ANA Environmental Statement 2022

WITH 2019 TO 2021 FACTS AND DATA

LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de la Mobilité
et des Travaux publics

Administration de la navigation aérienne

ANA
Administration de la navigation aérienne

EMAS
LU - 000008

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INTRODUCTION*

This document, ANA's environmental statement 2022 is the second updated version of ANA's environmental statement 2020, with 2019 to 2021 facts and data. Updated data and facts are flagged with an asterisk (*) in the titles of the document.

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FOREWORD*

The year 2021 was mainly affected by the green deal. The European Commission has adopted a series of proposals regarding EU's climate, energy, transport and taxation policies with the objective of reducing net greenhouse gas emissions by at least 55% until 2030 (compared to 1990 levels).

To achieve climate neutrality, the European Green Deal sets out the need to reduce transport emissions by 90% until 2050 (compared to 1990-levels). The Luxembourg government has also decided to accelerate its climate efforts and targets a 55% reduction in greenhouse gas emissions until 2030 compared to the reference year 2005. The government commits to reach net-zero emissions in Luxembourg by 2050 at the latest. In 2021, ANA calculated its carbon footprint for the first time, with the goal of carbon reduction aiming to reach carbon neutrality. Having been the first Luxembourgish administration and first European Air Navigation Service Provider holding the ISO14001 certificate and the EMAS registration, ANA carbon footprint calculation will be the management tool for prioritizing environmental actions.

Having calculated the carbon footprint with our direct aspects in 2021 (According to EMAS, direct means that ANA is directly responsible and is the decision maker), the environmental cell investigated further all relevant methodologies for the elaboration of a more wide or complete carbon footprint and to find the most convenient tool for ANA and its EMS.

The second major topic in 2021 was the special attention to the complaints process from local residents about airport noise. These complaints have increased dramatically following the air traffic recovery during the year and following the drastic reduction observed during the 2020 lockdown period, which can be explained by the high number of "Touch and go" flights due to less commercial traffic. ANA has received about 3000 complaints in 2021 (compared to 20 received annually in the years prior to the lockdown and 1000 in 2020). This massive raise required the implementation of a new effective working procedure. A working group including experts from different ANA departments designed a new process, which was validated in a dedicated meeting during summer 2021. summer 2021: Complaints are received through the ANA webpage, that triggers an automatic reception message. The working group then analyses the complaints and identifies the ones that need further investigation or that need to be fowarded to the civil aviation authorities(the DAC), and therefore the ones that will not be followed up.

European Air Navigation Providers are working on implementing the Green Deal and ANA wants to play a role in achieving these ambitions. First, in 2021, ANA volunteered to co-chair, together with Skeyes (Belgian air navigation and traffic service provider), of Pillar 3 of the ATM/ANS Environmental Transparency Working Group founded by the European Union Aviation Safety Agency (EASA) and the European Organisation for the Safety of Air Navigation (Eurocontrol). Pillar 3 focuses on improving the ANSP's carbon footprint. The objective of the Air Traffic Management/Air Navigation Services (ATM/ANS) Environmental Transparency Working Group is to develop proposals on how ATM/ANS providers can increase environmental transparency and demonstrate their efforts to deliver environmentally friendly air navigation services. Secondly, as of January, 1st 2023, ANA will be chair of the FABEC ASB (Functional Airspace Bloc Europe Central) for all ANSP meetings. We want to take this opportunity to encourage the CEO's from DFS, DSNA, LVNL, Skeyes and Skyguide, to make further progress concerning emissions of carbon.

Claudio Clori
Director ANA

Yves Becker
Environment Manager[1]

[1]The Director of ANA has appointed a management representative for the Environment, function called "Environment Manager"

COMPANY PROFILE*

MISSION AND RESPONSIBILITIES

The Air Navigation Administration (ANA), placed under the authority of the Ministry of Mobility and Public Works, is the Air Navigation Service Provider (ANSP) in Luxembourg responsible for flight safety and efficiency.

We, at ANA, are responsible for the management and operations of a key part of the airport surface where we provide Air Traffic Control (ATC) services, operate radio navigation, surveillance and communication equipment, airport power and lighting infrastructure, offer meteorological and aerodrome information services and ensure daily inspections, winter operations and work coordination on the manoeuvring area.

ANA's mission is to provide safe, efficient and environmentally friendly flow of traffic in the national and delegated airspaces as well as on the aerodrome.

COMPETENCE IS THE KEY

Being aware of the environmental impacts of our activities and services is the first step towards mastering them and acting responsibly and competently in performing assigned tasks.

Our core task and obligation is to ensure safe, expeditious, smooth air and ground operations at and around the airport of Luxembourg. Highly qualified teams with managerial, operational, technical and administrative expertise conduct our operations at the airport.

Supported by state-of-the-art technologies, we train our staff, through a comprehensive induction, awareness and training program to a level of competence in proportion to the level of responsibility of each individual employee.

We maintain the competence of our personnel in air traffic management and develop it on an ongoing basis. We stimulate motivation to learn and apply innovative solutions to minimize risks and anticipate, mitigate and avoid the occurrence of safety and environmental impacts and problems in our operations.

To ensure air traffic safety, we at ANA go beyond effective allocation of skills, technologies and procedures. Our organizational 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 act as a strategic goal on the safety side.

Through active participation in the tasks, we foster innovation that is needed to respond effectively to current and future challenges in air traffic safety and for a sustainable development of our services.

FIGURE – ANA ORGANIZATION CHART

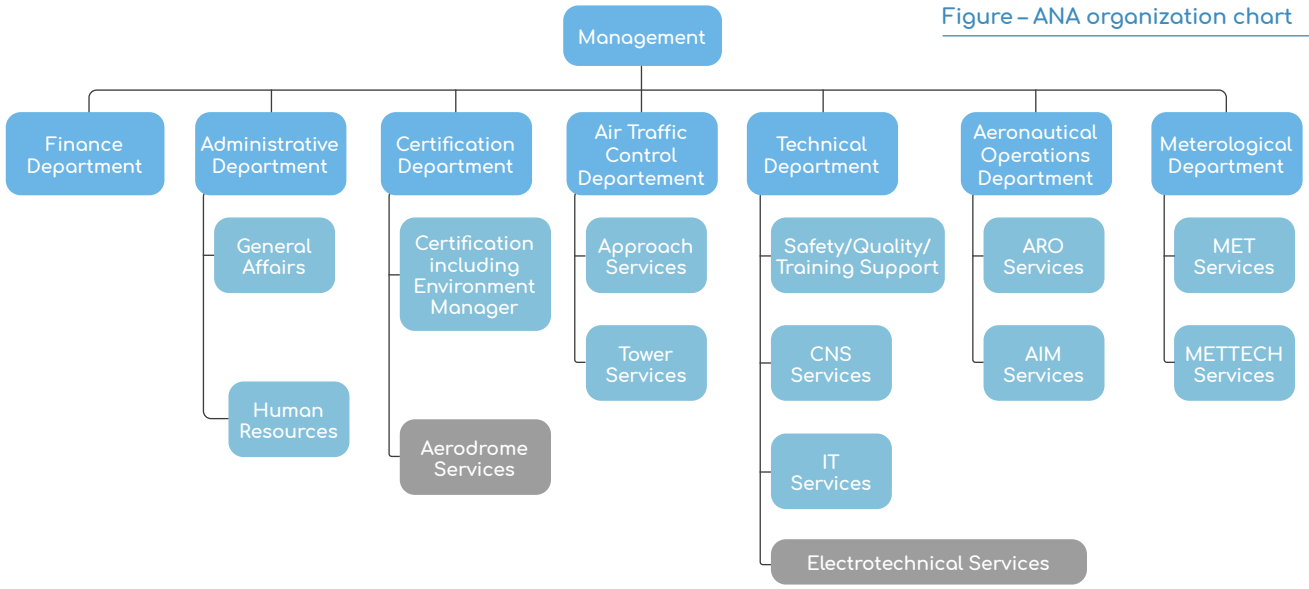

Figure – ANA organization chart

FIGURE – ANA ENVIRONMENTAL ORGANIZATION CHART

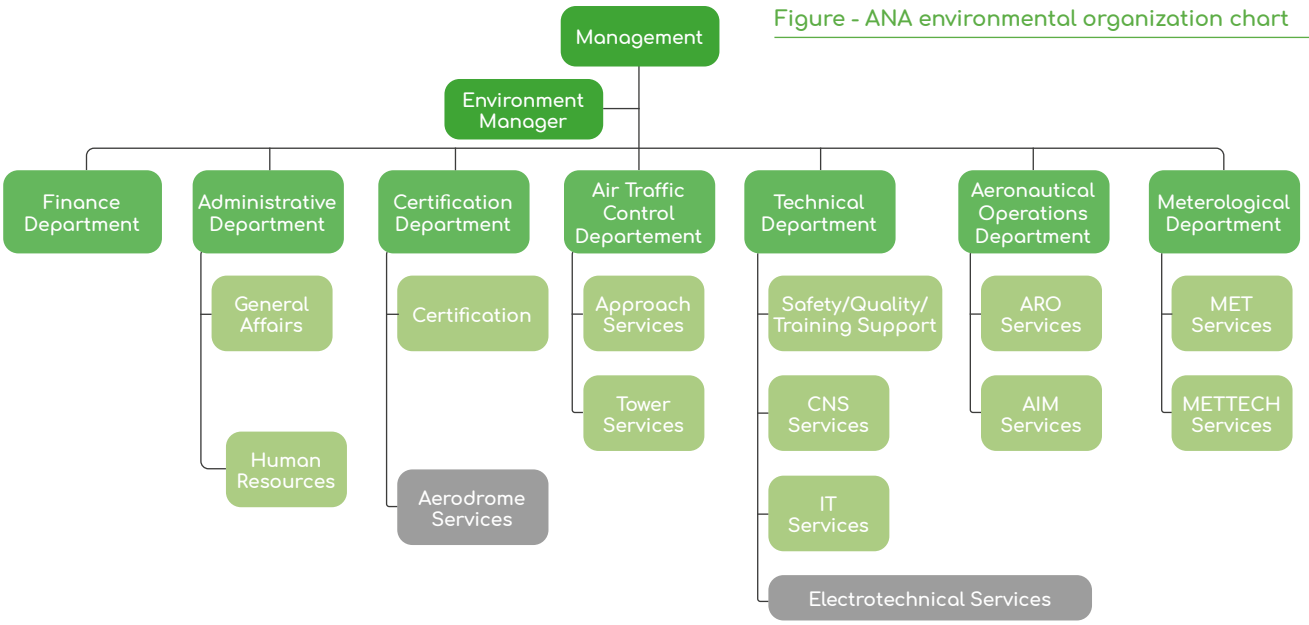

Figure - ANA environmental organization chart

Note: Electrotechnical and Aerodrome services are identified as ‚indirect activities' and are therefore out of the scope of the current EMAS registration

SERVICES AND FUNCTIONS*

Seven departments with allocated tasks form an integrated management structure. The organigrams below depict the management structure in an organizational chart.

The changes in the organizational chart are:

- the former Head of the CNS department is now nominated as Technical Expert in the Technical department,
- a new Head of the Technical department was nominated. The same person was also nominated as Head of the CNS department interim.
- a new Deputy Head of the CNS department was nominated.

SERVICE LOCATIONS AND BUILDINGS*

Skypark project*

ANA participates in the 'Skypark' building project in collaboration with the project owner, lux-Airport. Our objective is to relocate ANA Management and ANA support teams in this new building by the end of 2024.

This new building, foreseen to be built with a wooden frame, aims to be a reference regarding sustainability and environmental awareness. As such, it will consider most recent sustainable technologies like photovoltaic energy supply, rainwater collection, ecological fronts, green roofs and terraces, as well as energy reduction due to heat retention by a green layer.

ANA takes this opportunity to develop their news premises in an environmentally friendly and sustainable way. Skypark will give ANA the possibility to work in a motivating and rewarding working environment and assemble a large part of the staff currently spread over several buildings in a single place.

New Tower building project*

Another building project under study is to relocate the operational teams in a new Control tower.

The current control tower dates from 1992 and needs complete refurbishment. This would require a very high investment. Additionally, its current positioning facing South (facing the sun) is not optimal from an operational point of view.

Therefore, ANA, in agreement with its supervisory Ministry of Mobility and Public Works, decided to invest in a study for the planning of the construction of a new control tower. The goals pursued through this project are to guarantee high quality of air traffic control operation with state-of-the-art equipment and technology. The aim for carbon neutrality will also be integrated in this new project by reducing the use of natural resources and producing fewer emissions and waste.

