aerodrome procedures
	Energy	
Maintenance of airport infrastructure / surface & Inspections*	Emissions	• Coordination meetings, Project management procedure, inspection: fuel and oils spills detection, FOD, etc.
	Waste	
	Energy	
Purchasing of AER equipment	Emissions	• Purchasing procedures, Project management
	Material	
	Waste	
Implementation, Use & Maintenance of AER equipment	Emissions	• Purchasing procedures, Project management, Maintainance procedures, equipment follow up
	Material	
	Waste	
	Energy	
De-icing of manoeuvring area	Material	• Friction test info, Winter operations procedure, rain water treatment
	Water	
	Emissions	
	Energy	
Biodiversity (wildlife, flora and fauna management)	Biodiversity	• Airside and surroundings inspections, Honey production, biodiversity surveys
Commuting to work	Material	• Free public transport as of March 2020, charging station for e-cars, communication
	Emissions	

05

ENVIRONMENTAL GOALS

05

The targets and objectives of the environmental program are directly observable and quantifiable. The transposition and resulting actions (in the case of quantitative targets) or observations (qualitative events) of the targets are shown in the table below.

The targets are directly linked to ANA's main environmental performance indicators (core indicators) (the ´6 pillars´) and to the corresponding chapters in this document.

For each core indicator, the results achieved in relation to the targets set are measured, verified, and evaluated on an annual basis. Each core indicator is linked to environmental objectives and to the environmental program. The aim of these efforts is to achieve continuous improvement in our environmental impact, in line with ANA's environmental policy and supported by specific projects and environmental actions.

TABLE OF ENVIRONMENTAL GOALS

Pillar	Goal	Goals	Objective	Objectives	Baseline	Status 2023	Responsibility for the objective	Metric	Target for 2024 (unless another year is stated)
Governance	1	Achieve relevant environmental standards and requirements in all areas of its internal operations.	O1.1	Retain ISO 14001 certification	2017	Finalised	ENV/DIR	ISO 14001 certificate	ISO 14001 certificate
			O1.2	Retain EMAS registration	2020	Finalised	ENV/DIR	EMAS registration	EMAS registration
			O1.3	Retain "SuperDrecksKescht" certification annually	1998	Finalised	ENT	"SuperDrecksKescht" certification	"SuperDrecksKescht" certification
			O1.4	Implement ESR project	2024	Agreed	ENV/HR/DIR	ESR certification by INDR	ESR certification by INDR (2025)
	2	Manage internal projects by assessing their impact on the environment	O2.1	Enhance eco-responsible project management	2021	Agreed	ENV/DIR	% new projects with impact assessment	100% new projects with impact assessment
Energy	3	Purchase energy from renewable sources	O3.1	Maintain green electricity (neutral scope 2 emissions)	2017	Finalised	Ministry / DIR	Green electricity certificate	Green electricity certificate
	4	Manage use of energy resources	O4.1	Enhance LED technology & decommissioning of old equipment	2020	Agreed	ELE/Lux-Airport ATC	% LED replacement Reduction of electricity consumption	100 % LED replacement (2025) Reduction of electricity consumption
			O4.2	Reduce fuel and gas consumption	2021	Agreed	ALL	Reduction in fossil resources consumption per FTE until 2030	50% reduction in fossil resources consumption per FTE (2030)
			O4.3	Source neutral gaz	2024	Proposed	DIR	Carbon neutral Gaz certificate	Feasibillity study and cost analysis (cf O14.2)

Pillar	Goal	Goals	Objective	Objectives	Baseline	Status 2023	Responsibility for the objective	Metric	Target for 2024 (unless another year is stated)
Material 	5	Purchase sustainable products wherever feasible [e.g. recycled, FSC or low environmental impact products]	O 5.1	Maintain purchase of CO_2 neutral and recycled paper	2021	Finalised	ADM/DIR	% CO_2 neutral and recycled paper	100% CO_2 neutral and recycled paper
			O5.2	Purchasing policy for sustainable products	2024	Proposed	ENV/DIR	Create and implement Purchasing Policy	N/A
	6	Enhance environmental considerations in procurement decisions where appropriate	O 6.1	Include request for a product life cycle assessment and end of life disposal guidelines in public submission	2022	Proposed	DIR/LEG	Number of public submissions to request a product life cycle assessment and end of life disposal guidelines	100% of public submissions to request a product life cycle assessment and end of life disposal guidelines
	7	Manage use of natural resources	O 7.1	Reduce paper consumption	2022	Agreed	ALL	Reduction of paper consumption in sheets per employee	Paper consumption in sheets per employee below 1500
Water 	8	Manage use of water resources	O 8.1	Reduce water consumption linked to internal activities	2021	Agreed	ALL	Water consumption reduction in 2023	Water consumption reduction by 3%
Waste 	9	Prevent pollution that may arise as a result of its internal activities and minimize waste through the careful and efficient use of materials.	O 9.1	Retain SuperDrecksKescht certification annually	2017	Finalised	ENT/ENV	SuperDrecksKescht certificate	SuperDrecksKescht certificate
			O 9.2	Maintain Zero Single-Use Plastic Manifesto	2020	Finalised	ENV	Signed manifesto & Single-Use Plastic reduction	Signed manifesto & Single-Use Plastic reduction
			O 9.3	Reduce domestic & special waste	2021	Agreed	ALL	Domestic waste production reduction	Domestic waste production reduction by 3% to 7.7 tons Carton/paper waste: 4 tons
Biodiversity 	10	Protect flora and fauna around the airport	O 10.1	Maintain bee project with Lux-airport	2020	Finalised	ENV/DIR	Honey production in kg	Maintain Honey production

Pillar	Goal	Goals	Objective	Objectives	Baseline	Status 2023	Responsibility for the objective	Metric	Target for 2024 (unless another year is stated)
Emissions 	11	Reduce internal CO_2 emissions	O11.1	Calculate carbon footprint for scope 1 and 2	2021	Finalised	ENV	Carbon footprint yearly	Carbon footprint calculation
			O11.2	Reduce Scope 1 mobile emissions (fuel consumption from cars)	2018	Finalised	DIR/ENV	Average CO_2 emission per car in gr/km	Target emission per car: 120 gr/km For 2030: 0 emissions from car fleet
			O11.3	Reduce other scope 1 emissions (linked to O4.2, O4.3 and O3.1)	2021	Agreed	ALL/ENV/DIR	Carbon neutral by 2030 (Metrics linked to 04.2 and 03.1)	Carbon neutral by 2030
	12	Reduce gaseous emissions and saving aircraft fuel	O12.1	Enhance Tools for environmental performance	2022	Agreed	CERT	Reduced aircraft CO_2 and/or noise emissions	Reduced aircraft CO_2 and/or noise emissions
			O12.2	Enhance CCO application	2022	Agreed	ATC/ENV	Reduced aircraft noise emissions	Reduced aircraft noise emissions
			O12.3	Enhance CDO application	2019	Agreed	ATC/ENV	Reduced aircraft noise emissions	60.5% of CDO application
	13	Reducing noise emissions and saving aircraft fuel	O13.1	Enhance noise measurement	2024	Proposed	ENV/ATC	Explore operational KPI to measure ENV (noise) impact	N/A
			O13.2	Manage curfew extensions	2021	Finalised	CERT/DIR	Nb of curfew granted	Grant maximum 95 curfew extension per year
			O13.3	Collect, investigate and address noise complaints to the right stakeholders	2020	Proposed	ENV	Nb of noise complaints	Register of noise complaints
	14	Carbon neutrality	O14.1	Enhance home office if possible within employee tasks	2024	Agreed	DIR	Nb home office days/ week	Carbon neutral by 2030
			O14.2	Feasibility study: neutral gas	2024	Agreed	ENV/DIR	CO_2e reduction	N/A
			O14.3	Cost and impact study for Renovation of ELE building	2025	Agreed	ENV/DIR/ELE	CO_2e reduction	Carbon neutral by 2030
			O14.4	Feasibility and timeline study for Full electrical or plug-in hybrid car fleet	2025	Agreed	ENV/DIR	CO_2e reduction	Carbon neutral by 2030
			O14.5	New buildings - Skypark&Tower building	2026	Agreed	DIR	CO_2e reduction	New mix of energy certified neutral by 2030
			O14.6	Reduce emissions in Scope 1&2 to zero (carbon neutrality)	2023	Agreed	ENV/DIR/ALL	CO_2e neutrality (Scopes 1 & 2)	Carbon neutral by 2030

06

THE 6 ENVIRONMENTAL PILLARS

WITH ANA'S EMAS CORE INDICATORS

06

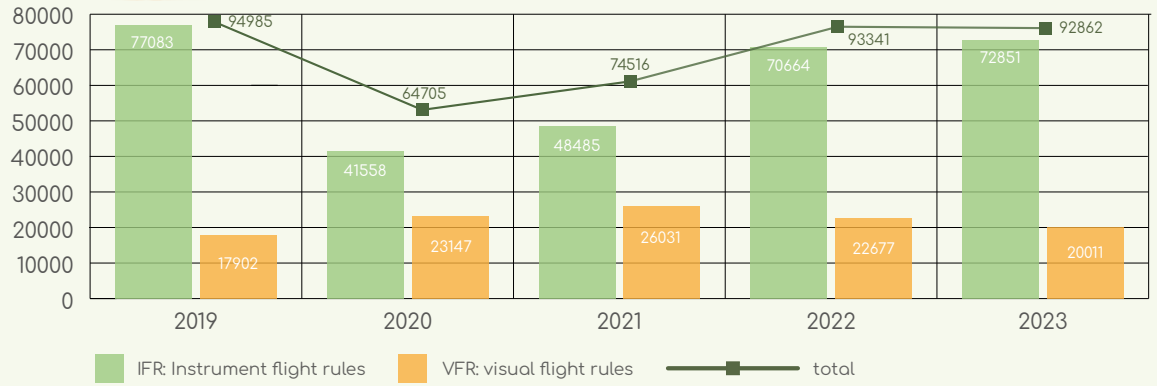
REFERENCE VALUES

Introduction

To facilitate meaningful comparisons, ANA employs benchmark data encompassing both aircraft movements and full-time equivalents (FTEs) as reference points for contextualizing raw data across different core indicators in each annual analysis. This approach illuminates nuanced trends within the indicators.

Full-time equivalent (FTE) values serve as the basis for a more precise assessment of consumption in terms of percentage per agent, while the number of aircraft movements enhances the comparative analysis of operational metrics relative to the volume of traffic.

NUMBER OF AIRCRAFT MOVEMENTS ON ELLX



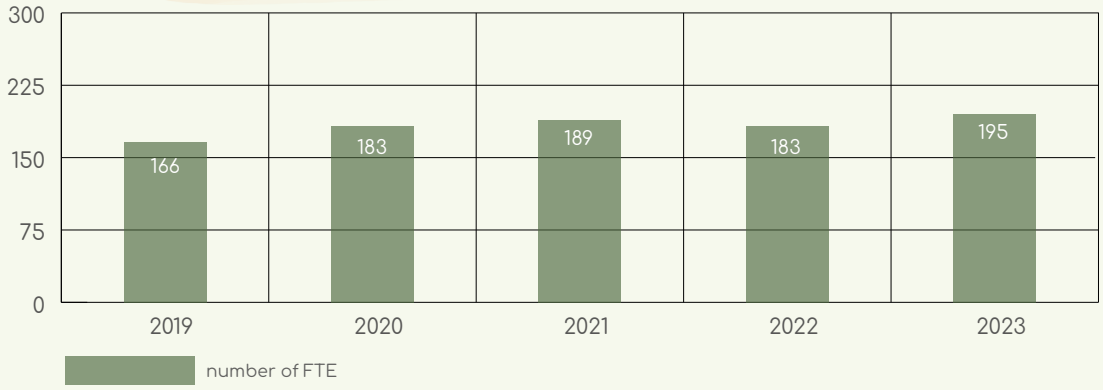
NOTE

Air traffic has returned to pre-pandemic levels (base year 2019), with a notable increase observed in 2022 and 2023. In 2023, international flight movements increased by 3% compared to 2022. However, local flights fell by almost 12%

TARGET

The reference values have no target.

NUMBER OF FTE (FULL TIME EQUIVALENT)



NOTE

ANA had an increase of 12 FTE in 2023. Details can be found in the chapter services and functions.

Due to the implementation of a new Enterprise Resource Planning Software (ERP) the FTE count has been adjusted for 2022 from 180 to 183. All figures per FTE for 2022 consider this new value.

TARGET

The reference values have no target.