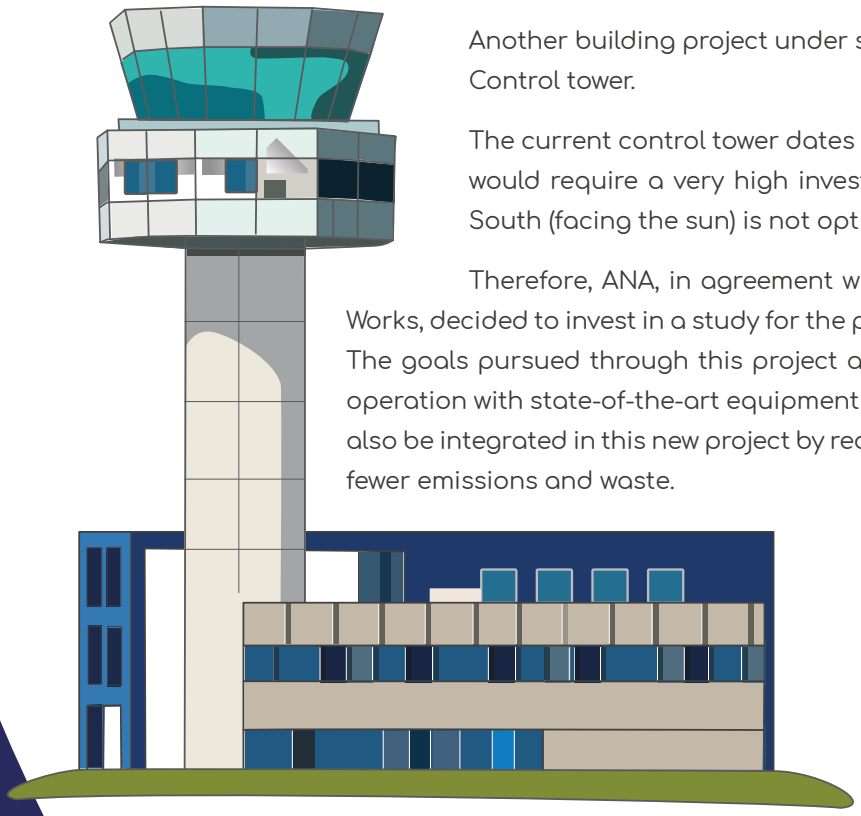

Illustration: Actual control tower dating from 1992

An additional positive impact would be the reduction of noise nuisance for inhabitants by implementing a new standard circuit flown in the north, an area of land covered mainly by forests and fields.

The new tower building will be built south of the airport, more precisely close to intersection "India".

lux-Airport will be the awarding authority. The first preparation meetings took place, the location has been chosen in common agreement.

Due to senior management changes at the airport authority, the meetings have been put on hold and project timeline still needs to be agreed upon. At this stage, there is no precise timetable for this ambitious project, but there is a desire to start it as soon as possible.

ADMINISTRATION BUILDING

Constructed in 1949, the building which included the control tower, went operational on 15 February 1950. Most service activities (tower and terminal air navigation services, technical services..., etc.) were located on this single site. The construction of the Airport Terminal A in 1975, and later the construction of the new tower building (BTO) in 1993 led to a dispersal of the services in different locations.

Today the building is mainly used as an office building. The management, the administration departments counting general affairs, human resources, facilities department, certification department, including the Environment Manager, financial department and one part of meteorological department work in the administration building.

In 2018 a container annex was added next to the administration building housing the IT department, the technical meteorological department (METTECH) and the facilities department. For all buildings, ANA uses 100% green electric energy (nova naturstroum label) since several years. The heating in the administration building is still an oil-fired boiler renewed in 2015. Its fuel tanks contain 6000 l of fuel.

Most offices have air conditioning, which is maintained as defined. The same maintenance interval is respected for the heating system. The container annexe is heated via air the conditioning system; electrical heating devices are installed for additional heating if required.

TOWER BUILDING (BTO)

The construction of the new Tower building and related technical facilities started in 1989 and were inaugurated on 17 Aril 1993. The Airport Administration was from then on distributed over three buildings: the new Tower building (BTO), the Terminal A building, constructed in 1975 and the "old Terminal building" (now Administration building). The Tower building (BTO) is the main operational location of ANA. Approach services and Tower services are operating from here. In addition to the air traffic services departments, the CNS (communication, navigation, surveillance) department is located there.

The entire building is heated with a petroleum gas heating system, which could be switched to an oil-fired heating system with a 3000 l fuel tank. The building has an air conditioning system that was upgraded with additional units over the years. The heating system, as well as the air conditioning systems are maintained on a yearly basis.

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 (AIS/OPS) department, offices for the head of MET and OPS, a terminal charges billing, restrooms, a kitchen and a meeting room. These offices are in the new Luxembourg Airport Terminal A building inaugurated in May 2008.

Three further offices are located in the lux-Airport Administration building close to the Administration building. All environmental aspects (heating, water and energy) are included in the charges ANA pays and are under the responsibility of lux-Airport.

TECHNICAL BUILDINGS*

To be more precise and as an update of the last environmental statement, it is important to note that the so-called ´Emission centre´ hosting radio equipment and transmission / receiver antennas for ATC, north of the runway, has gas heating installed. The gas consumption of the site was already included in the 2019 figures for the respective measurements and core performance indicators.

ENVIRONMENTAL MANAGEMENT SYSTEM*

ANA ENVIRONMENTAL POLICY *

The fundament of an environmental management system is its policy. ANA's environmental policy is separated into two parts, its responsibilities and its commitments.

RESPONSIBILITIES

The Luxembourg Administration de la Navigation Aérienne (ANA), responsible for managing and operating many parts of Luxembourg Airport - the Grand Duchy of Luxembourg's only commercial airport -ensures flights in a safe and efficient way. 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 engage its employees, the airport community, airlines as well as local residents to ensure sustainability of resources and protection of the environment.

The scope of this Environmental Approach concerns those business activities, services and locations directly under the control of ANA. Furthermore, ANA acknowledges that there are activities outside this scope which it can influence and will seek collaboration from all stakeholders. The Environmental Management System, operating to ISO 14001 standard, is an integral part of the Integrated Management System and is in line with ANA policy, mission and vision.

COMMITMENTS

- Continuous raise employee awareness of the importance of environmental protection in the fulfilment of their duties.
- Co-operate with government authorities, the community and its other stakeholders to improve environmental protection practices, encourage use of sustainable resources, protection of biodiversity and ecosystems and 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.
- 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 impact by adopting efficient operational procedures.
- Ensure compliance with applicable legislation and regulations in matters pertaining to the environment, as well as with all other requirements to which ANA subscribes.

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OUR 'ENVIRONMENTAL JOURNEY'*

In November 2020, the Environmental Management System of ANA was successfully ISO 14001:2015 recertified. The next ISO 14001 re-certification audit is foreseen in 2023, with a surveillance audit in July 2022.

ANA has been EMAS registered in December 2020, with the registration number LU-000008. The next environmental statement date is December 1st, 2023. This updated environmental statement is the second update to the initial 2020 statement and has been validated by an accredited verifier.

OUR STAKEHOLDERS*

European Stakeholders

With respect to the Green Deal and the 'Paris Agreement', aiming to avoid dangerous climate change, ANA is participating in external environmental working groups, such as the EASA and Eurocontrol Environmental Transparency Working Group, the FABEC Standing Committee Environment.

The Environmental Transparency Working Group develops proposals how ATM/ANS Providers can increase their collective disclosure and reporting of environmental performance and how providers can improve their organisation's environmental footprint.

ANA, in cooperation with Skeyes, organised a series of sustainability-focused webinars as co-chairs of the pillar 3 ATM/ANS Environmental Transparency Working Group, which focuses on improving ANSP's environmental footprint.

These webinars allowed the participants to gain knowledge and skills necessary to apply carbon footprinting into their own ANSP business processes. It provided attendees an overview of what an ANSP can do to control their own environmental impact, excluding airline emissions. These webinars are focused on decarbonizing the company's buildings, vehicles, and infrastructure.

The ATM/ANS Environmental Transparency Working Group, established within the EASA – Eurocontrol Joint Work Programme in support of EASA'S sustainable aviation programme has as purpose 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 approaches to measuring environmental benefits and to demonstrate their efforts to support a net zero ambition for the industry".

The working group focuses on three "pillars" of work, as follows:

Pillar 1, on how providers identify environmental inefficiencies under their responsibilities and how they measure improvement based on certain performance criteria (existing or to be developed);

Pillar 2, on how individual providers improve performance through the implementation of new technologies and procedures; and

Pillar 3, on how providers are improving their organisations' environmental footprints

(source Eurocontrol)

The FABEC Standing Committee Environment (SC ENV) is a body of the FABEC governance structure for the cooperation of ANSPs within FABEC. The SC ENV is tasked to prepare the FABEC policy in the environmental domain and to ensure the integration of the environmental pillar in the optimised performance of the ATM-system.

In the past two years, environmental management system continued pursuing the common obligation to address the shared responsibilities of ANA and lux-Airport, and their home carriers Cargolux and Luxair, on their environmental aspects 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 in the frame of the ATM master plan and Airport CDM (Collaborative Decision Making) and to work together on a common charter. The Luxembourg Airport Environmental Committee is organised periodically since 2020.

National Stakeholders

ANA is also in constant dialogue with the airport citizens and contributes actively to the 'Plan d'action Bruit' (Noise action plan) and the 'Commission consultative aéroportuaire' from the Ministry of the Environment, Climate and Sustainable Development in cooperation with the Environmental Agency. Further regular meetings with the citizens associations are organized. Moreover, ANA is also represented in the Airfield safety team (AST) and the Runway safety team (RST) with all involved actors on the airport.

OUR ENVIRONMENT COMMITMENT

In all areas of activity, we at ANA strive to implement best practices to avoid and reduce the environmental impact of flying, of airport operations and to improve environmental efficiency in operations. We do this by considering important economic objectives and environmental sustainability, both with a long-term perspective in management and operations, whilst maintaining compliance with legal and regulatory obligations and with our environmental, safety and quality strategies and policies in focus.

The main scope of our environmental approach are the commercial activities, services and sites directly under our control. However, we pursue also activities outside this framework through collaboration with all stakeholders whenever it is possible.

We are committed to:

- Constantly educate and advise employees on the importance and on measures to protect the environment when performing their duties;
- In line with government authorities, cooperate with the community and our other stakeholders to improve environmental protection practices, encourage the use of sustainable resources, protect the biodiversity and ecosystems and adapt to climate change;
- Prevent pollution and minimize the impact on the environment caused by our operations under our control, as well as in our administrative and purchasing activities;
- Monitor the environmental impact of operations at Luxembourg airport through established key environmental performance indicators and continuous improvement measures;
- Reduce noise impact and save fuel by adopting efficient operating procedures in ATM, on the airport and in ATC;
- Ensure compliance with applicable environmental laws and regulations and with all other requirements that we subscribe to.

AWARENESS RAISING *

We continuously invest in improving environmental awareness of all employees. An awareness booklet will be developed to share best practices related to the individual carbon footprint. Continuous research and implementation of more sustainable products will be discussed, and we will evaluate if dedicated workshops for ANA employees can be organized in order to understand the essential issues of climate change, taking adequate actions and focusing on raising awareness regarding consumption of energy and resources.

In the scope of the EMAS registration, ANA organized an annual training / instruction on the subject of environmental protection and the environmental management system for all employees, including management.

Another example of concrete engagement of our people in "doing things differently" is a contest for the best environmental ideas of ANA's employees launched in May 2021. People were asked to bring forward ideas in order to reduce emissions or suggest environmental improvements at their workplace.

The outcome of our contest was to invest for protection, plant trees, install automatic switches in hallways and offices and timers on heating devices, invest in bike storage boxes and to motivate staff for the use of the bicycle as a means of transport for commuting to work. All actions were analysed on their feasibility and entered in ANA's environmental action plan.

Furthermore, new environmental procedures were released.