06

ENERGY

Introduction

ANA's main energy consumers are its technical equipment for communication, navigation, surveillance and airfield lighting. Several energy-reduction projects have already been implemented in recent years, such as the switch to LED technology on the manoeuvring area and in our office buildings. Our eco-responsible project management, the decommissioning of NDBs (Non-Directional Beacon) and awareness campaigns for our agents with newsletters, training, poster, and social media campaigns, etc. are other measures which have already led to a reduction of our energy consumption.

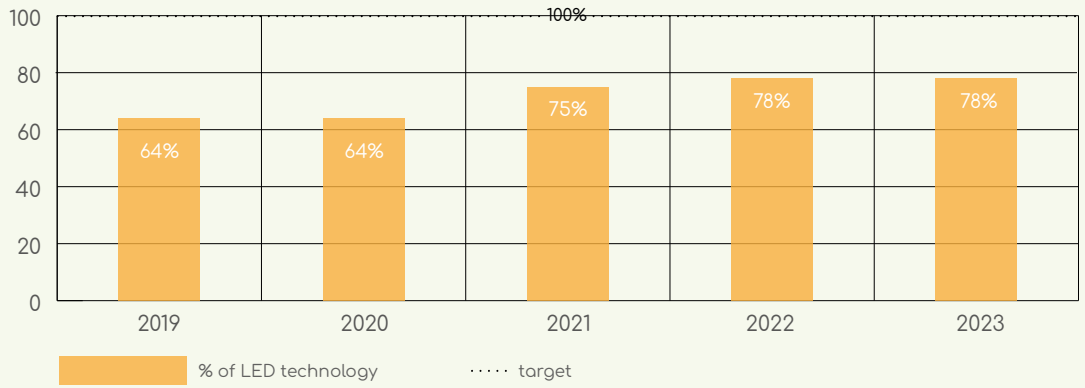
Objectives

- **02.1:** Enhance eco-responsible project management
- **03.1:** Maintain green electricity
- **04.1:** Enhance LED technology decommissioning of old equipment
- **04.2:** Reduce fuel and gas consumption

Using LED technology

As part of the runway refurbishment, new LED lights and associated power supplies in and around the runway have been replaced. Following the refurbishment work (which began in April 2021 and was scheduled to run until October 2022), all the lights on the runway (with the exception of the approach lighting systems) have been replaced with this sustainable, energy-efficient technology.

% OF LED TECHNOLOGY ON MANOEUVRING AREAS



NOTE

The runway lighting has been replaced with the exception of the approach lights and some remaining taxiway edge lights. Approach lights are planned to be renewed in 2025 and the remaining taxiway edge lights will be replaced during the taxiway refurbishment project.

TARGET

100 % LED replacement by 2030.

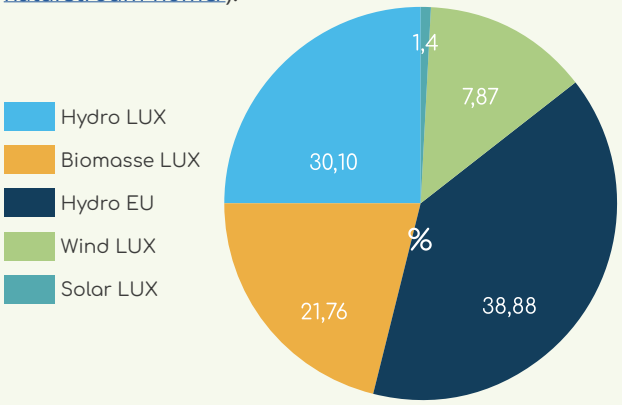
Stable over the last 2 years. Positive trend towards 2030 target will be achieved with the approach lights replacement and the taxiway refurbishment project.

Eco-responsible project management

ANA has developed an environmental impact assessment to classify projects and major activities on a common scale. Before launching a project, we identify the conditions necessary for its implementation as well as the possibility and chances of success of an environmentally friendly approach. In this context, the environmental impact of our projects is assessed both locally and globally.

Supply of ´Green´ electric power

ANA's choice for its electricity supply is 100% European and 100% CO2-free. The electricity purchased is supplied by 30.10% hydropower from hydroelectric power stations in Luxembourg, 38.88% hydropower from hydroelectric power stations in Europe, 7.87% wind power in Luxembourg, 21.76% biomass production in Luxembourg and 1.4% Luxembourg photovoltaic installations. Please note that the composition of green energy can change as it depends on natural resources. Overall, ANA saved 1261 tonnes of CO2e in 2023 thanks to its green electricity (source: ANA 2022 carbon footprint calculation – nova naturstroum: https://www.enovos.lu/en/individuals/electricity/nova-naturstroum-home/).

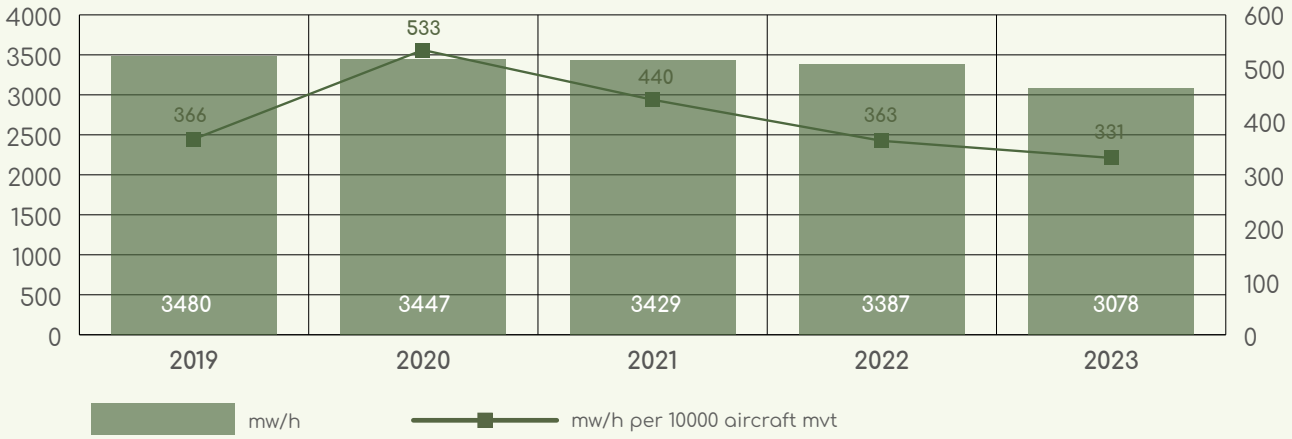


Electricity mix by Enovos (status: 15.11.2024)

Decommissioning of NDB's

The decommissioning of NDBs (non-directional beacons) has positive effects on the environment. NDBs are radio beacons used in aviation for navigation purposes, particularly during non-precision instrument approaches and en-route navigation. Their operation requires a continuous power supply, generally in the form of electricity. Taking them out of service results in reduced energy consumption, less maintenance and a decrease in operating costs. In order to ensure the transition to more environmentally friendly Performance Based Navigation (PBN), the ANA has decommissioned all NDBs in Luxembourg by the end of 2022.

ELECTRICITY CONSUMPTION



NOTE

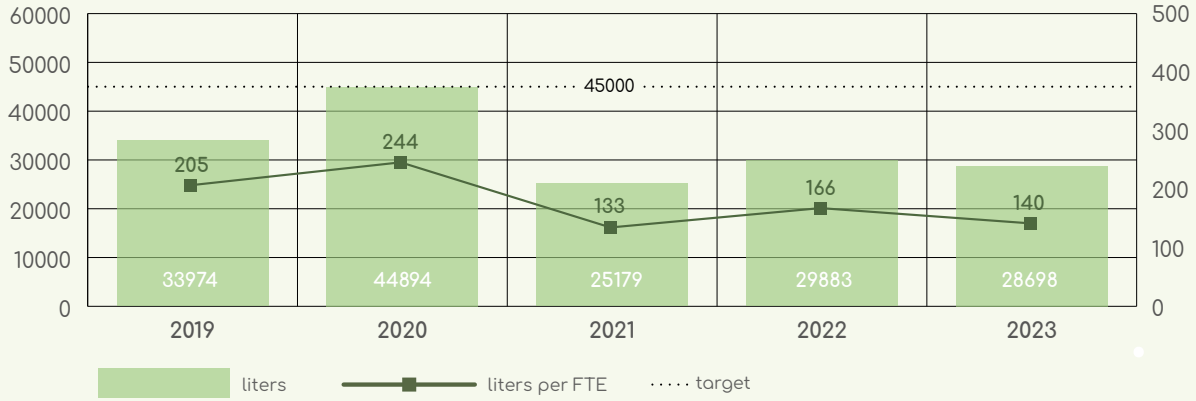
Thanks to the continuous replacement and switch to LED technology over the last five years, ANA has been able to reduce its electricity consumption by more than 20 000 kWh per year since 2019. Because of the decommissioning of all NDBs in 2022, a further reduction could be achieved in 2023.

Electricity consumption per 10,000 aircraft movements fell even more sharply, whereas consumption per 10,000 aircraft movements was higher due to the lower number of flights during the pandemic years.

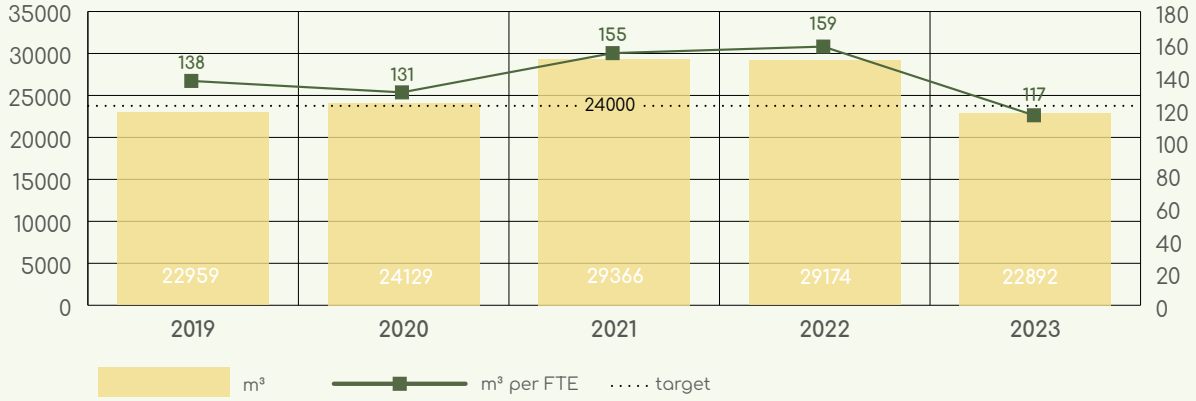
TARGET

Electricity consumption is linked to the supply of air navigation and visual aids, and therefore has an impact on safety, no target will be set for the time being.

FUEL CONSUMPTION (HEATING ANA BUILDINGS)



GAS CONSUMPTION (HEATING ANA BUILDINGS)



NOTE

Overall consumption of fossil fuels for heating has increased in 2022 compared with 2021, but has remained stable in recent years. Our buildings date from 1949 and 1993 respectively, and overall consumption is difficult to influence here. Fossil resources will be reduced with the new building (Skypark) to which ANA will be moving in 2025.

TARGET

The target for fossil fuel consumption for heating ANA buildings is 24,000 m3 for gas and 45,000 l for fuel oil. As the current target has not been deemed adequate, and as the buildings will change in the future, and in the context of carbon neutrality, a new target will be set.

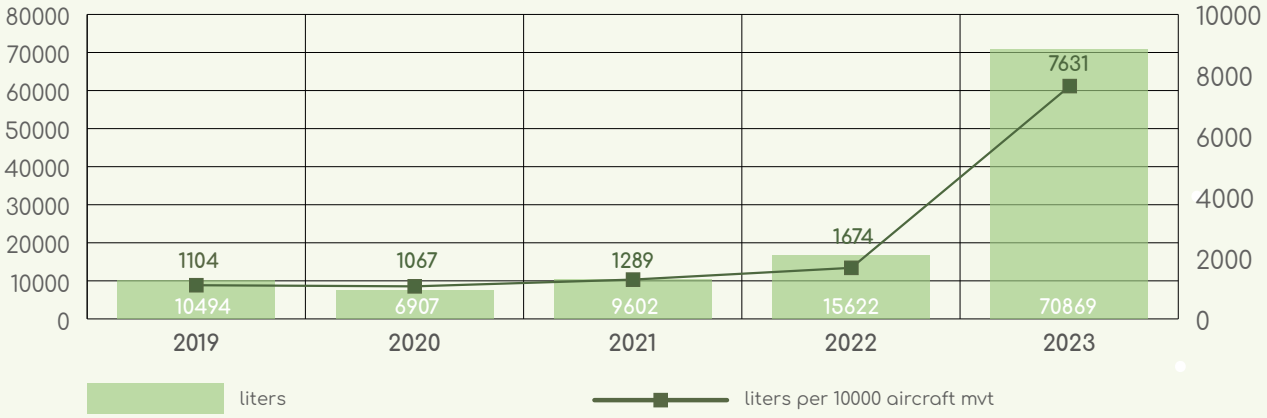
Target was met for fuel consumption

Target was met for gas consumption

NEW TARGET

50% reduction in fossil resources consumption per FTE until 2030 (baseline year 2021)

EMERGENCY GENERATOR FUEL CONSUMPTION



NOTE

Fuel consumption of the energy generators is calculated with the running time of the engines, and the full load consumption value given by the manufacturer. In 2022, a larger amount of fuel was consumed because the fuel generators had to run continuously for three days due to maintenance. More or less 7500 litres of fuel were consumed during these 3 days.

In 2023 a major incident happened on the construction site of the Skypark building, where an electrical cable was damaged. Emergency generators had to run continuously from the 22nd of November untill the 16th of December as mitigation, and the extra fuel consumption amounted to 55200 litres.

Fossil resources for the emergency generator can hardly be influenced because they are directly linked to the safety of operations. However, new technologies are foreseen. New technical stations equipped with new emergency generators have already been installed in recent years and others are in the planning phase

TARGET

As emergency generators are linked to the provision of air navigation aids and visual aids and therefore have an impact on safety, no target will be set.

06

MATERIAL

Introduction

ANA has demonstrated a commitment to sustainability through material choices and operational practices. Four years ago, ANA eliminated all single-use plastics. Throughout its operations, ANA rigorously evaluates the environmental impact of projects, ensuring that sustainable practices are integrated into decision-making. While a recent shift in financial procedures has led to a temporary increase in paper consumption, ANA has offset this by exclusively using CO2-neutral paper for the past two years.

Objectives

- **O 5.1:** Maintain CO_2 neutral and recycled paper
- **O 6.1:** Include request for product life cycle assessment and end of life disposal guidelines in public submission
- **O 7.1:** Reduce paper consumption

ANA going for Zero Single-Use Plastic

The problem of disposable plastics, long ignored, is massive and causes enormous pollution throughout the world, destroying ecosystems (air, water and soil), endangering species and compromising health.

- Between 6.9 and 8.5 million tonnes of plastic enter the oceans every year.
- Microplastics are everywhere, in the air we breathe, the water we drink and the food we eat.
- Millions of animals die every year from the damage caused by plastic pollution. 70% of the rubbish found on beaches and 85% of ocean pollution is caused by single-use plastics.

By signing the IMS Zero Single-Use Plastic manifesto, ANA has eliminated all single-use plastics by 2020. Several years ago, ANA already began eliminating plastic cups and replacing them with glasses and mugs, as well as replacing plastic stirrers with conventional spoons. All drinks are supplied in reusable glass bottles and drinking water fountains have been installed for agents. Coffee pods are banned and centralised coffee machines have been installed throughout the departments.

Saving trees – reducing paper

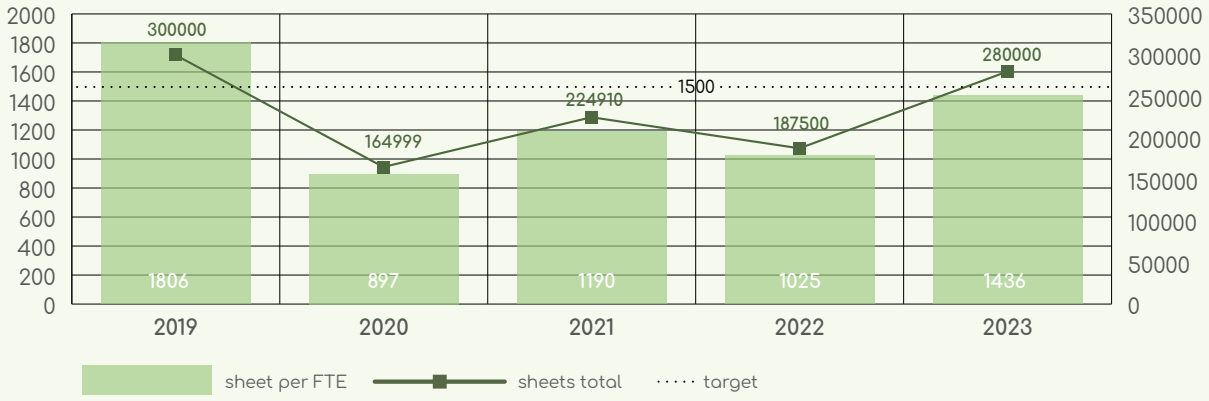
The paper used by ANA is 100% recycled and has been awarded the Ecolabel FR/011/006 and FSC C002321 license. In 2022, ANA has switched to CO_2-neutral paper.

This label guarantees:

- Low emissions into the air and water during production,
- Low energy consumption during production,
- The use of sustainably sourced or recycled fibres

However, our aim is to reduce the use of paper by digital documentation and storage.

PAPER-CONSUMPTION IN SHEETS/FTE (EMAS KEY AREA MATERIAL)



NOTE

Paper consumption itself has decreased in the years 2020, 2021 and 2022 compared to the years 2017, 2018 and 2019, from more than 1,700 sheets of paper per agent (average for the years 2017-2019) to 1,043 sheets of paper per agent (average for the years 2020-2021) which is a reduction of 39%.

Despite a recent increase in paper consumption due to new financial procedures, ANA has maintained its environmental target for 2023. ANA has compensated its paper consumption by exclusively using CO2-neutral paper for the past two years.

TARGET

The annual target for paper consumption in sheets per agent was evaluated to 1500.

Target was met for paper consumption.

06

WATER

Introduction

Water consumption data is collected for all ANA buildings, with the exception of those described in the Additional Leased Offices section. Water consumption has been low during the COVID years in 2020 and 2021 and is increasing in 2022 and 2023. We strive to apply safe and sustainable practices to preserve water and soil quality as part of our responsibilities.

Objective

- **O 8.1:** Reduce water consumption linked to internal activities

Install new water meters for all airport stakeholders

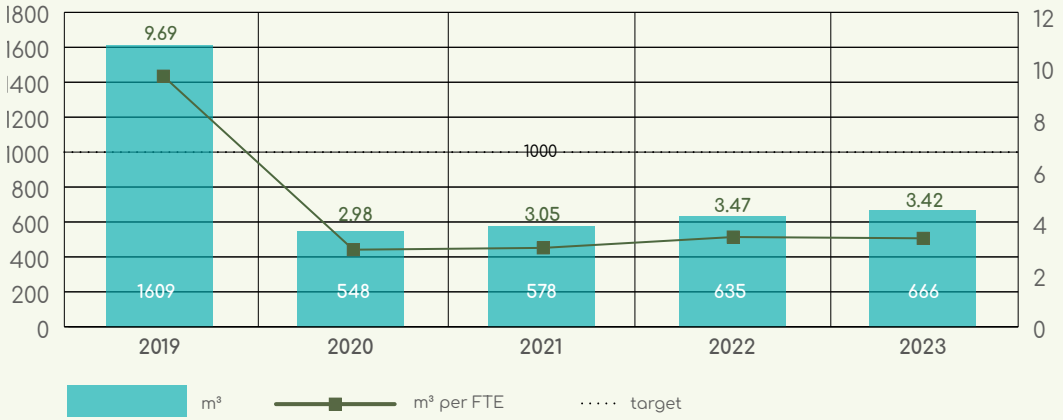
As part of an initiative identified in the 2020 Environmental Statement, a project was launched in 2020 to review all existing water meters on the sites of all airport stakeholders (internal and external) in cooperation with Lux-Airport. An external company was commissioned to carry out a study of the existing infrastructure and to update the existing construction plans. Phase 2 of the project begins in 2023 and involves replacing the existing water meters with remote-reading meters. Lux-Airport is now in charge of this project. New water meters will allow us to measure our water consumption more accurately.

Environmental emergency procedure

Our services ensure proper communication and exchange between airport stakeholders to prevent and manage incidents influencing water and soil quality. We continuously monitor and investigate such incidents (e.g. fuel, oil or other spills), help prevent future incidents and participate, in collaboration with other stakeholders, in the implementation of an environmental emergency procedure on manoeuvring areas.

ANA's environmental emergency procedure has been updated and an emergency preparedness and response plan has been prepared. This plan has been published in all buildings alongside the evacuation plan. In addition, ANA aerodrome inspectors are trained to detect ground pollution (e.g. fuel spills) and other environmental pollution on the manoeuvring area during inspections.

TOTAL ANNUAL WATER CONSUMPTION



NOTE

While construction of a new technical station in 2019 led to a spike in water consumption, the pandemic-related shift to remote work in 2020 and 2021 resulted in a significant decrease. Despite an overall increase in water consumption in 2023, consumption per FTE remained stable, even declining from 2022 levels.

TARGET

The target for total water consumption was fixed below 1000m³.

Target was met for water consumption.

Target will be updated to a water reduction of 3.25 m³ per FTE.

06

WASTE

Introduction

For more than twenty years, ANA has been awarded the ´SuperDrecksKëscht® fir Betriber´ label, an initiative of the Ministry of the Environment, Climate and Sustainable Development, the Chambre des Métiers and the Chambre de Commerce created in 1993, which rewards the establishment of a precise waste management plan. The plan covers the appropriate collection, sorting and storage of waste, the search for suitable means of reuse and recycling, the prevention of waste production and compliance with provisions (in particular the law of 21 March 2012 on the elimination and prevention of waste).

Data on volume of special waste by type commercial & domestic electrical appliances, incandescent and halogen lamps, cables (copper), cardboard/paper, plastic film, plastic products, fluorescent light bulbs, aerosol cans, polystyrene foam, toner cartridges, dry batteries, etc.) is also provided.

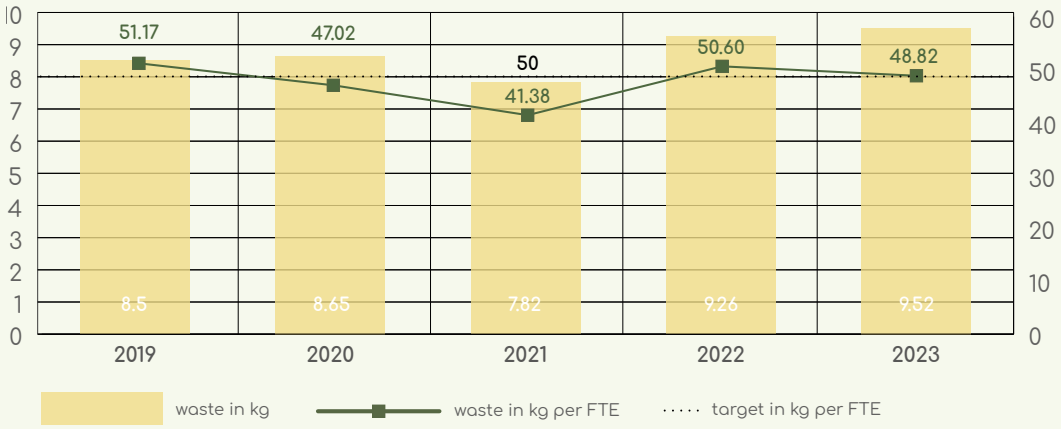
Objectives

- **O 9.1:** Retain SuperDrecksKescht certification annually
- **O 9.2:** Maintain Zero Single-Use Plastic Manifesto
- **O9.3:** Reduce domestic & special waste

Sorting and recycling of waste

ANA has published a waste handling procedure. All ANA agents are responsible for the proper disposal of waste generated during and around their work. Agents must strive to reduce and optimise their waste generation and disposal.

ANNUAL TOTAL GENERATION OF DOMESTIC WASTE



NOTE

The total quantity of domestic waste between 2018 and 2020 was more or less the same. Waste quantities generally decreased in 2021 and increased in 2022. ANA was previously responsible for the waste management of the road and bridge administration (Ponts & Chaussées) and for CGDIS. Following some structural changes within their organisations, CGDIS and Ponts et Chaussées now have their own waste management. Waste generated increased in general in 2023, but stays in the limits of the previous years per agents.