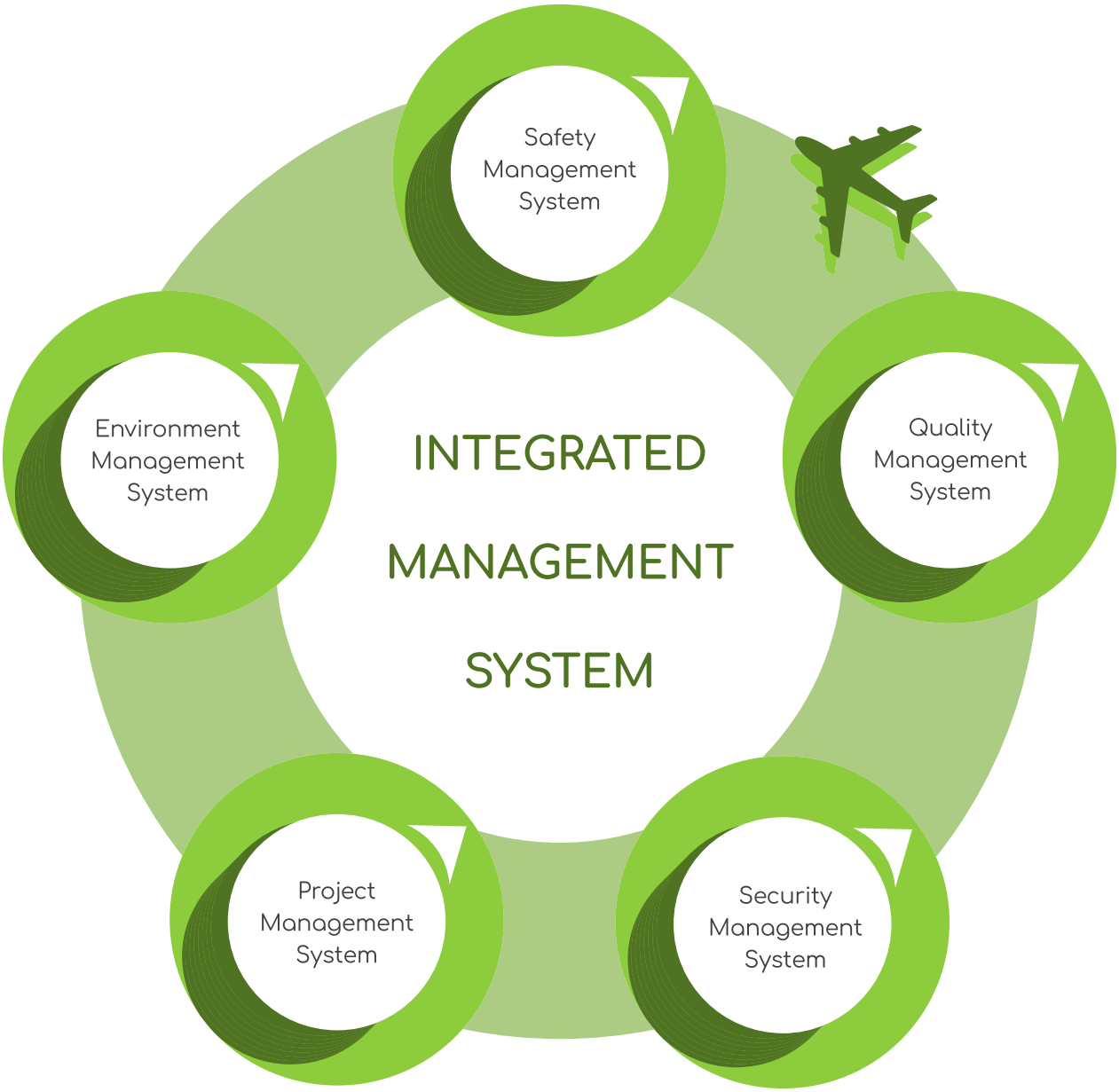
A procedure on how ANA uses energy and resources in a responsible way and aims at reducing and optimizing the use.

A procedure for the handling of chemicals in line with best practice and recommendations.

These procedures were integrated in the ANA yearly training on environmental issues provided to all employees.

In 2021, ANA released environmental bulletins which briefed about following topics:

- acquirement of our EMAS registration and ANA's environmental statement
- EMAS training and its content
- the outcome of the environmental survey and the nomination of the winner and the winning proposal
- clever address food packaging
- what the impacts of single use plastics are
- a waste management special
- the outcome of the EMAS and ISO audits
- the consequences of CO2 emissions and ANA's carbon footprint calculation
- a campaign related to bike commuting initiated by the ministry (MVOS)
- our honey production in 2021
- greener web tips for everyday use
- the Eurocontrol EASA environmental transparency working group webinars, where ANA is co-chair for pillar 3 with focus on improving ANSP's environmental footprint.



THE EMS FRAMEWORK

The EMS is embedded in our Integrated Management System (IMS), which documents the common management processes and structures embracing safety management, quality management, project portfolio management, environment management, and security management systems.

The objective of the IMS is to coordinate the design, development, implementation, monitoring, and continuous improvement of these sub-systems to ensure that stakeholders' expectations and requirements in these areas can be and are met and that the set performance targets are achieved.

The goals, targets and activities of our EMS form part of the overarching performance management system gets the same full commitment from ANA management as the other performance areas. Our management, our personnel and the Ministry of Mobility and Public Works as the main stakeholder strongly support the goals and initiatives, as do the major Luxembourg airlines, the airport operator lux-Airport and the local resident associations with which we are in regular contact. An increasing number of set up and agreed statements and policies on environment demonstrates the effective working of this stakeholder management structure.

SUSTAINABLE CHANGE

´Environmental Sustainability´ is not only a phrase ... it means to think and act in a sustainable way when it comes to use resources. The core statement in ANA´s Environmental Policy underlines this clearly:

"ANA [...] 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".

It means that we strive for sustainability through actions with a long-term view. New procedures (e.g. Continuous Descent Operations (CDO), Performance Based Navigation (PBN)) will have significant long-term impact on noise and emissions and reduce fuel consumption. New equipment (LED lights on runway and taxiways, electric cars ...) and all products that we use in performing our duties are purchased based on environmental criteria, i.e. to be in operation for a long period, are biodegradable, and / or reduce the use of natural resources for example.

The measures we take shall ensure that there is no way back to non-sustainable practices, lowering the guard on environmental problems, or ignoring the impacts on our neighbours and the wider public. We will develop further measures that aim to maintain and increase these efforts in the future.

Managing the change of the organisational culture and working practices in this respect was and still is key in shifting the attitudes, thinking and - most important – the behaviour with a view to the environment. This is a long and ongoing process. To overcome internal resistance and achieve acceptance of new practices and way of working required strong commitment of the top management and the Ministry of Mobility and Public Works.

Continuous feedback efforts and learning have led to a change of mind in a sustainable and lasting way. We observe new behaviours in all environmental aspects and in our encounters with stakeholders at all levels of the Ministry and inside our administration.

In addition, as per ISO 14001 standards, a process of continuous improvement is in place to maintain the good results achieved. Our sustainable approach is demonstrated in external but especially internal audits.

Indeed the internal audit as a cornerstone of the EMS is defined with the goal to determine:

- if the environmental management system meets the requirements of ISO 14001 and the EMAS Regulation
- if it has been properly implemented and maintained
- to guarantee that the organisation's management gets the information it needs to review the organisation's environmental performance
- the effectiveness of the environmental management system

We carry out audits on an annual basis, as this helps to demonstrate control of our significant environmental aspects, with all activities being audited within a three-year cycle on the:

- environmental performance of the organisation, as per requirements of ISO 14001 and EMAS Annex III
- organisation's compliance with applicable legal requirements and other requirements relating to the environment as per EMAS Annex III. Our approach is communicated in our annual plans and reports and in the internal reporting system.

RESPONSIBILITIES OF THE EMS

The Director of ANA has appointed a management representative for the Environment, function called "Environment Manager". Together with the support of the Management Team, the Environment Manager, is responsible for the continuous progression of the system. Each head of department has specific objectives linked to the environmental aspects of their activities.

The Environment Manager ensures the improvement, maintenance and revision of the internal Environmental Management structures, procedures and processes in all services and at all levels of ANA.

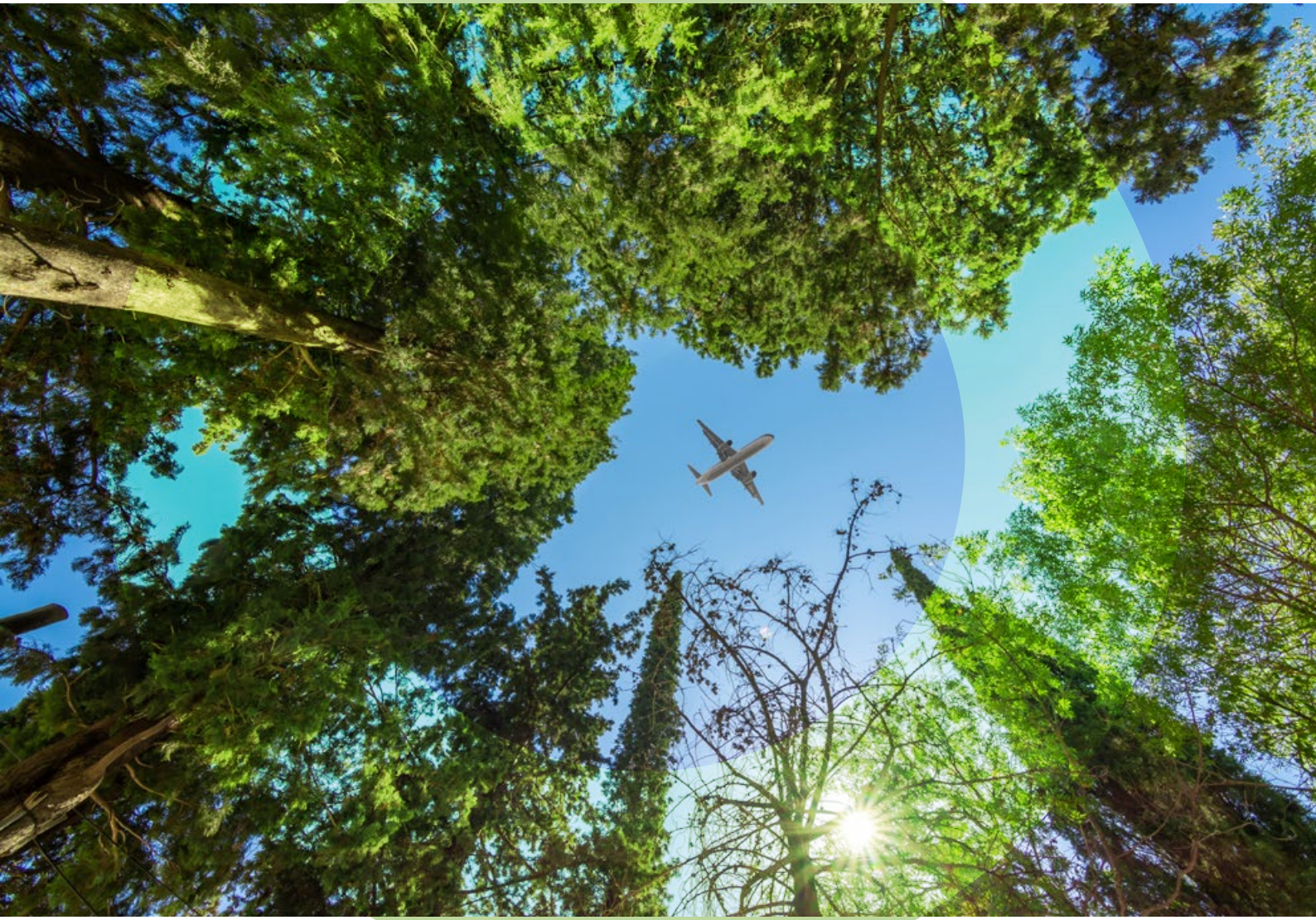
This includes:

- Report to the Director about the system efficiency and the improvement needs
- Establish, implement, monitor and improve an environmental management system at all applicable levels of the organization
- Ensure that the necessary processes for the EMS are defined, implemented and reviewed
- Determine risks and opportunities that need to be addressed to ensure the environmental management system
- Ensure implementation of and compliance with new rules and regulations
- Analyse and act upon the results of environmental performance and the organization's compliance obligations
- Promote environmental obligations in the suppliers' assessment and monitoring process
- Take into account the user requirements and stakeholders' expectations in relation to the environment
- External auditors' coordination linked to EMS
- Follow-up and development of corrective action plan related to environmental audits
- Organize and/or perform internal audits in the frame of the EMS
- Collect data, approve and follow-up of environmental indicators
- Promote continuous improvement linked to the environment
- Manage resources for the environmental management system
- Individual safety responsibilities as per Departmental Internal Register and/or Safety Management Manual, in the frame of his/her tasks
- Draft and yearly update of the environmental statement pursuant to Regulation (EC) no 1221/2009 of the European Parliament and of the council of 25 November 2009
- Report directly to ANA director regarding any major fact that could have impact on the environment

Based on the inputs from the Environment Manager, the Management conducts annual management reviews, tabling issues that need revision or adaptation and agree on new initiatives, targets and actions. To improve the environmental system, they will together determine the priority and use of financial and human resources required for this purpose. We designed the EMS as a dynamic system. Every employee can and should participate in the development process of the EMS and should contribute in the achievement of environmental goals.