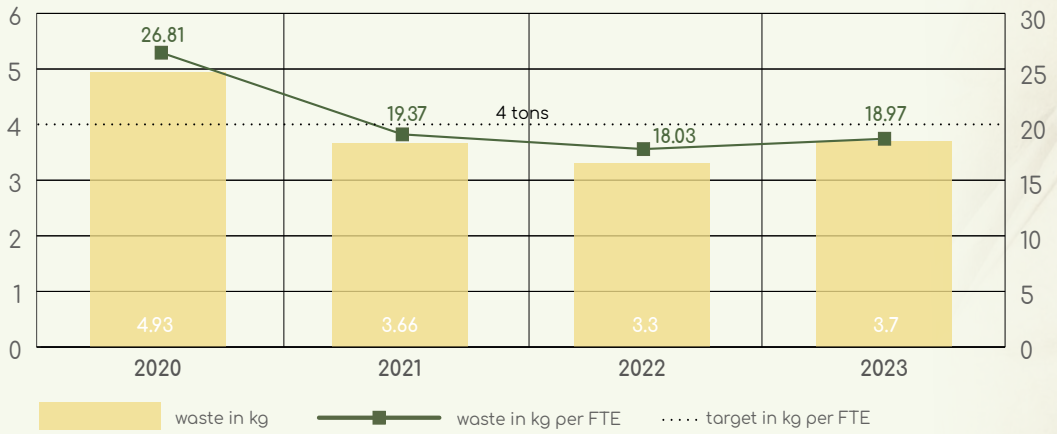
TARGET

The target for annual total generation of domestic waste was fixed to 7.8 tons.

Target was not met for domestic waste.

The target for annual total generation of domestic waste has been reviewed to 50kg/FTE.

CARDBOARD/PAPER WASTE



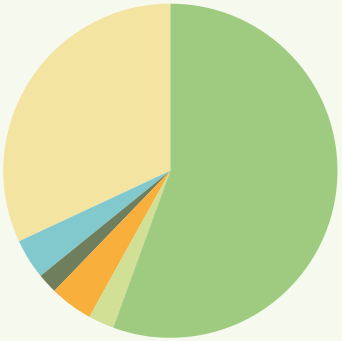
TARGET

The target for annual total generation of cardboard/paper waste was fixed to 4 tons.

Target was met for cardboard/paper waste

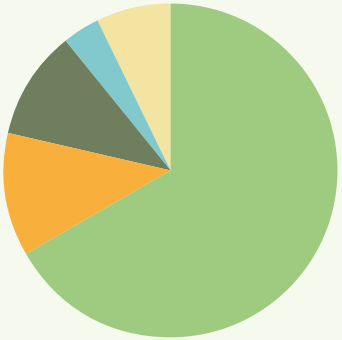
ANNUAL TOTAL GENERATION OF SPECIAL WASTE

2022



- 180kg Electrical devices (commercial)
- 14kg Plastic film
- 5.8kg Spray cans
- 103kg Dry batteries
- 13kg Styrofoam
- 8kg Electrical devices (domestic)
- 0kg Toner cartridge
- 0kg Fluorescent light bulb
- 0kg Incandescent and halogen lamps
- 0kg Cabel (copper)

2023



- 56kg Electrical devices (commercial)
- 10kg Plastic film
- 8.8kg Spray cans
- 6kg Dry batteries
- 3kg Styrofoam
- 0kg Electrical devices (domestic)
- 0kg Toner cartridge
- 0kg Fluorescent light bulb
- 0kg Incandescent and halogen lamps
- 0kg Cabel (copper)

NOTE

Special waste amounts are often linked to specific maintenances or projects.

TARGET

The indicator will be monitored but no target will be set for special waste.

06

LAND-USE WITH REGARD TO BIODIVERSITY

Introduction

ANA is trying to support Lux-Airport, which is now responsible for managing the green areas, in the most sustainable and practical way to protect the flora and fauna. ANA has carried out studies and identified the airport's biodiversity to ensure that the number of species remains stable. The development of bees on the airport platform is part of other environmental initiatives, in collaboration with Lux-Airport.

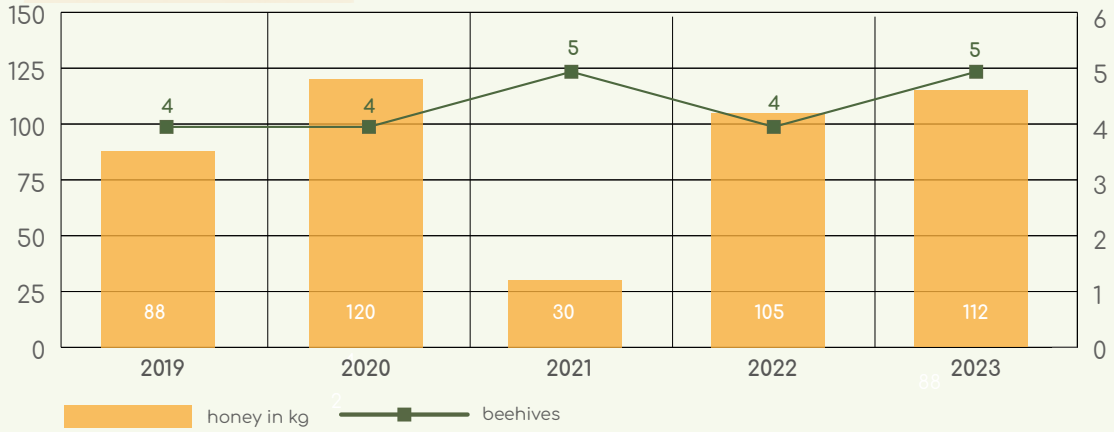
NOTE

Because of poor weather conditions, honey production in 2021 was very low. In spring 2022, low temperatures prevented our bees from finding enough nectars due to the flowers having an overlay of frost, and during the summer, there were more rain periods than usual. 2023 was a productive year, with 112 kg of honey produced by five hives.

TARGET

There is no applicable target because honey production depends on the weather and temperatures.

TOTAL PRODUCED HONEY



Land-use

ANA, as a public administration, has no land ownership of its own, as evidenced by the registration certificate from the Land Registry and Surveying Administration. Only technical buildings are owned by the government, all other land-use is either delegated to, or is under the ownership of the airport operator, Lux-Airport. The forms of land use with regard to biodiversity expressed in surface units, total land use, total impervious surface, total surface oriented towards nature on site and total surface oriented towards nature off site cannot be demonstrated.

The surface area of Luxembourg airport is 358.74 HA. Of this area, 57.6% (206.61 HA) is green space. 131.57 HA are asphalted surfaces and 21.53 HA are buildings. The surface area of ANA's offices is 1635.69 m^2, 159.86m^2 for workshops and 6330m^2 for technical stations.

Beehives - production of honey

The honeybee population is collapsing worldwide, causing biodiversity to decline at an unprecedented rate. The planet's ecosystems are on the verge of collapse, with a mass extinction of species jeopardising economies and the well-being of societies. ANA, in cooperation with Lux-Airport, started this collaborative project in 2018 and has been producing honey since 2019. Today, we have five beehives located at the airport. Setting up beehives is only a small intervention to have a positive impact, but it is hoped that this small effort will bear fruit.

A FEW FIGURES:

We have 50000 'agents' (bees) per beehive and 250000 in total in 2021.

- Our bees can help in monitoring the air quality.
- We have one queen per hive (average age 3-5 years).
- Our worker-bees are living for 35 days and are travelling up to 8000 km during their lifetime.
- Their population is reduced during the winter period to 5000 – 8000 bees.
- Two thirds of the honey production are used for the hive.

Objectives

- **O10.1:** Maintain bee project with Lux-airport

06

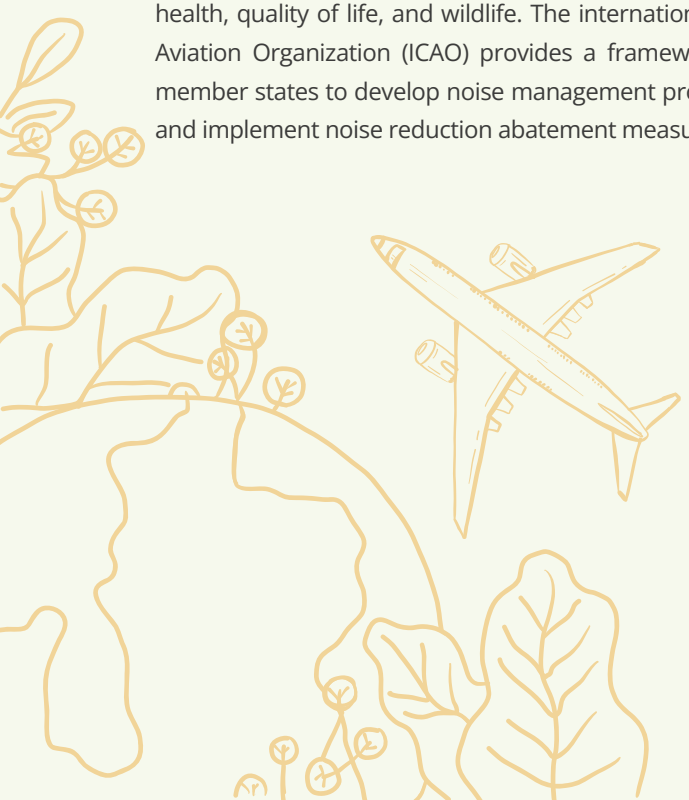
EMISSIONS

As part of our business, we are actively committed to preserving local air quality by combating climate change and reducing noise pollution on and around the airport.

AIRPORT NOISE EMISSIONS

Introduction

ANA is committed to environmental stewardship and ensuring sustainable practices in all aspects of its operations. As part of our ongoing efforts, we recognize the importance of addressing noise emissions associated with airport activities. Noise emissions from aircraft operations can have significant impacts on local communities, including potential effects on human health, quality of life, and wildlife. The international Civil Aviation Organization (ICAO) provides a framework for member states to develop noise management programs and implement noise reduction abatement measures.



Objectives

- **O12.1:** Enhance Tools for environmental performance
- **O12.2:** Enhance CCO application
- **O12.3:** Enhance CDO application
- **O13.1:** Enhance noise measurement
- **O13.2:** Manage curfew extensions
- **O13.3:** Collect, investigate and address noise complaints to the right stakeholders

Environmental modulation of terminal charges

Since 2015, ANA has applied a pricing system for its airport air navigation services that includes environmental factors based on aircraft noise emission certificates and encourages the use of departure times that are less disruptive in terms of noise. Airlines using less 'noisy' aircraft engines pay less for the service, as do airlines departing during the airport's normal operating hours, i.e. after 6 a.m. and before 11 p.m. at night.

The modulation formula is applied to all aircraft departures; our regulator (DAC) oversees the formula within the framework of the EU Performance and Charges Regulation and the Local Performance Plan. ANA has an obligation to monitor the application of the formula and to report on its effects to its stakeholders. The scheme has shown its effectiveness, is respected by airlines and has the expected effect to reduce noise.

Noise measurement

Luxembourg airport has a network of four noise-measuring stations, with a fifth one in planning, which regularly and automatically measure noise emissions at the airport and prepare daily and monthly summary reports. ANA has adapted the system to publish noise measurement summary sheets on its website. The use of the European noise indicators that we apply, enables better, more transparent and consistent communication of noise measurements to the public. We are now able to link the results of noise measurements with the noise maps calculated by the airport in order to identify the areas most exposed to noise.

The data is also used to store actual flight information on movements for incorporation into noise map indicators for noise distribution and an input for the development of noise abatement procedures.

Noise complaints

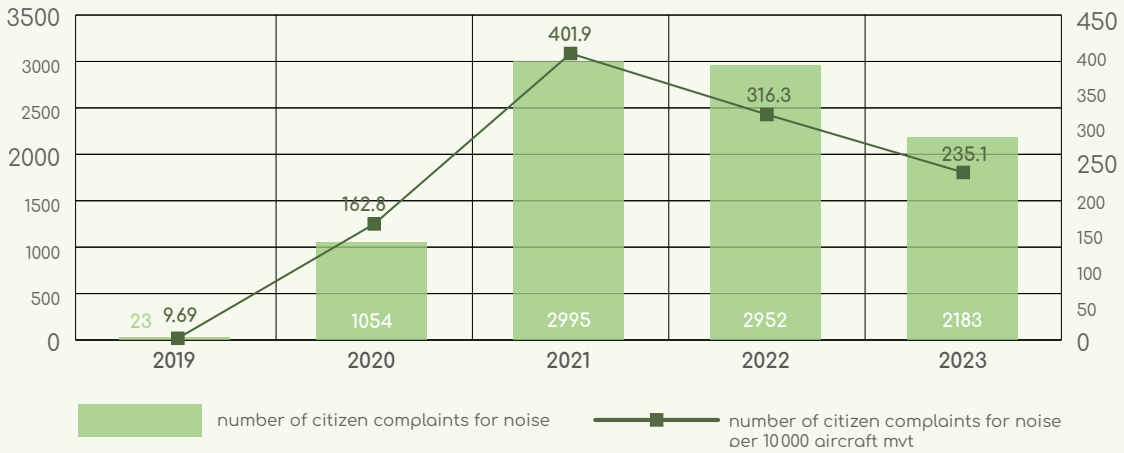
In the last four years, there has been a considerable increase in noise complaints from residents living near the airport. This trend can be attributed, in part, to the government's COVID-19 pandemic-related lockdown measures. Despite a reduction of international flights, the number of local flight movements had increased, and people had spent more time at home, making residents more aware of disturbances caused by aircraft noise.

As a result, new resident associations were created, the reclamations exploded and consequently ANA was obliged to establish an online complaint service.

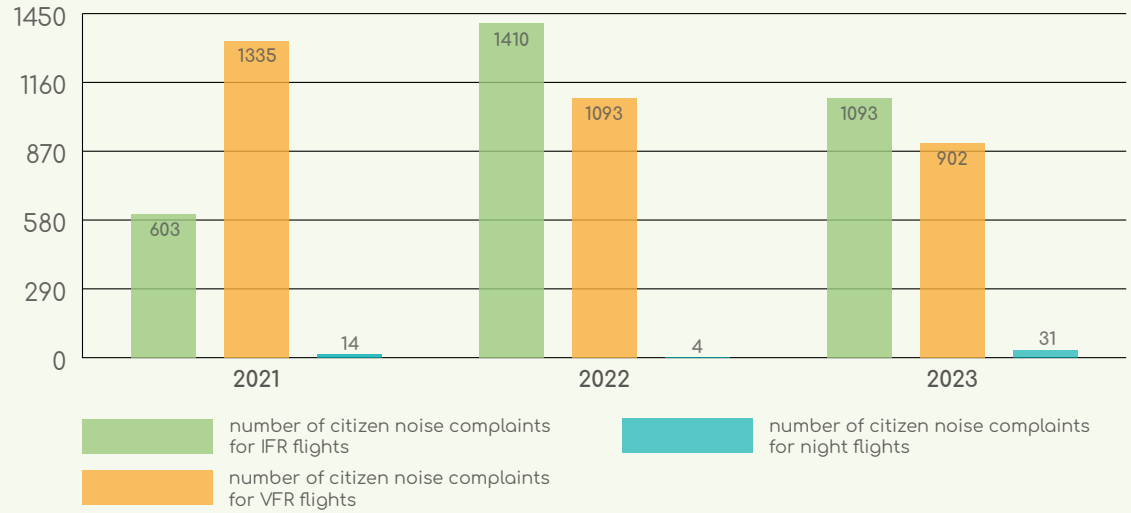
After the pandemic years the complaints remained on a high level, partly due to an alteration of a departure route known as SID GTQ (more details under 'GTQ departure' paragraph). In 2021, the procedure had been revised once more to minimize noise impact. This revision involved raising the turning altitude from 1700 to 2200 feet. However, despite all these efforts, the number of noise complaints continues to increase. Consequently, another procedure revision was performed in 2023. By raising the GTQ turning point from 2200ft to 2700ft, we have reduced the noise impact on surrounding communities. See also GTQ departure for more details.

To address these concerns, various measures have been implemented. These include updating the process for citizens' complaints , arranging meetings and collaborative sessions involving the Ministry, the Directorate of Civil Aviation (DAC) and citizens'associations. Additionally, ongoing efforts to update the Airport Noise Action Plan are in progress.

NOISE COMPLAINTS



NOISE COMPLAINTS PER CATEGORIE



NOTE

A decrease is observed in the number of complaints compared to the general increase of air traffic in 2023. A success of the second update of the GTQ departure route with a wider distribution of the aircraft traffic can be detected.

TARGET

No target was fixed so far for noise compliants.

Satellite-based navigation

The use of modern satellite technology is an important step from conventional ground-based navigation and procedures to satellite-based navigation and area navigation procedures. The potential for additional environmental and economic benefits is high.

The Performance Based Navigation (PBN) offers in principle the possibility of reducing noise for citizens living in the vicinity of airports and, for example, of designing "tailor-made" departure (SID) and arrival (STAR) routes to reduce noise with much greater flexibility than is currently the case.

PBN is available in Luxembourg TMA (Terminal Control Area) for precise navigation since March 2020. The solutions implemented enable shorter, direct routes and more efficient take-offs and landings at Luxembourg airport. PBN, in combination with CDO's improves safety, helps to reduce fuel consumption and noise impact, thereby reducing aircraft emissions.

Additional savings can be achieved by modifying PBN/CDO procedures, making ground operations more flexible and optimized.

Figure - PBN procedures compared to conventional routing

ASMA time

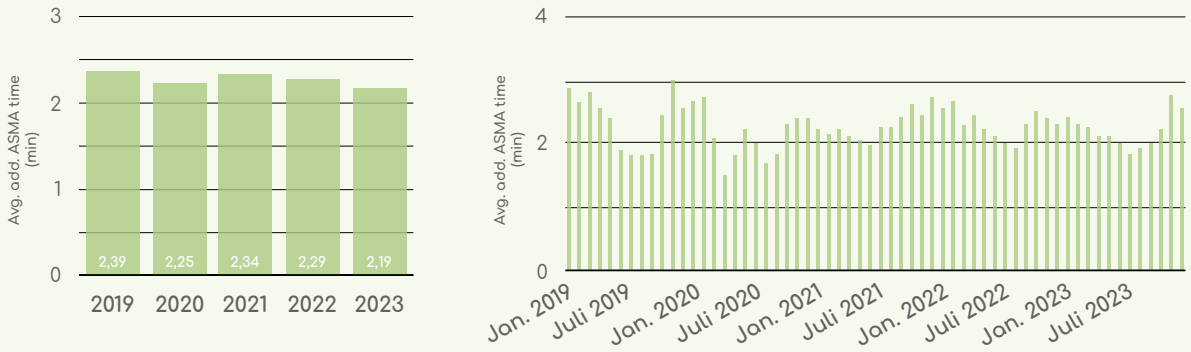
ANS-related inefficiencies on the arrival flow are measured in terms of arrival ATFM delay and additional time in the arrival sequencing and metering area (ASMA time).

The Arrival Sequencing and Metering Area (ASMA) is defined as a virtual cylinder with a 40-NM radius around the airport. The actual time spent by an aircraft between its last entry in the cylinder (Entry-time at 40 NM upstream) and the actual landing time (ALDT) is denoted ASMA transit time.

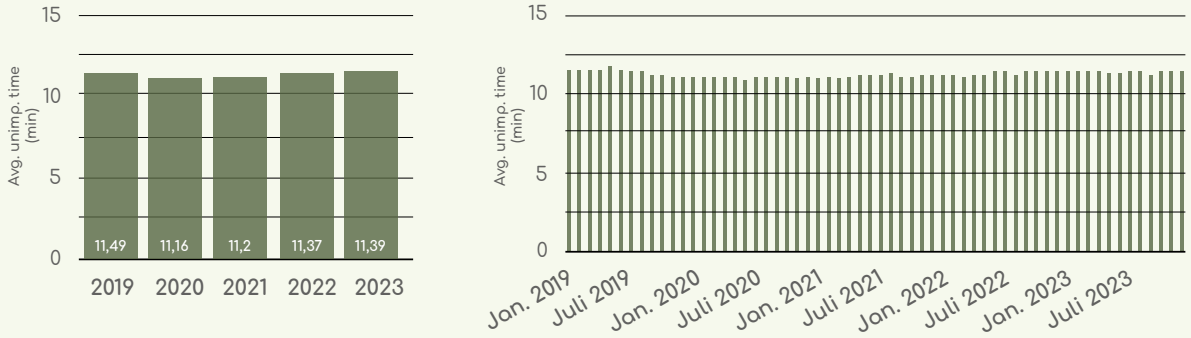
Additional ASMA time (airborne holdings) has also a direct impact in terms of fuel burn and emissions. The higher the additional ASMA time, the higher the additional fuel consumption and emissions.

By continuously improving the available PBN techniques ("direct to instructions" and PBN transitions including fine-tuned procedures), improved agreements with adjacent sectors and implementing a 3rd ATC position (arrival/director controller), ANA managed to achieve a continuous reduction of ASMA time since 2018 (from 2,47 min in 2018 to 2,17 min in 2024) despite of increasing traffic figures.

EVOLUTION OF AVERAGE ADDITIONAL ASMA TIME (MIN/ARRIVAL)



EVOLUTION OF UNIMPEDED REFERENCE TIME (MIN/ARRIVAL)



Source: Efficiency in the Arrival Sequencing and Metering Area (ASMA) | Aviation Intelligence Unit Portal (ansperformance.eu)

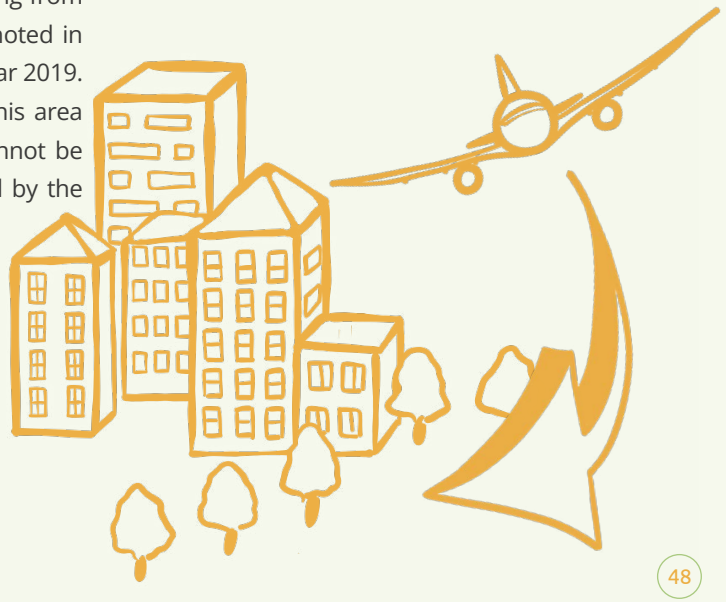
GTQ departure

The southbound standard departure route (GTQ) from runway 06 (east southeast direction) has undergone several changes in recent years:

Until January 1, 2020, aircraft turned immediately south after passing a ground-based navigational aid beacon. The Military Area TRA Lauter (TRA205), an area exclusively located on German Territory extending to the Luxembourg border limited the possibility to continue the straight-ahead course with continuous climbing before turning right.

Since January 2, 2020, aircraft were required to turn as soon as passing a defined altitude, which concentrated the track area for all different aircraft types. This change in the GTQ departure procedure had to be made for reasons of compliance with international regulations and in particular the decommissioning of beacons. In collaboration with Skeyes (formerly Belgocontrol), ANA has redesigned this procedure to consider the new standards dictated by the European Union regulations (Performance Based Navigation- PBN) and the safety restrictions related to the military zone.

- Thus, as of January 02, 2020, the minimum altitude before turning south had been fixed at 1,700 feet.
- Since December 31, 2020, this altitude had been set at 2,200 feet in response to complaints from residents of the municipality of Schuttrange regarding an increase in noise pollution.
- From autumn 2023 on, the altitude was increased further to 2,700 feet for a trial period of 12 months, following internal simulations. ANA published this change of the GTQ departure route by highlighting that no further increase of the turning altitude could be made due to the compliance with European regulations and the restrictions of the military zone TRA Lauter. Due to the effects of climate change (wind direction changed over the recent years) and to the fact that aircraft have to land and take off with a wind coming from the opposite direction, an 8% increase has been noted in the use of runway 06 compared to the reference year 2019. This has resulted in an increase in overflights of this area south of the airport. The years 2021 and 2022 cannot be considered as air traffic was very strongly affected by the pandemic (COVID 19).