ENVIRONMENTAL RISK MANAGEMENT*

The Environmental risks & opportunities analysis has been reviewed by evaluating the effectiveness of the actions taken, based on a set of performance indicators, and assessing whether new risks or opportunities have arisen. The residual risks have been recalculated and the environmental action plan reprioritized where needed. The outcome of this review has been validated during the bi-annual environmental review.



DIRECT AND INDIRECT ENVIRONMENTAL ASPECTS AND IMPACTS*

The table of aspects and impacts has been reviewed and split in two tables. The first table groups the direct aspects, where ANA has the responsibilities and direct control, which allows it to focus on the actionable items identified. The second table presents the indirect aspects, resulting from interaction with third parties, including other stakeholders and subcontractors that ANA may influence. These items are significant inputs for the external communication plan.

Business travels have been identified as an additional aspect having a direct impact on air quality.

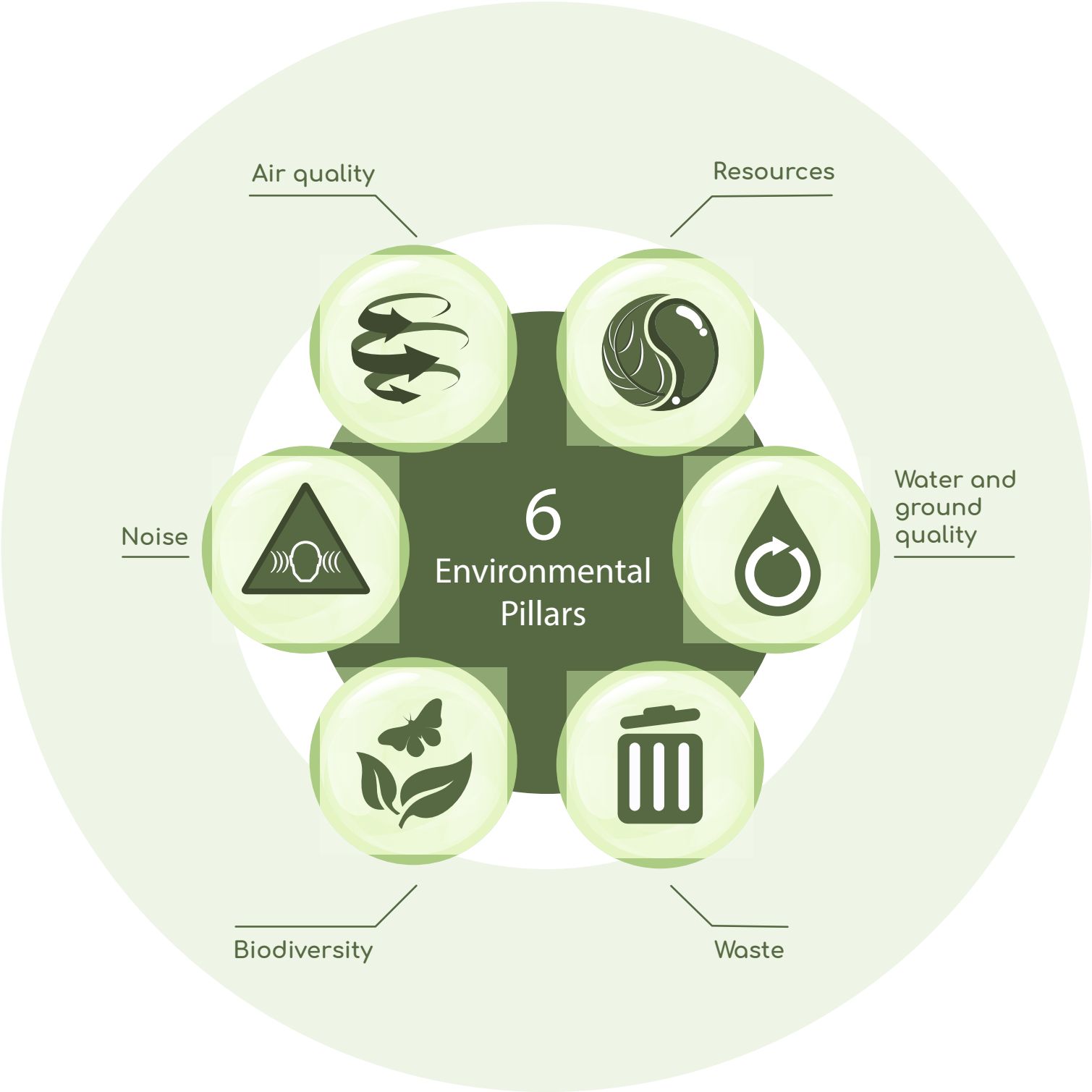
Table of indirect aspects and their environmental impacts:

Aspect	Impact	Respon-sibility	Decision (control)	Influence	Aspect type	Stakeholders impact	Means of Influence or Control
Aircraft approach, take off, VFR traffic	Noise	N	Y	Y	Indirect	High	• ATC, airlines procedures, Charging fee per aircraft type, Night curfew quota, CDO/PBN procedures
	Air Quality	N	Y	Y	Indirect	Medium	
Aircraft on ground (taxiing, reverse thrust, engine test, Auxiliary Power Unit)	Noise	N	Y	Y	Indirect	High	• ATC, airlines, aerodrome procedures
	Air Quality	N	Y	Y	Indirect	Low	
Maintenance of airport infrastructure/surface & Inspections*	Noise	N	N	N	Indirect	Medium	• Coordination meetings, Project management procedure
	Air Quality	N	N	N	Indirect	Low	
	Waste	N	N	N	Indirect	Low	
Supply of water to whole airport	Natural resources	N	N	N	Indirect	Low	• Measure consumption
Purchasing of AER equipment	Noise	Y	Y	Y	Direct	Low	• Purchasing procedures, Project management
	Air Quality	Y	Y	Y	Direct	Medium	
	Natural resources	Y	Y	Y	Direct	Medium	
	Waste	Y	Y	Y	Direct	Medium	
Implementation, Use & Maintenance of AER equipment	Noise	N	Y	Y	Indirect	Low	• Purchasing procedures, Project management
	Air Quality	N	Y	Y	Indirect	Medium	
	Natural resources	N	Y	Y	Indirect	Medium	
	Waste	N	Y	Y	Indirect	Medium	
Deicing of manoeuvring area	Natural resources	Y	N	Y	Indirect	Medium	• Friction test info, Winter operations procedure, rain water treatment, potassium purchase lowered the impact
	Water & Ground Quality	Y	N	Y	Indirect	Medium	
Biodiversity (wildlife, flora and fauna mgt)	Biodiversity	N	N	Y	Indirect	Medium	• Airside and surroundings inspections, Honey production, biodiversity surveys
Commuting to work	Natural resources	N	N	Y	Indirect	Medium	• Free public transport as of March 2020, charging station for e-cars, communication

Table of direct aspects and their environmental impacts

Environmental Aspect	Impact	Responsibility	Decision (control)	Influence	Aspect type	Stakeholders impact	Means of Influence or Control
Purchasing of ANA ANSP equipment	Noise	Y	N	Y	Indirect	Low	• Purchasing procedures, Project management, Maintenance procedures, equipment follow up
	Air Quality	Y	N	Y	Indirect	Low	
	Natural resources	Y	N	Y	Indirect	Medium	
	Waste (equipment lifecycle)*	Y	N	Y	Indirect	Medium	
Purchasing of ANA office materials	Air Quality	Y	Y	Y	Direct	Medium	• Purchasing procedures, Project management
	Natural resources	Y	Y	Y	Direct	Medium	
	Waste	Y	Y	Y	Direct	Medium	
Implementation, use & maintenance of ANA ANSP equipment	Noise	Y	Y	Y	Direct	Low	• Purchasing procedures, Project management, Maintenance procedures, equipment follow up • Measure consumtions
	Natural resources	Y	Y	Y	Direct	Medium	
	Waste (equipment lifecycle)*	Y	Y	Y	Direct	Medium	
Fleet management	Natural resources	Y	Y	Y	Direct	Medium	• Water for cleaning recycled (if possible) or filtered • Measure consumption • Waste policy*
	Air Quality	Y	Y	Y	Direct	Medium	
	Waste (equipment lifecycle)*	Y*	Y*	Y*	Direct*	Medium*	
Use of hazardous prod-ucts	Natural resources	Y	Y	Y	Direct	High	• Measure consumption, chemicals procedure, waste procedure
	Waste	Y	Y	Y	Direct	High	
	Water & Ground Quality	Y	Y	Y	Direct	High	
Use of Office	Natural resources	Y	Y	Y	Direct	Medium	• Measure consumptions, Waste procedure, resources procedure, Training & Communication
	Waste	Y	Y	Y	Direct	Medium	
	Water & Ground Quality	Y	Y	Y	Direct	Medium	
Facility management & maintenance	Natural resources	Y	Y	Y	Direct	Medium	• Measure consumptions, Waste procedure, resources procedure, maintenance procedure
	Waste	Y	Y	Y	Direct	Medium	
	Water & Ground Quality	Y	Y	Y	Direct	Medium	
Internal trans-port (on airport / between ANA facilities)	Natural resources	Y	Y	Y	Direct	Medium	• E-bikes for employees, purchasing policy for vehicles (e- or plug-in hybrid), communication
	Air quality	Y	Y	Y	Direct	Low	
Business travels*	Air quality	Y	Y	Y	Direct	Medium	• switch to public transport or green mobility*
	Resources*	Y*	Y*	Y*	Direct*	Medium*	

THE 6 ENVIRONMENTAL PILLARS*

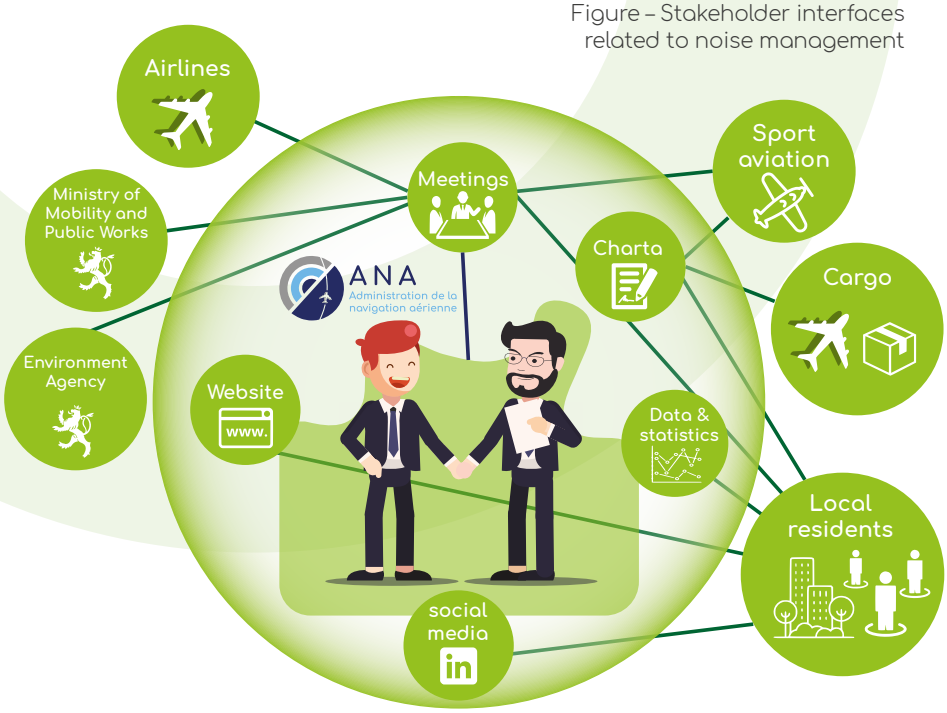


The ´6 Environmental Pillars´ and direct & indirect environmental management aspects

	Pillars	Significant Environmental Management Impact	Impact	Direct significant Environmental Aspect	Indirect Environmental Aspect
1	Noise	Noise pollution	Disturbance	Purchasing of ANA ANSP equipment Maintenance and operations of ANA ANSP equipment	• Aircraft operations • Ground operations
2	Resources	Reduction in resources	Energy consumption	Air Navigation Services equipment & services HVAC, lighting & electricity supply of premises Internal movements	• Transport of goods (suppliers)
			Paper consumption	Office activities	
			Water consumption	Lavatories Cleaning vehicles and premises	• All airport activities
3	Air	Global warming	Emissions of CO_2 and other greenhouse gases	Purchasing of ANA ANSP equipment & office Business travels	• Aircraft emissions • Emissions from services to Airlines
		Air pollution	Emissions of pollutants and particulates	Fleet management Building emissons Waste emissions	• Aircraft types
4	Water & Ground	Water and Ground Pollution	Fuel and oil leaks	Use of hazardous products	• Aircraft activities • Handling activities
			Deicing fluids	Facility management Maintenance activities	
5	Waste	Air, water and ground pollution	Waste production, storage and treatment	Office activities	• Maintenance of airport infrastructure/ surface
				Maintenance of premises & equipment	
				Renovation and replacement of equipment	
				Purchasing policy	
6	Biodiversity	Fauna & Flora reduction	Disturbance to wildlife	-	• Aircraft traffic • Ground traffic • Infrastructure extension

Table – The ´6 Environmental Pillars´ and direct & indirect environmental management Figure– EMS Pillars

Figure – Stakeholder interfaces related to noise management



1. NOISE REDUCTION*

BACKGROUND*

Reducing gaseous and noise emissions – NOX and noise – and saving aircraft fuel are immediate goals to achieve.