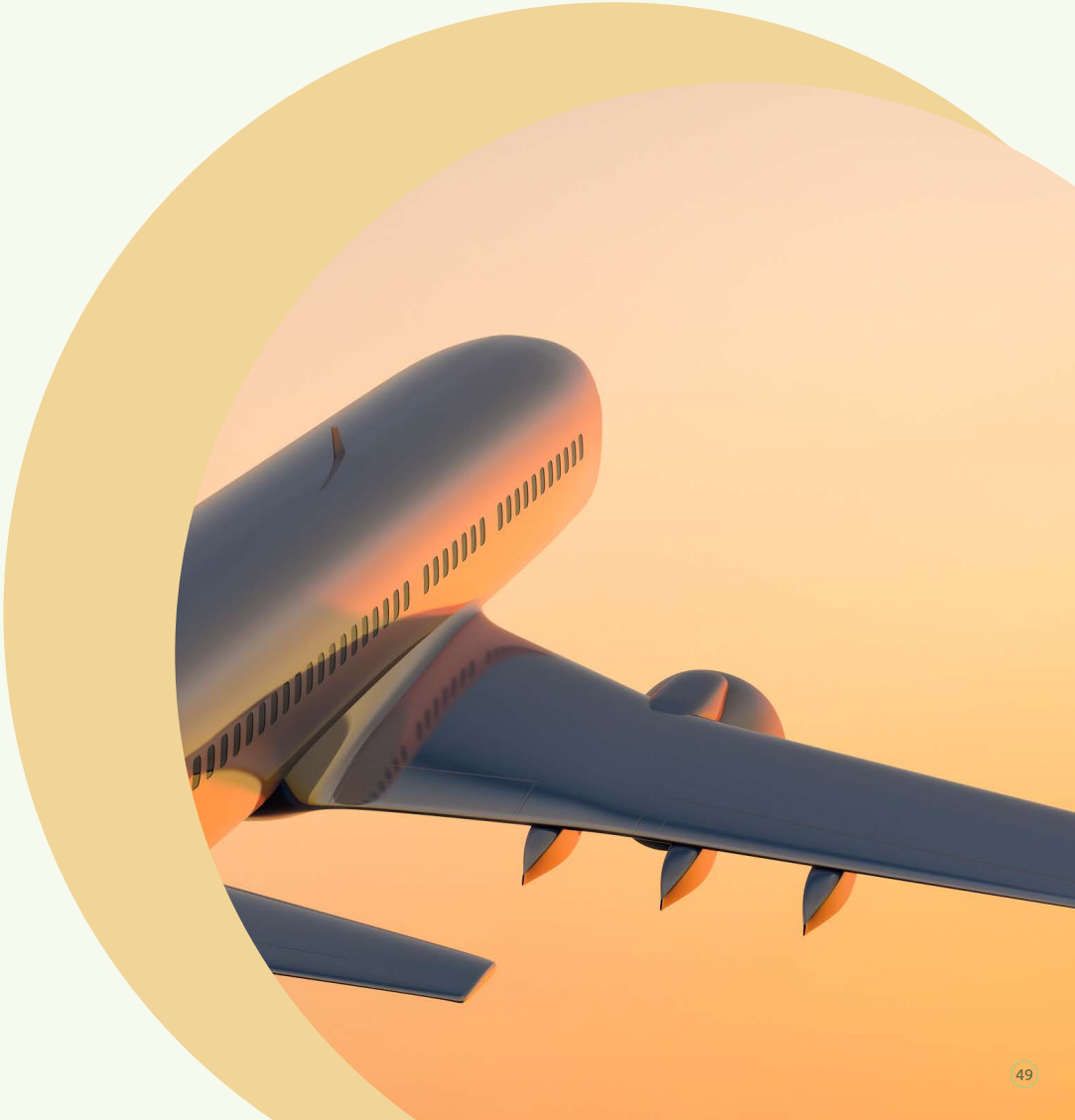


06

´Green Climbing´ - Continuous climb of aircraft

We expect to see a reduction in fuel burn and noise and, by compiling and analysing airlines 'early access data', we will monitor and, where necessary, improve performance by adopting measures that suit airlines and ATC. For example, airlines can take steps to achieve optimum climb engine thrust and other operational benefits when using the Continuous Climb Operation (CCO) procedure.

ANA has implemented, in cooperation with local airlines, stakeholders and the DAC, ATC procedures and clearances for CCO. In addition, where appropriate, operational use and environmental effects are monitored: fuel savings for airlines, and reduced emissions and noise for our residents. A new project on PBN SIDs was launched at the end of 2021/beginning of 2022 to enable continuous climb operations on routes clear of arrival routes.



Implementation of CDO for ´smooth landing´

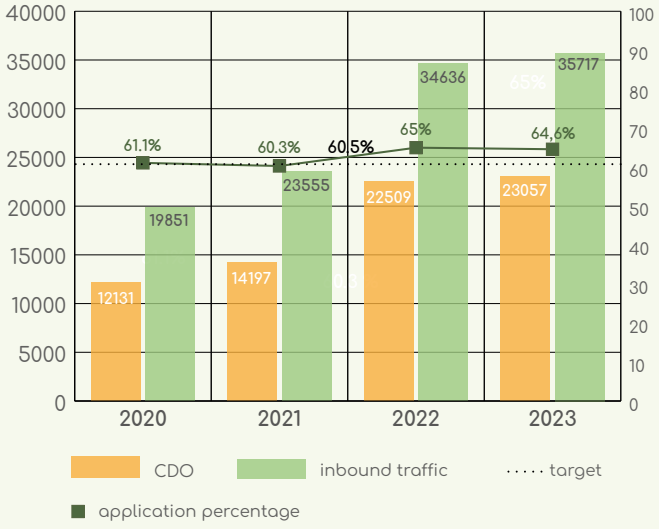
ANA investments in new ATC procedures, terminal airspace and route changes (PBN transitions & approaches enabling CDO) are already reducing fuel burn, CO_2 emission and aircraft noise, thereby improving the environment.

A Continuous Descent Operations procedure (CDO) is a manoeuvre in which an aircraft descends from an optimum position using minimum thrust and avoiding level flight, within the limits authorised by published procedures, while ensuring flight safety. The flight path of an aircraft can also help to reduce noise levels and fuel consumption by descending smoothly to the runway threshold instead of using a traditional level approach.

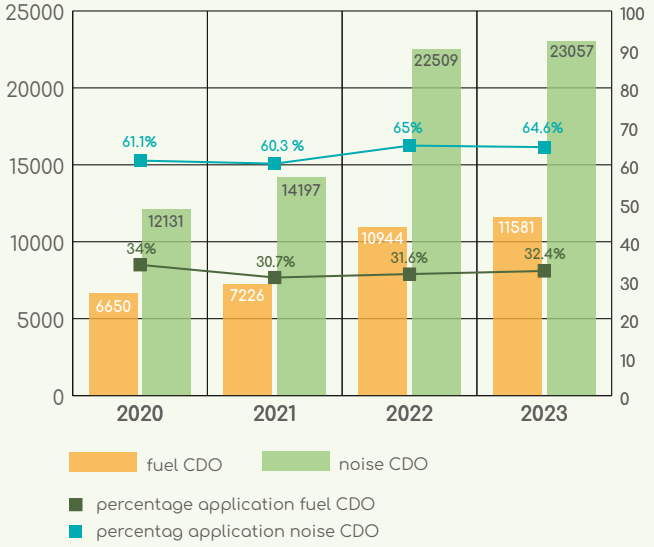
To ensure the accuracy of the data, we have chosen to update our CDO figures from 2020 onwards with the data and figures provided and collected by Eurocontrol. Around 60% of incoming flights used the CDO approaches available in 2020 and 2021.

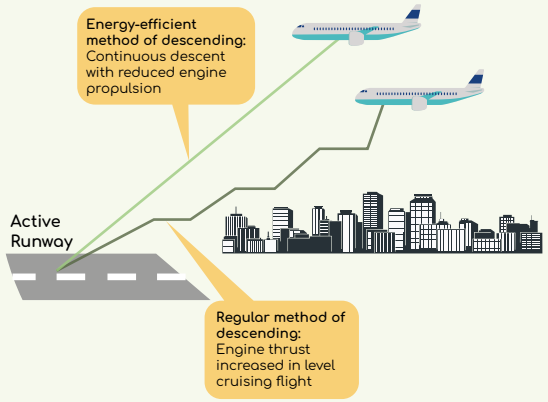
Fuel CDOs are measured from ToD (Top of Descent) to 1800ft, with no level-off segment. These CDOs reduce fuel consumption during the approach. Fuel CDOs are also considered as noise CDOs, because from FL075 to 1800ft, noise is considerably reduced.

CDO FLIGHTS



NUMBER OF CDO APPROACHES ESTABLISHED/FLOWN INTO ELLX





NOTE

In 2021, and according to our calculation based on figures collected with our airline partners and Eurocontrol, about 60% of incoming flights used the available CDO approaches. The values were stable for 2020 and 2021. In 2022 and 2023, an increase of almost 5 points can be observed.

TARGET

Achieve at least 60.5 % of the CDO application.

Target was met for CDO application.

Managing derogations and exemptions

Article 13 of the Grand-Ducal Regulation of 2nd November 2012 amending the amended Grand-Ducal Regulation of 24 May 1998 lays down the conditions for the technical and operational services of Luxembourg airport and regulates exemptions. Beneficiaries (airlines) of exemptions to the regulation are required to submit to the Ministry of Transport quarterly summary statements of exemptions actually used and the reasons justifying them.

ANA, with the support of Transport Department of the Ministry of Mobility and Public Works, analyses in detail the reasons for the exemptions in consultation with the airlines concerned.

Tool for environmental performance

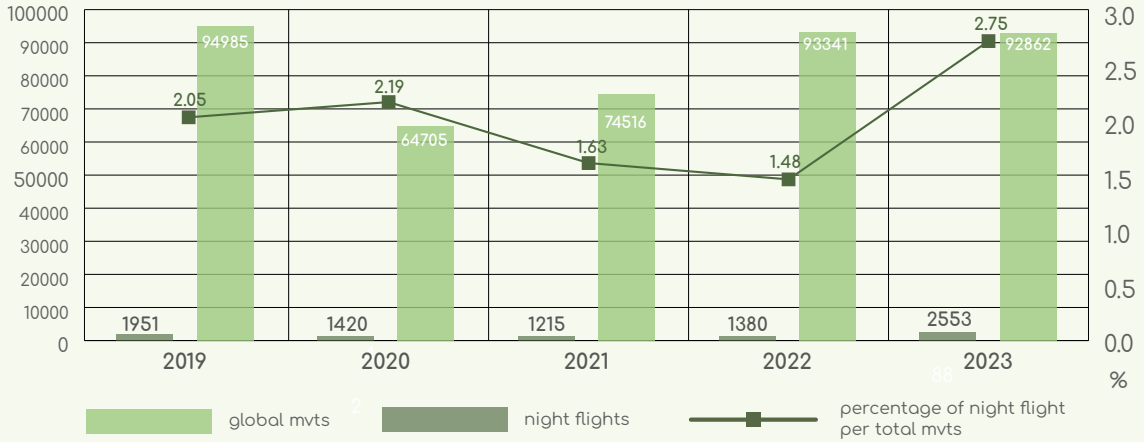
Furthermore, ANA is defining and studying the purchase of a tool which enables us to analyse the environmental performance of all our arrival and departure routes and procedures. This is significant as the routes were designed from an operational and safety standpoint but have not yet been analysed from an environmental perspective. The first phase of the tool will enable ANA to gather information about emissions and noise generated by the current areas, and which communities have been most affected. The second phase of the tool enables ANA to optimize the current routes and simulate the impact of future route updates to decrease our environmental impact in terms of emissions and noise. Due to budget and resources reasons the project is for the time being on hold.

Night flights

Luxembourg airport applies a night traffic ban between 23:00 – 06:00, with the exception of medical flights, search and rescue flights, and late arrivals of scheduled flights. Airlines may ask ANA for authorisation to carry out special take-off and landing operations (curfew extensions). ANA will analyse the justification provided and will grant the curfew only if necessary. Night flights are a serious disturbance to residents and are a major issue. Reducing night flights to the necessary minimum is an important objective in Luxembourg.

ANA, in partnership with Cargolux, has developed a charter of best practices in the fight against noise pollution. One of the objectives of this charter is to set a maximum ceiling of exceptions for night flights, taking into account the time of day and type of aircraft. This best practice could be offered to other major airlines.

NIGHTFLIGHTS



NOTE

A significant reduction of night flights until 2023 in relation to the increase in traffic is noticeable. This can be explained by the restrictions put in place due to the runway refurbishment project, which began in spring 2021 and lasted for two years, carried out during night-time hours for a period of 6 months apart from holidays and weekends. In 2023 a sharp increase in night flights can be observed again.

The main reason is linked directly with reduction of arrivals per hour imposed by our regulator to some cover some non-conformities at ATSEP level. As normal peaks of traffic take place before the night curfew, and in relation with the restriction, the traffic was delayed after 2300h local time.

TARGET

No target applicable as ANA has no direct impact on the number of night flights.

Curfew extensions

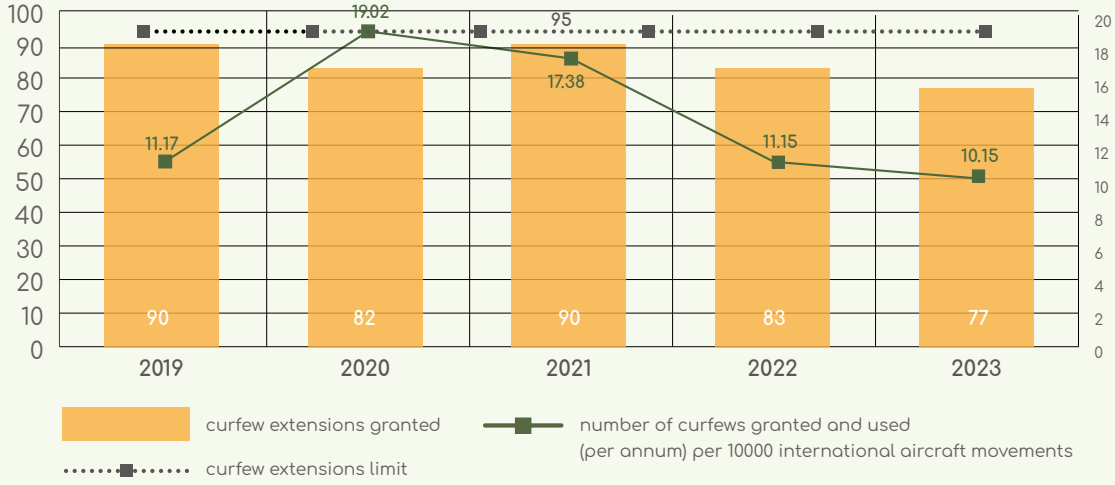
ANA, on behalf of the Ministry of Mobility and Public Works (MMTP) may grant individual curfew extensions.

The following may apply for an individual exemption from the curfew, with due justification:

- departures of scheduled passenger and cargo flights after 00:01LT
- any departure and/or arrival of non-scheduled flights after 23:01LT

All non-scheduled flight departures after 24:00, duly justified, are subject to specific prior authorization by the Minister. At the end of each quarter, the beneficiaries of derogations submit to the Ministry of Transport a summary statement of the derogations actually used, explaining the reasons for their use. The Air Navigation Administration, in conjunction with the Transport Department of the Ministry of Mobility and Public Works, analyses the reasons for waivers in detail, in consultation with the airlines involved.

CURFEW EXTENSIONS



NOTE

Curfew extensions have been reduced further in 2023. The recovery from the pandemic, in the years 2022 and 2023, led to an increase in air traffic compared to 2020 and 2021. However, the number of extensions remained below the threshold of 95 authorizations and decreased from 90 in 2021 to 83 in 2022, and then to 77 in 2023.

A notable decrease in curfew extensions per 10,000 international aircraft movements was observed in 2022 and 2023. This may contradict the figures of the pandemic years of 2020 and 2021, where fewer flight movements resulted in a higher number of extensions per 10,000 international aircraft movements, but those numbers can be explained due to the high amount of cargo flights continuously operating during COVID.

TARGET

Curfew extensions should remain below 95 authorizations a year.

Target was met for maximum curfew extensions.

06

CARBON EMISSIONS

Introduction

Carbon emissions, particularly those resulting from the combustion of fossil fuels, are a significant contributor to climate change and global warming. Trough innovation, collaboration, and the adoption of best practices, we strive to drive meaningful change and establish a sustainable pathway for our organisation.

We are currently focusing our efforts internally by controlling the heating emissions produced in our buildings, reducing the number of service cars in use and purchasing plug-in hybrid or electric cars. We encourage the reduction of carbon emissions by providing electric cars and bicycles for journeys during their working hours. Charging stations have also been installed for company and private electric cars.

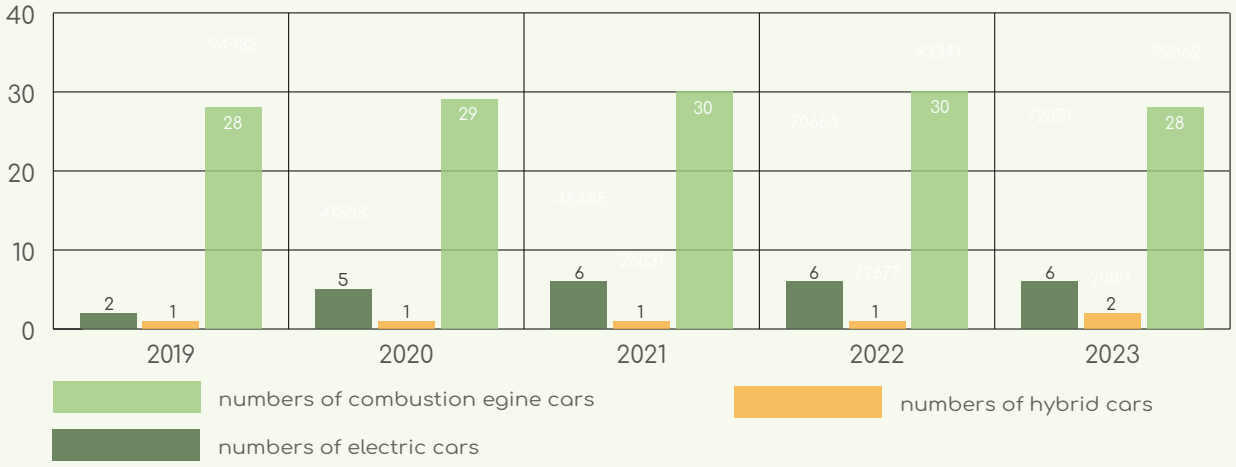
Objectives

- **O11.1:** Calculate carbon footprint for scope 1 and 2
- **O11.2:** Reduce Scope 1 mobile emissions (fuel consumption from cars)
- **O11.3:** Reduce other scope 1 emissions
- **O14.1:** Enhance home office if possible within agents tasks
- **O14.2:** Feasibility study: neutral gas
- **O14.3:** Cost and impact study for renovation of ELE building
- **O14.4:** Feasibility and timeline study for Full electrical or plug-in hybrid car fleet
- **O14.5:** New buildings – Skypark & Tower building
- **O14.6:** Reduce emissions in Scope 1& 2 to zero (carbon neutrality)

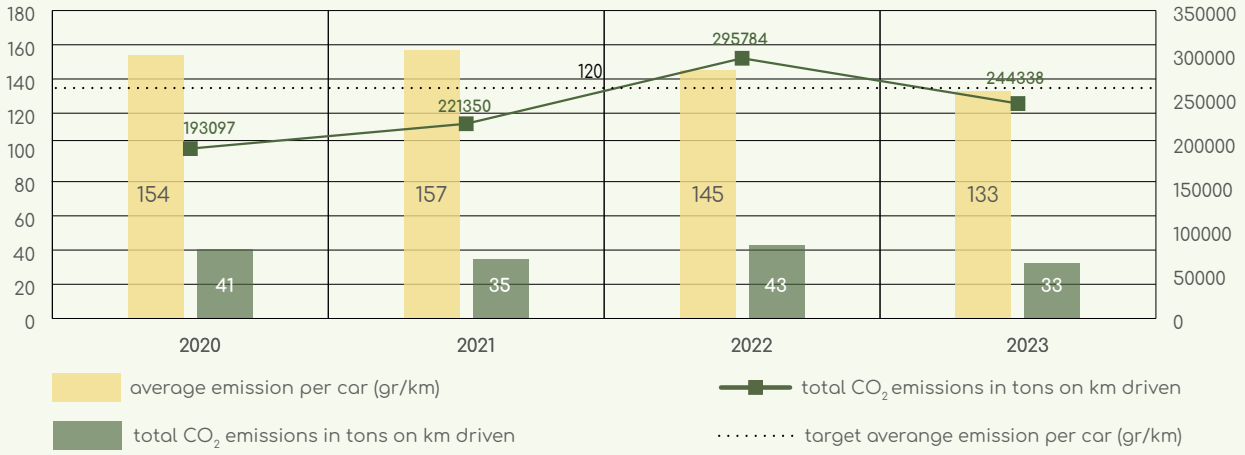
Fleet management

The goal of our fleet management is to replace all feasible combustion-powered vehicles at the end of their life cycle with either fully electric or plug-in hybrid technology. In fact, since the inception of data collection in 2016, we have successfully lowered the average CO2 emissions of our fleet by 58%. Nevertheless, the fleet size has grown from 32 vehicles in 2016 to 36 in 2023 (the number of vehicles per agents was reduced from 0.21 in 2022 to 0.18 in 2023). This expansion is largely attributed to the incorporation of electric cars since 2017. Currently, our fleet comprises six fully electric cars and 2 hybrid cars. A timetable will be defined until 2030 in the scope of ANA's carbon neutrality.

FLEET MANAGEMENT



CAR EMISSIONS



NOTE

Replacing carbon emission cars with electric and hybrid cars will significantly reduce emissions. Car emissions are calculated with the data provided by the car manufacturers.

TARGET

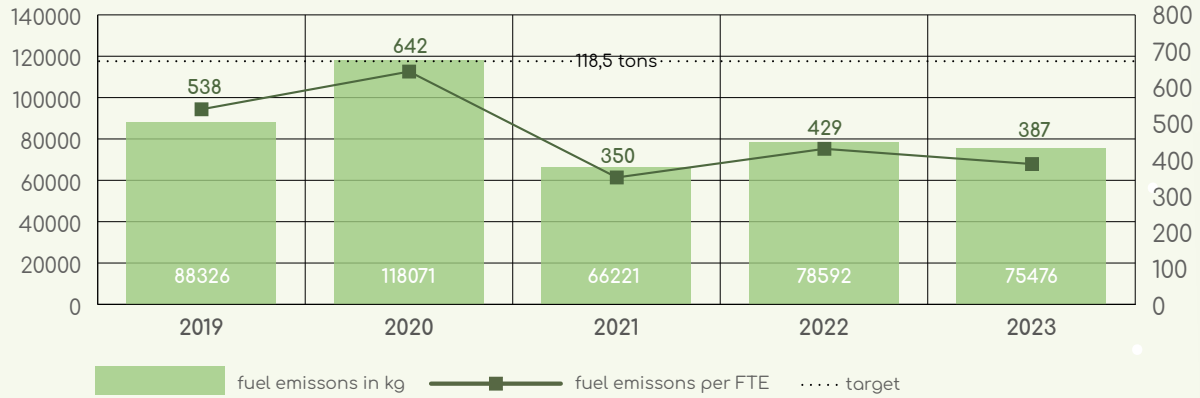
If possible, ANA will replace all end-of-life cars with electric cars or rechargeable hybrids. The aim will be to replace all cars with combustion-powered vehicles. A timetable will be defined until 2030 in the scope of ANA's carbon neutrality. The target for this year was 120 grCO2/km of average emissions per car. Car emissions are calculated with the emission value given by the manufacturer and kilometres driven.

Target was not met related to ANA's car emissions.

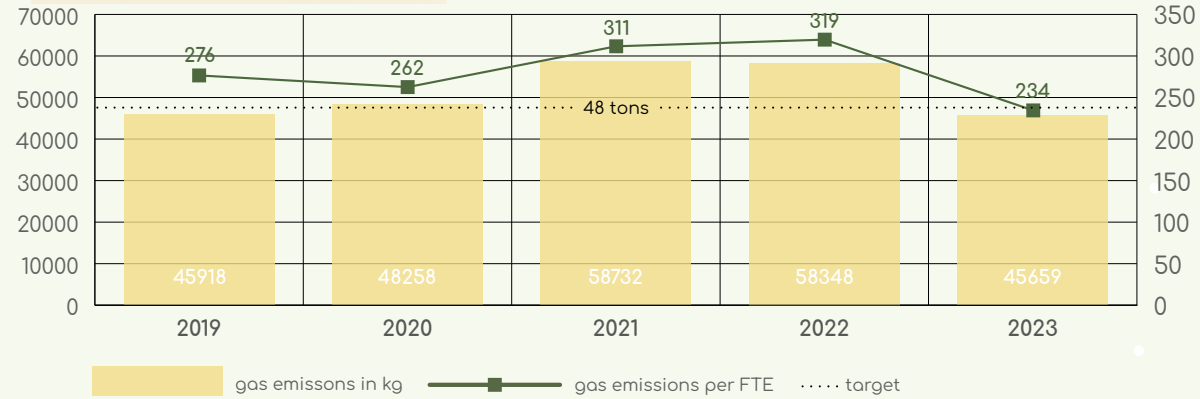
ANA will further reduce the emissions caused by its fleet, by renewing it with electric or plug-in hybrid technologies.

The target for 2030 will be to reduce car emissions to 0.