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

Fuel CDO's, are measured from ToD (Top of descent) to 1800ft, with no level-off segment. These CDO's decrease fuel consumption during approach. Fuel CDO's are also considered as noise CDO's, as from FL075 to 1800ft, noise is considerably reduced.

Despite this, noise complaints of citizens in the vicinity of the airport increased, which is unusual and was mainly due to the high increase of local VFR (Visual Flight Rules) traffic (especially touch and go operations) from May 2020 to November 2020 during the time of much reduced IFR (Instrumental Flight Rules) traffic.

Furthermore, a change of a departure route (SID GTQ1T) at the eastern side of the runway also caused a higher number of noise complaints. The procedure has been revised beginning 2021 in order to reduce the noise impact (GTQ2T). Even though the altitude has been raised from 1700 FT to 2200 FT, complaints are multiplying.

As mentioned, noise complaints have further risen in 2021. Actions, such as the update of the citizen complaints process were introduced (with the creation of a template on: https://ana.gouvernement.lu/fr/support/contact.html), meetings and working groups were organized together with the ministry, the DAC (Direction de l'aviation civile) and citizen associations and the update of the national airport noise plan (Plan d'action contre le bruit aéroportuaire) are still on-going.

SATELLITE-BASED NAVIGATION

Making use of modern satellite technology is a major step from conventional ground-based navigation and procedures to satellite-based navigation and area navigation procedures.

IMPLEMENTATION OF CDO FOR ´SMOOTH LANDING´/ PBN - PERFORMANCE BASED NAVIGATION*

ANA investments in new ATC procedures and terminal airspace and route changes (PBN transitions & approaches enabling CDO) are already reducing aircraft fuel, CO2 emission and noise as environmental improvements.

The potential for further environmental and economic benefits is high. PBN in principle offers opportunities to reduce noise for citizens in the airport vicinity and, for example, design ´custom tailored´ departure (SIDs) and arrival (STARs) routes for noise abatement with much more flexibility as current.

Performance Based Navigation (PBN) is available in Luxembourg TMA (Terminal Control Area) for accurate navigation since March 2020. The solutions implemented allow direct, shorter routes as well as more efficient take-offs and landings at Luxembourg airport. PBN, in combination with PBN enabled CDOs improves safety, helps to reduce fuel consumption and noise impacts, cutting aircraft emissions.

There is potential for further savings as result of changed procedures in PBN/CDO, flexible ground operation and advancing in PBN for example. One additional CDO/PBN has been implemented in 2021 to increase the CDO offer.

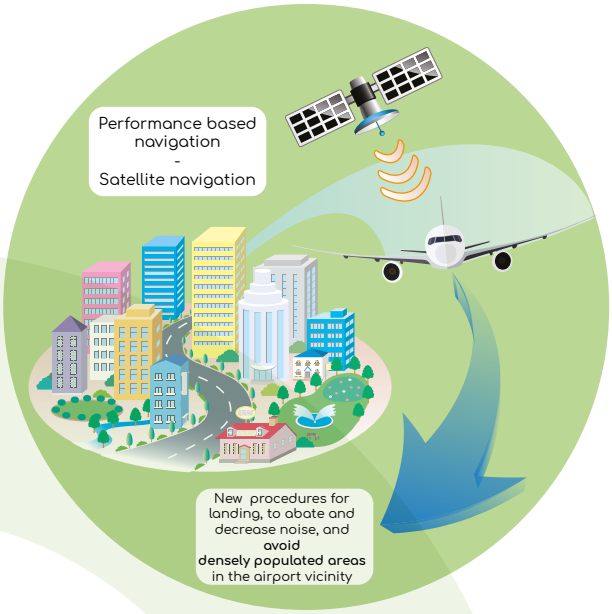


Figure - PBN procedures compared to conventional routing

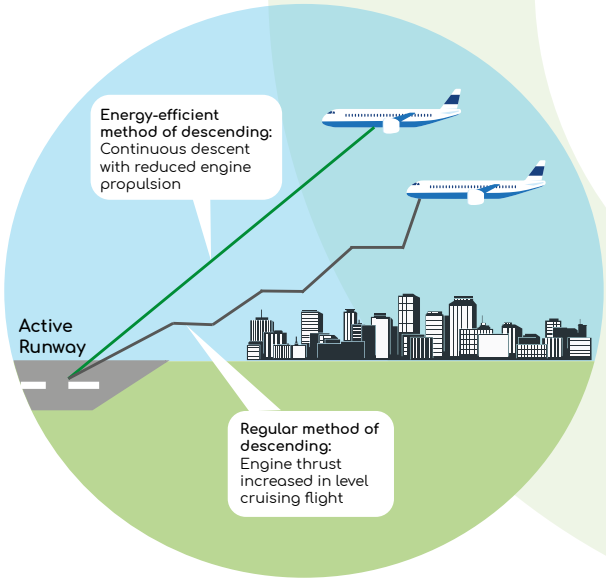


Figure – CDO procedures compared to conventional approach

WHAT´S NEW: ´GREEN CLIMBING´ - CONTINUOUS CLIMB OF AIRCRAFT*

We expect a reduction of fuel burned and noise and will, by compiling and analysing airlines ´quick access data´, monitor and if necessary improve performance by adopting actions that work for airlines and ATC. Airlines, for example, can employ measures to achieve optimum climb engine thrust and other operational benefits when using the CCO procedure.

ANA will implement, in cooperation with local airlines, stakeholders and DAC, procedures and ATC clearance for Continuous Climb Operation (CCO). Furthermore, when applicable, the operational use and effects in environmental terms will be monitored: fuel savings of airlines, and emission and noise reduction for our residents. A new project on PBN SID's has been launched end 2021/ early 2022 to enable continuous climb on routes clear of arrival routes. The PBN SID's will be implemented in 2023 for all destinations and all runways, but the specific part, regarding separated PBN departures and arrivals to and from the south (AKELU/GTQ) enabling continuous climb and descent operations depend on French airspace redesign project (foreseen until 2024).

AIRCRAFT ENGINE RUN-UP AREA

After the study ANA launched, the project was handed over to the aerodrome operator lux-Airport.

ENVIRONMENTAL MODULATION OF TERMINAL CHARGES

Since 2015 ANA operates a charging scheme for its airport air navigation services that includes environmental factors based on noise emission certificate of aircraft and promotes the use of less disturbing departure times in terms of noise. Aircrafts that use less ´noisy´ engines pay less for the service as do airlines that depart during normal operating time of the airport i.e. after 0600 and before 2300 hrs in the night.

The modulation formula is applied to all aircraft departures; our Regulator (DAC) supervises the formula as part of the EU Performance and Charging Regulation and the local performance plan. The monitoring of application and reporting of the effects to our stakeholders is ANA's obligation.

The scheme has shown its effectiveness, is respected by airlines and has the expected effect to reduce noise.

Figure - Charging scheme for ANS services including environmental factors

Figure – Charta "Against the noise" with Cargolux

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. The airlines may request the authorization for special take-off and landing operations to ANA. ANA will analyse the justification provided and grant curfew when necessary only. Night flights are a serious disturbance to residents and are a major issue. Reducing night flights to a minimum necessary is an important goal in Luxembourg.

ANA, in partnership with Cargolux, developed a charter of good practices in the fight against noise pollution. One of the purposes of this Charta is to set a maximum ceiling for exceptions for night flights, taking into account the time and type of aircraft. This good practice may be offered to other major companies.

NOISE MEASUREMENT

Luxembourg Airport has a network of five noise measuring stations which regularly and automatically measure the noise emission on the airport and prepare daily and monthly summary reports. ANA adapted the system to publish the summary sheets for noise measurements on our website. The use of European indices for noise that we apply enables a better, transparent and consistent communication of noise measurements to the public. We are now able to put the results of the noise measurements in relation with the calculated airport noise maps to identify areas that are more exposed to noise.

The data collected by the airport's systems are published on a monthly basis and indicate in particular the number of movements at the airport according to predefined time slots. The data is also used to store the actual flight information of the movements in order to integrate them into the noise maps indicators for noise distribution and an input for developing noise abatement procedures.

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 derogations from the regulation are required to submit to the Ministry of Transport quarterly summary statements of exemptions actually used and justifying reasons.

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

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.

2. RESOURCES (MATERIAL) *

AIR CONDITIONING AND HEATING SYSTEM MAINTENANCE

After an internal audit, ANA reviewed its contracts for the air conditioning and heating system maintenances. In that scope, equipment listings were reviewed and amended, and additionally the maintenance process within the facilities department was updated.

ANA GOING FOR ZERO SINGLE-USE PLASTIC

The long-ignored issue of disposable plastics is massive and is causing an enormous pollution worldwide destroying ecosystems (air, water, soil), endangering species and jeopardising health.

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

By signing the Zero Single-Use Plastic Manifesto, ANA is bound to eliminate all single-use plastic by the end of this year.

Several years ago, ANA started already to eliminate plastic cups and replacing them by glasses and mugs and substituting plastic stirrers with conventional spoons. All beverages are delivered in reusable glass bottles and fountains for drinking water were installed for the employees. Coffee pads were banned and centralized coffee machines were installed in the departments.

INSTALL NEW WATER METERS FOR ALL AIRPORT STAKEHOLDERS

As an initiative identified in the Environmental Statement 2020 a project was started in 2020 to install new water meters at the sites of all airport stakeholders (internal and external) in cooperation with Lux-Airport. An external company was mandated to make a survey of the existing infrastructure and to update the existing building plans. Phase 2 of the project will be to replace existing water meters with remote reading meters.

ELECTRICITY METERS FOR ANA EQUIPMENT AND FACILITIES*

Another initiative identified in the environmental statement 2020 was the implementation of an electricity management plan. ANA identified 11 new measurement points and installed adequate electricity meters of their equipment and facilities. Those new measurements are now integrated in our environmental plan and will allow a better monitoring of ANA's electricity consumption. A further step will be the direct monitoring of the consumption by our technical department.

USING LED TECHNOLOGY*

This year the runway refurbishment will enter its second round and consequently new LED lights and respective power supply units at and around the runway will replace the current Airfield Ground Lights (AGL). After the refurbishment works (started in April 2021 and planned until end of 2022), all lights on the runway (except the approach lighting systems) will be replaced by this long-lasting and energy efficient technology.