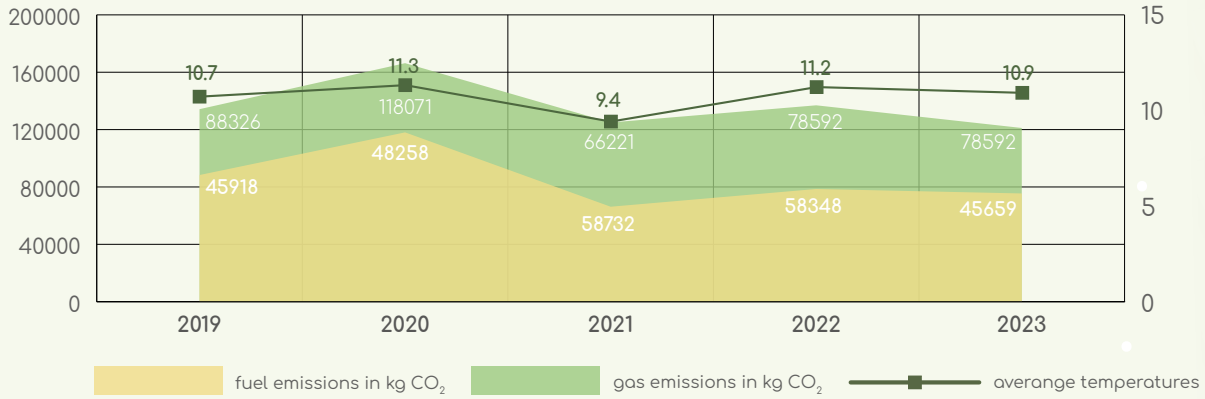
FUEL EMISSIONS ANA BUILDINGS



GAS EMISSIONS ANA BUILDINGS



FUEL AND GAS EMISSIONS ANA BUILDINGS



NOTE

Overall, fossil fuel consumption for heating decreased in 2023 compared with 2022 by almost 10% despite a decreased average temperature of 0,3 C. Our buildings were built around 1949 and 1992 respectively, so it is difficult to have a proper influence on the overall consumption. Fossil resources will be further reduced with the new building (Skypark) to which ANA will be moving end of 2025.

Fuel consumption is tending to fall,but remains dependent on weather conditions. Fuel and gas emissions are calculated with 2,63 kg CO2 / l fuel and 2 kg CO2 / m3 gas.

TARGET

The target for fuel and gas emissions in heating ANA buildings is in total 48 tons of CO2 for gas and 118.5 tons of CO2 for fuel. As the actual target was not found adequate, as buildings will change in future and in the scope of carbon neutrality, a new target will be set.

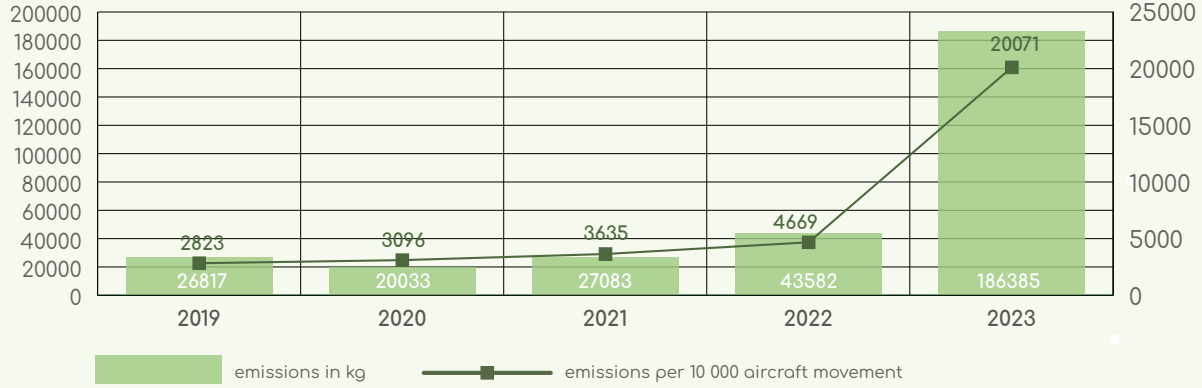
Target was met for fuel consumption.

Target was met for gas consumption.

Considering the total of gas and fuel emissions the target was achieved.

New target: 50% reduction in fossil resources consumption per FTE until 2030 (baseline year 2021)

EMERGENCY GENERATOR FUEL EMISSIONS



NOTE

In 2023 a major incident happened on the construction site of the Skypark building, where an electrical cable was damaged. Emergency generators had to run continuously from the 22nd of November untill the 16th of December as mitigation, and the extra fuel consumption amounted to 55200 litres.

Fuel consumption of the energy generators is calculated with the running time of the engines, and the full load consumption value given by the manufacturer. Fuel emissions are calculated with 2,63 kg CO2 / l fuel.

TARGET

As emissions from emergency generators are linked to the provision of air navigation aids and visual aids and therefore have an impact on safety, no target will be set.

07

LEGAL FRAMEWORK

ANA is committed to complying with a range of environmental legislation applicable at national and European level. To ensure that these requirements are met, ANA maintains a comprehensive register of environmental regulations.

ANA checks their environmental legal compliance in a specific worksheet. Equipment subject to environmental authorisations is included and its legal compliance is checked by compliance with the required maintenance intervals, among other things. For any new equipment or techniques, an authorisation file is submitted to the authorities, as provided for in the regulations relating to operating permits for classified establishments ("commodo/incommodo").

The relevant ministries publish new laws and regulations applicable at national, European and international level. However, the Environmental Manager is responsible for monitoring regulations and ensuring their compliance. In addition, ANA has a number of interfaces that enable it to keep abreast of new regulations in force and to identify the needs and expectations of stakeholders.

To ensure continuity of legal compliance status, a full review of all current equipment and the content of each authorisation file is scheduled for completion in 2024.

08

ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

TÜV Rheinland Cert GmbH, Am Grauen Stein, D- 51105 Köln

with EMAS environmental verifier Erich Grünes, registration number DE-V-0017

accredited or licensed for the scope 84 (NACE Code)

declares to have verified whether the site or the whole organisation as indicated in the updated environmental statement 2024.

Administration de la Navigation Aérienne (ANA), 4, route de Trèves , 2632 Findel / Luxemburg with registration number (if available) meet all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

By signing this declaration, I declare that:

- the verification and validation have been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,
- the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
- the data and information of the updated environmental statement 2024 with facts and data from 2021 reflect a reliable, credible and correct image of all the organisation's activities, within the scope mentioned in the environmental statement.

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a competent body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

Done at Luxembourg / Cologne on 26/11/24

Signature

Erich Grünes

TÜV Rheinland Cert GmbH
Am Grauen Stein
D-51105 Köln

Airport charges:
Charges levied for airport infrastructure and ground-services paid by airlines to the airport company.

ANS charges:
Charges levied by the ANSP (or EUROCONTROL on behalf of the ANSP) for ANS provision in terminal airspace (Terminal Charges, TNC) and En-route.

Aircraft movement:
A take-off or a landing operation.

Airport Collaborative Decision Making (A-CDM):
Aims to enhance the operational efficiency of airports and improve their integration into the air traffic management network. This is achieved by increasing the information sharing between local ANSP, airport operators, aircraft operators, ground handlers and other airport service providers. A-CDM allows enhancing the predictability of events, optimizing the utilisation of resources and therefore the efficiency of the overall system.

Air Navigation Service Provider (ANSP):
An ANSP is a public or a private legal entity providing Air Navigation Services. It manages air traffic on behalf of a company, region or country. The Air Navigation Administration (ANA), placed under the authority of the Ministry of Mobility and Public Works, is the air navigation service provider of Luxembourg.

Air Traffic Management (ATM):
Communication navigation and surveillance systems (CNS)
Meteorological service for air navigation (MET)
Search and rescue (SAR)
Aeronautical information services/ Aeronautical information management (AIS/AIM).

ATM MP:
Air Traffic Management Master Plan
https://www.atmmasterplan.eu/learn/essip

Auxiliary Power Unit (APU):
The power supply unit on board an aircraft that is used to provide electricity for the power supply and air-conditioning on the ground.

Continuous Descent Operations (CDO):
These are descents from flight cruising level down to the final approach without intermediate ´levelling-off´, to save fuel (and emission) and to reduce noise.

Emissions:
All (solid, gaseous, or odorous) substances, wave radiation or particle radiation emitted from systems and plants, vehicles, products, materials, or other sources (for example aircraft) which exert an impact on the surrounding environment.

Environmental impact:
Direct impacts are negative or positive effects on the environment, resulting from the various environmentally relevant ANSP activities carried out by ANA where management has direct control. Indirect environmental impacts consist of those effects on the environment over which ANA doesn't have direct influence.

Environmental Management System (EMS):
System for the coordinated processing of operational environmental protection, geared towards concrete local environmental impact. The core aspects of an EMS are a company's environmental policy and environmental programme.

Environmental performance:
The quantifiable results derived from the management of the environmental aspects of an organisation by this organisation.

Environmental policy:
Component of an environmental management system, establishing guidelines for environmental protection at the highest level within a company.

Environmental programme:
Within the framework of an environmental management system, a plan of measures to be applied for a specified period of time in order to minimise environmental impacts.

ESR (Environmental, Social and Responsibility) label:
The ESR label created by the INDR (Institut National pour le Développement Durable et la Responsabilité Sociale des Entreprises) recognizes the efforts made by companies that have decided to manage their ESG (Environment, Social, Gouvernance) impacts (www.esr.lu).

EU Eco-Management and Audit Scheme (EMAS III):
EMAS is a premium management instrument developed by the European Commission for companies and other organisations to evaluate, report, and improve their environmental performance. More on https://ec.europa.eu/environment/emas/

EUROCONTROL:
EUROCONTROL is a Pan-European civil-military organisation for the safety of air navigation established in 1960. The organisation is dedicated to supporting European aviation. EUROCONTROL is the Network Manager for the optimisation of operational air traffic flow and performance, recovers the costs of En-route ANS provision, supports civil-military cooperation, provides En-route service through its Maastricht Upper Area Control (MUAC) centre, delivers research, innovation and development by the EUROCONTROL Experimental Centre and training and skills programmes at the Institute for ANS in Luxembourg. EUROCONTROL currently has 41 European member states (plus agreements with Israel and Morocco). The European Commission is working closely together with EUROCONTROL to achieve the objectives of the Single European Sky (SES) initiative and aims to become a full member.

FABEC:
"Functional Airspace Block Europe Central", an initiative by the European commission to create airspace blocks. The air navigation service providers of six countries (Luxembourg, Belgium, France, Germany, the Netherlands, Switzerland) and Eurocontrol Maastricht UAC are gathered in the former.

Green Deal:
Climate change and environmental degradation are an existential threat to Europe and the world. To overcome these challenges, Europe needs a new growth strategy that will transform the Union into a modern, resource-efficient and competitive economy, where

- there are no net emissions of greenhouse gases by 2050
- economic growth is decoupled from resource use
- no person and no place is left behind

The European Green Deal is the plan to make the EU's economy sustainable. (source EC) .

ISO:
International Organization for Standardization.

ISO 14001:
This international environmental management standard defines globally recognized standards for environmental management.

PBN:
Performance-based Navigation (PBN) is helping the global aviation community reduce aviation congestion, conserve fuel, protect the environment, reduce the impact of aircraft noise and maintain reliable, all-weather operations, even at the most challenging airports. It provides operators with greater flexibility and better operating returns while increasing the safety of regional and national airspace systems. (source ICAO).

PI / KPI:
A performance indicator or key performance indicator (KPI) is a type of performance measurement. KPIs evaluate the success of an organization or of a particular activity (such as projects, programs, products and other initiatives) in which it engages. (source Wikipedia)

Single European Sky (SES):
SES is a broad legislative and operational initiative and programme of the European Commission as the executive body of the EU. Its goal is the harmonisation, development / enhancement and integration of the European Air Traffic Management system and airspace. The programme includes the SESAR, SES Aviation Research programme, the air traffic Network Manager (EUROCONTROL) and a Performance Management Board and support functions. The performance and charging scheme and FABs are part of the SES programme.

SuperDrecksKëscht (SDK):
The SuperDrecksKëscht® is a trademark which was developed in the frame of the waste management obligations of Luxembourg by the Ministry of the Environment, Climate and Sustainable Development, the Chambre des Métiers (Chamber of Trade) and Chambre de Commerce (Chamber of Commerce). The activities of the SuperDrecksKëscht® are also recognized by the EU Commission through the award of the label 'best practice' in the field of protection of resources and climate.

The orientation is based on the strategy provided by the EU with the hierarchy prevention before preparation for re-use, before recycling, before any other use (as for instance energetic use), before disposal of waste.

The task of the SuperDrecksKëscht® consists in using and implementing the most recent information in order to achieve a sustainable high-quality material management in the ecological and economic sense. Carrying out these tasks allows showing the lead in the ecological restructuring of our society.

Stakeholder:
Groups or individuals that are affected by the activities of a company and can exert influence on attainment of their aims. Accordingly, the stakeholders of a company are the agents, shareholders and lenders, customers, suppliers, neighbours, non-government organizations, government agencies, and politicians.

Surface noise:
Noise emanating from aircraft when they are on the ground, arising from engine tests, taxiing, and / or APU operation. Noise generated by take-off and landing is not considered as surface noise, not even for the phases when the aircraft is on the ground.

CONTACTS

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Next ANA environmental statement will be published before December 2025.