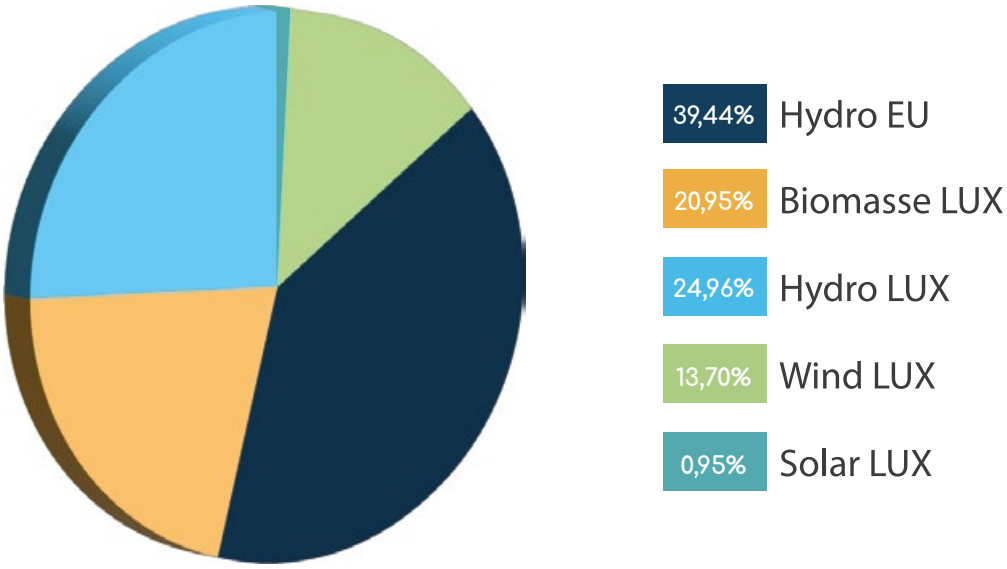


Figure – Supply of ´Green´ electric power

ECO-RESPONSIBLE PROJECT MANAGEMENT

A recent initiative of the Project Management Office and the Environmental Department is the environmental impact assessment or effects of projects and main activities on a common scale. Before launching any project, we identify the conditions necessary for the implementation and the possibility and likely success of an eco-friendly approach. In this context, the environmental impact of our projects is evaluated locally and globally.

SUPPLY OF ´GREEN´ ELECTRIC POWER*

ANA's choice for their electricity supply is 100% European and 100% free of CO2. The purchased electricity is powered by 50% hydro energy coming from hydroelectric power stations which are not older than 15 years, 25% wind mills, 7% biomass production and 0,5% photovoltaic facilities.

Please note that the composition of the green energy may change as it is depending on natural resources.

(Source: www.enovos.lu – 06/04/2022)

SAVING TREES – REDUCING PAPER*

Paper used in ANA is 100% recycled and awarded with the EU Ecolabel DE/011/004.

This label guarantees:

- Low air and water pollution during production
- Hazardous substances restricted, if not completely avoided.
- Use of certified fibres from sustainably managed forest

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

The paper consumption itself fell in 2020 and 2021 from 600 paper blocks (1800 paper sheets per employee) in 2019 to 330, respectively 450 paper blocks (900, respectively 1200 paper sheets per employee) in 2020 and 2021. Both years are not considered statistically relevant because of the pandemic.

To further reduce the consumption we will, in the future monitor also the paper weight with the idea to use thinner paper. Furthermore, it will be evaluated if CO_2 neutral paper can be purchased.

3. AIR QUALITY*

As part of our business, we are actively engaged in preserving local air quality and fighting climate change by reducing our carbon footprint. We are currently focusing our efforts internally by monitoring our heating emissions produced in our buildings, reducing the number of service cars in use and the purchase of plug-in hybrid or electric cars. We encourage the reduction of carbon emissions by making e-cars and e-bikes available to our staff during their daily work. Charging stations for service or private electric cars have also been installed.

The determination of ANA's carbon footprint has been focused on the air quality pillar. New metrics were introduced, such as emissions from use of buildings, emissions caused by business travels (via car and via plane), emissions descending from waste and fuel consumptions of ANA's car fleet and from air conditioning emissions.

FLEET MANAGEMENT*

Our fleet management's target is to replace all possible combustion cars at the end of their lifecycle by cars with full electric or plug-in hybrid technologies. In fact, since data has been collected in 2016, we managed to reduce our average CO2 emissions on our car fleet by 58%, even though it has grown from 32 vehicles in use in 2016 to 37 in 2021 (the number of vehicles per employee stays the same). This is mainly due to the introduction of electric cars, firstly introduced in 2017. Last year, our fleet counted a total of 6 full electric and 1 hybrid car. The total CO2 emissions for 2021, on km driven, accounted for 38.2 tons versus 39 tons in 2020.

With this new acquisition, we reduced the average of CO2 emissions from our car fleet to 149g/km CO2 compared to 351g/km CO2 in 2016, which is a reduction of our car emissions from 2016 to 2021 of 56%.

All historic data has been verified and corrected in order to provide accurate and valid measurements.

ANA also started to keep track of its mileage for each car (from August 2020).

ICAO Carbon Emissions Calculator

Scan me

BUSINESS TRAVEL*

Another new dimension which was integrated in the air quality pillar from 2020 on, was the calculation of the business travels performed by ANA employees. The emissions calculated were an integral part of the calculation of ANA's carbon footprint.

Those calculations distinguish business travels via car and business travels via aircraft. For the calculations of the business travels via aircraft the ICAO Carbon Emissions Calculator was used.

ICAO Carbon Emissions Calculator

During COVID crisis, business travels were reduced to an absolute minimum. The sanitary crisis urged us to use video-conference meetings. Most ANA employees were trained recently on the new media and are aware of the advantages of using digital means to replace face-to-face meetings. The mid-term impact will be assessed. The goal is to make such a method a standard practice. In the same spirit, home working for some categories of employees enabled continuity of service in times of crisis. The intention of ANA Management is to facilitate this new way of working. This reduction of commuting has a positive impact on the environment and is considered as an indirect impact.

After the evaluation of the carbon footprint of our business travels, we additionally worked on identifying the commuting emissions caused by our employees and our suppliers and developed scope 3 in detail. Further explanations on emission categories are explained in detail in chapter "Carbon footprint" of this document.

4. WATER AND GROUND QUALITY*

We strive to apply safe and sustainable practices to preserve water and ground quality within the scope of our responsibilities.

ANA's aerodrome inspectors are trained to detect ground pollution (e.g. fuel spills) and other environmental pollution on the manoeuvring area during inspections.

BIODEGRADABILITY OF DE-ICING PRODUCTS*

ANA has been responsible for the purchasing of de-icing fluids for the manoeuvring area until the end of 2021, thus we always ensured a green labelled product within the purchasing procedure and during the transfer of responsibilities we advised the road and bridge administration (Ponts & Chaussées) to continue in the same direction.

ENVIRONMENTAL EMERGENCY PROCEDURE*

Our services ensure proper communication and exchange between airport stakeholders in avoiding and managing incidents that impact water and ground quality. We continuously monitor and investigate these incidents (e.g. spills of fuels, oil or others), help to avoid 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 was updated and an emergency response and preparedness plan was prepared. This plan will be on display next to the evacuation plans.

5. WASTE MANAGEMENT*

For more than twenty years, ANA has 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 an accurate waste management plan. This relates to the appropriate collection, sorting and storage of waste, the search for adequate means for re-use and recycling, the prevention of waste production as well as compliance with legal regulations (in particular the waste disposal and waste prevention law of 21 March 2012).

SORTING AND RECYCLING OF WASTE*

ANA released a procedure for dealing with waste. All ANA employees are responsible for the correct disposal of the waste generated during and around their work. Employees shall try to reduce and optimize their waste production and disposal.

Waste quantities decreased in 2021. This is mainly related to the exclusion of the road and bridge administration (Ponts & Chaussées) in our waste management policy. ANA was in the past responsible for the waste management for the road and bridge administration (Ponts & Chaussées) and for CGDIS. Waste management within CGDIS is still under discussion.

6. BIODIVERSITY*

Luxembourg airport area consists of a 57,6% green surface area. ANA tries to support Lux-Airport, which is now responsible for managing green surface, in the most sustainable and practical way to protect flora and fauna.

ANA conducted studies and identified the airport biodiversity to ensure that the number of species remain stable. The development of bees on the airport platform is part of further environmental initiatives, together with Lux-Airport.

BIODIVERSITY SURVEYS

One objective is to maintain or even increase the number of species on the aerodrome by creating shelters for endangered species. We are conducting studies and identifying the airports biodiversity to ensure that the number of species remains at least stable. We also conduct the dialogue with the airport community for this purpose. ANA together with "Natur & Emwelt Asbl" detected 32 butterfly species of which 6 are endangered, and 224 plant species of which 3 are endangered.

AIRPORT GREENS MANAGEMENT*

As the responsibilities changed, lux-Airport is now the responsible entity for biodiversity and the airport green management.

ANA continues to advise lux-Airport via the different platforms such as the Luxemburg airport environmental committee. Green spaces and meadows are important to conservation of nature. Therefore, the frequency of mowing in order to support the appearance of a wide variety of vegetation forms was reduced.

The extensive management and late mowing practiced on the airport, in collaboration with the road and bridge administration (Ponts & Chaussées) was kept, also under the responsibility of lux-Airport. This contributed to the preservation of the existing biodiversity on the airport platform. Contrary to the preconceived idea, several endemic species, like butterflies, are present on the airport.

BEEHIVES - PRODUCTION OF HONEY*

Due to bad weather conditions, the honey production in 2021 was very poor. In fact, during spring, low temperatures made it difficult for our bees to find enough nectar as the flowers were frozen up and during summer, they had to face lots of rain.

We have left the small amount of honey produced to the bees, and we have to cross our fingers for next year.

However, ANA's busy honey bees produced, from the 5 beehives, a total of 30 kg of honey in 2021 (compared to 120 kg of honey in 2020).

As ANA wants to promote the importance of this production, we participated to a webinar organized by IMS Luxembourg and shared our experience of the two last years in honey production.

The Honeybee population is collapsing worldwide and is generating the decline of Biodiversity at an unprecedented rate. The planet's ecosystems are about to collapse, with a massive extinction of species putting economies and societies wellbeing at risk.

Setting up beehives is just a small intervention in making a positive impact, but hopefully, this little effort will thrive.

A few figures:

- We have 50000 'employees' (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 life time
- Their population is reduced during the winter period to 5000 – 8000 bees
- Two thirds of the honey production are used for the hive

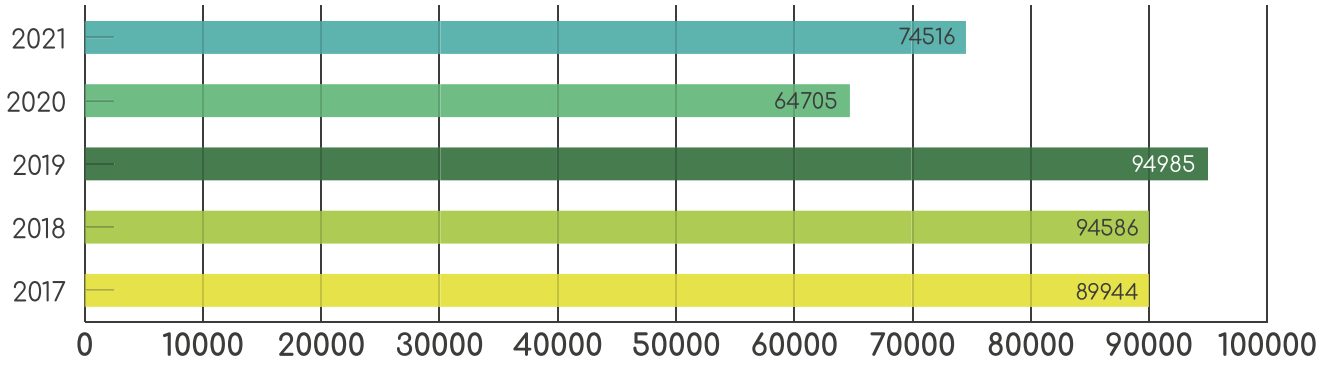
Pictures -
ANA breeds honey bees
and honey jars in cooperation
with lux-Airport

ANA'S CORE ENVIRONMENTAL PERFORMANCE INDICATORS (CORE INDICATORS)*

REFERENCE VALUES*

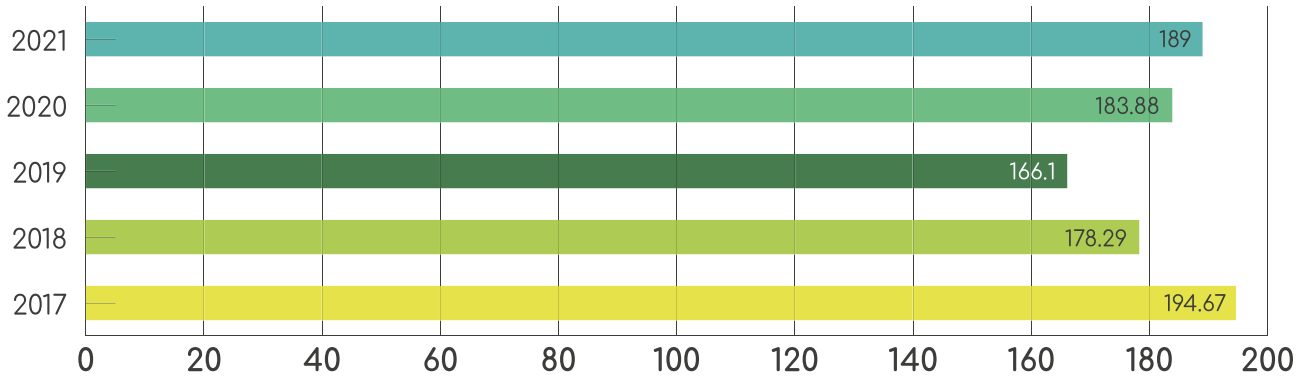
ANA is using following values as reference values for their KPI's:

NUMBER OF AIRCRAFT MOVEMENTS ON ELLX



Note: Pandemic is still influencing the traffic figures in 2021. However, a quick recovery of total air traffic is notifiable. Aircraft movements dropped to almost 85% in 2020 and around 50 % until June 2021.

NUMBER OF FTE (FULL TIME EQUIVALENT)



Note: ANA had a slight increase of FTE in 2021.

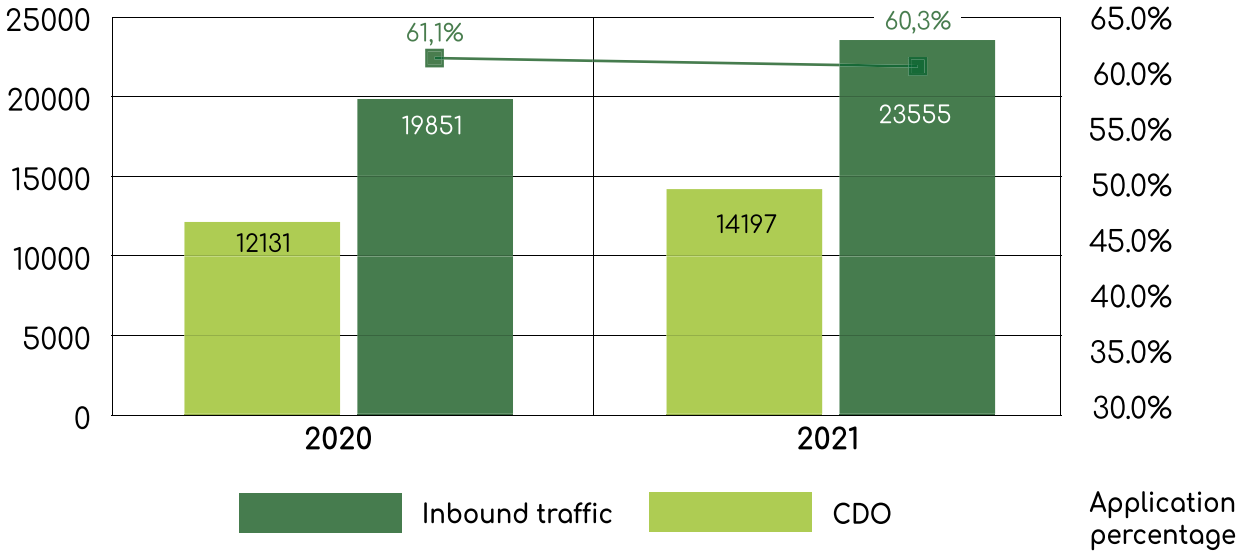
Target: The reference values have no target.

AIRPORT NOISE & EMISSIONS*

Note: Airport noise and gaseous emissions are important ENV aspects for ANA and its stakeholders. The impact of this performance indicator is indirect as the combined activities of ANA and other parties are required to reduce noise/emissions. ANA contributes substantially to reduce noise/emissions through the following actions under its operational control.

Airport noise and gaseous emissions are important ENV aspects for ANA and its Stakeholders. This procedure, which reduces fuel consumption and noise emissions of aircraft, was implemented in 2017.

The CDO definition changed in 2020. A recalculation of the years prior 2020 was not done. Therefore only 2020 and 2021 are taken into consideration and appear in this graph.

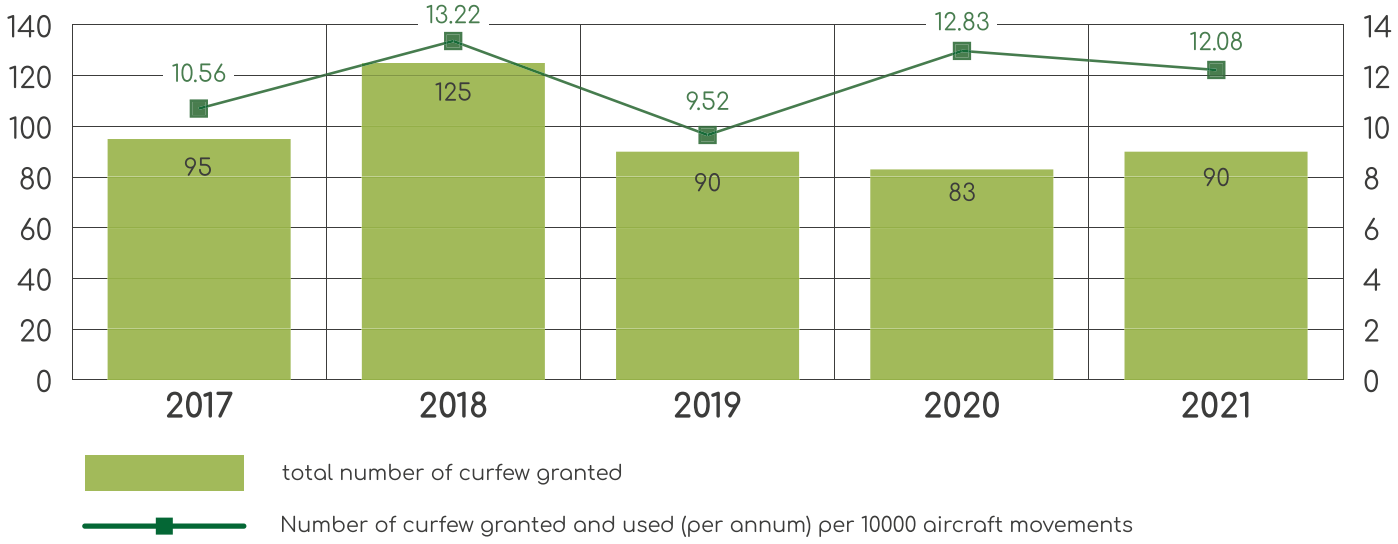


Note: According to our calculation based on figures collected with our airline partners and Eurocontrol, about 60% of incoming flights used the available CDO approaches. The values were stable for 2020 and 2021.

Fuel CDO's, are measured from ToD (Top of descent) to 1800ft, with no level-off segment. These CDO's decrease fuel consumption during approach. Fuel CDO's are also considered as Noise CDO's, as from FL075 to 1800ft, noise is considerably reduced.

Target: The target of the CDO application is 60.5%.

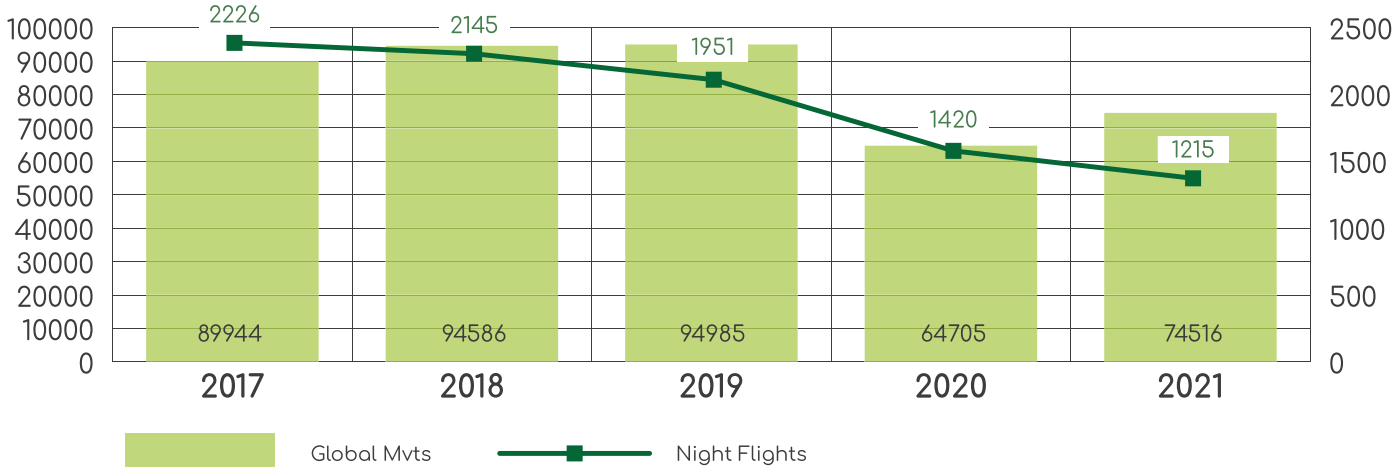
SOURCE OF NOISE*



Note: More curfew extensions were granted in 2021 due to a slow recovery of the pandemic resulting in the increase of air traffic (compared to 2020).

Target: As defined in the "Règlement grand-ducal du 2 novembre 2012 portant modification du règlement grand-ducal modifié du 24 mai 1998 fixant les conditions d'exploitation technique et opérationnelle de l'aéroport de Luxembourg", curfew extensions are defined to a maximum of 95 per year.

NIGHT FLIGHTS VS GLOBAL MOVEMENTS*



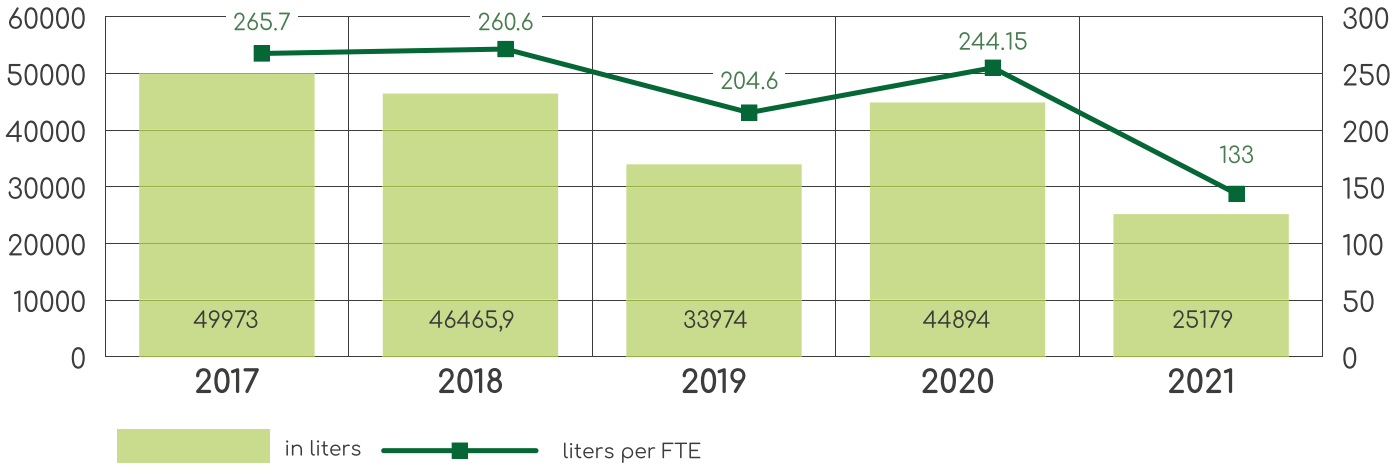
Note: A significant decrease in nightlights compared to the increasing traffic is noticeable. This can be explained by the restrictions put in place due to the runway refurbishment project which started in spring 2021, performed during night hours for a period of 6 months.

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

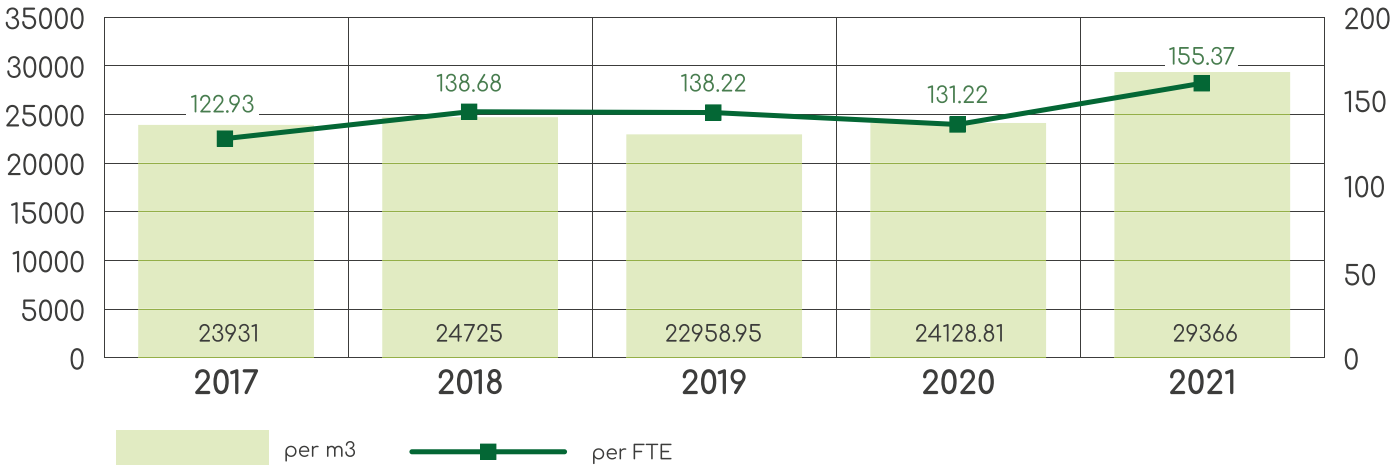
CONSUMPTION OF RESOURCES (MATERIAL)*

Note: The following measurements have a direct impact as they are under ANA direct operational control and are classified in EMAS Key Area "Energy, Material and Water"

FOSSIL RESOURCES- FUEL CONSUMPTION IN LITERS (HEATING ANA BUILDINGS) PER FTE (EMAS KEY AREA MATERIAL)



FOSSIL RESOURCES. GAS CONSUMPTION IN M3 (HEATING ANA BUILDINGS) PER FTE (EMAS KEY AREA MATERIAL)

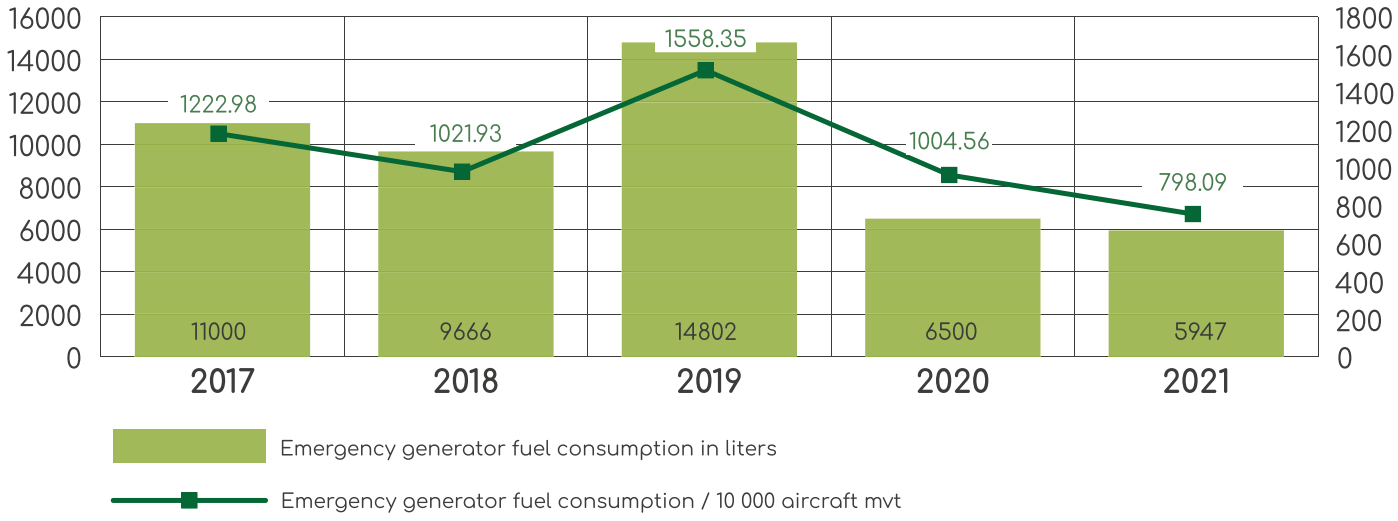


Note: An overall reduction of Fossil resources for Heating in 2021 is observed. This is also valid for the heating emissions. The winter months of 2017 and 2018 were colder: 4.95°C and 4.71 °C and 5.53°C and 5.88°C for 2019 and 2020 (calculated average temperature for the 6 winter months January to March and October to December). The average winter temperature for 2021 was 4.46°C colder than 4 years before. The reduction can be explained as more gas and less fuel was consumed. Gas has a better emission factor than fuel (2.63 kg CO2/l fuel and 2 kg CO2 /m3 gas).

Source for winter temperatures: https://data.public.lu/fr/datasets/monthly-meteorological-parameters-luxembourg-findel-airport-wmo-id-06590/

Target: The target for fossil resources consumption in heating ANA buildings is in total numbers 24000 m3 for gas and 45000 l for fuel.

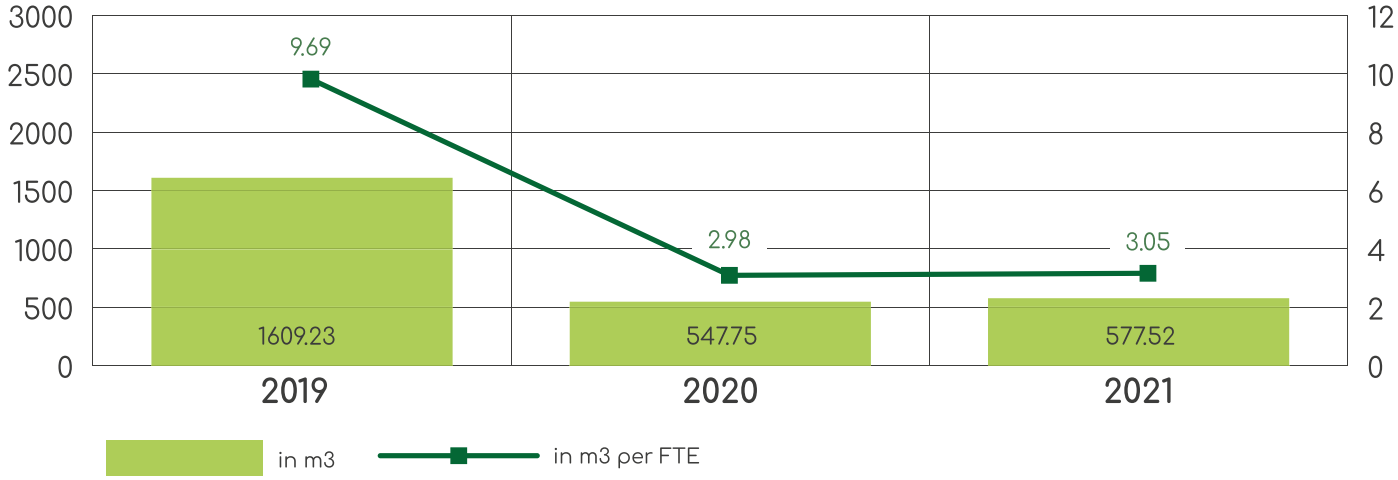
EMERGENCY GENERATOR FUEL CONSUMPTION



Note: As the fuel is not ordered regularly, but depending on different factors, the quantities are fluctuating. A higher amount of fuel was ordered in 2019, which is why the quantity ordered in 2020 and 2021 was very low. Those variations can also be found in the emission footprint.

Target: As the emergency generators are linked to the supply of air navigation and visual aids and have therefore a safety impact, no target will be defined.

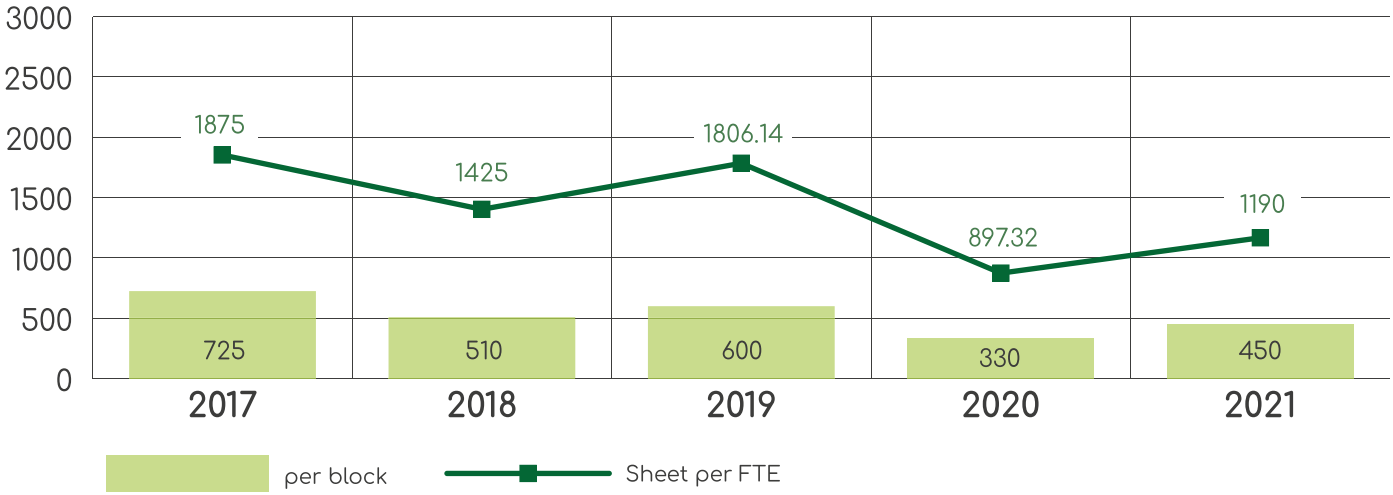
TOTAL ANNUAL WATER CONSUMPTION-EXPRESSED IN M3 IN ANA FACILITIES/FTE (EMAS KEY AREA WATER)



Note: High water consumption in 2019 due to the construction of a new technical station next to the tower building. On the other hand, and due to the pandemic, the consumption in 2020 and 2021 was very low as a majority of the ANA employees were doing home office work.

Target: The target for total water consumption should be below 1000m3.

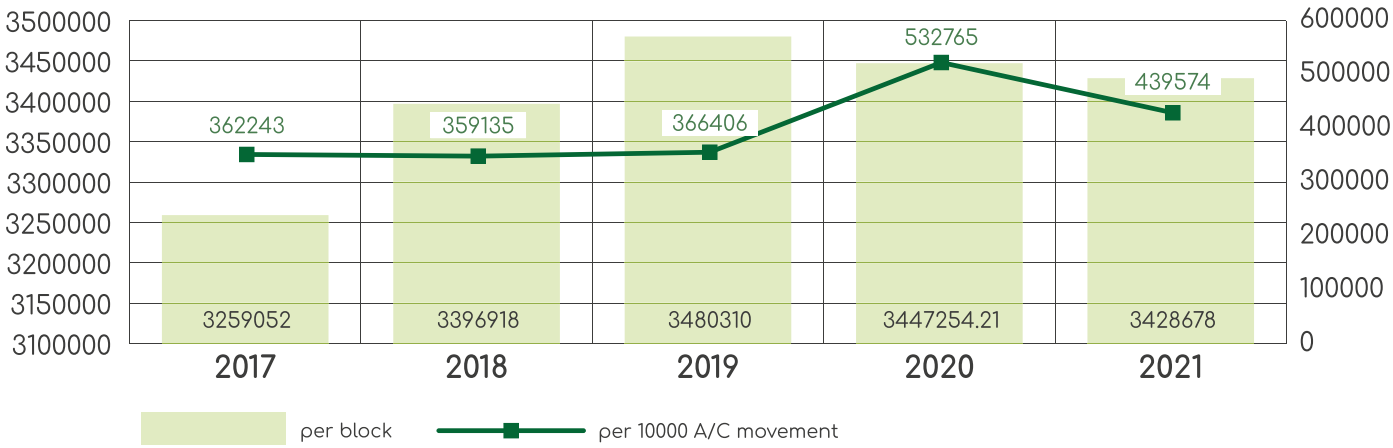
PAPER-CONSUMPTION IN SHEETS/FTE (EMAS KEY AREA MATERIAL)



Note: Overall diminution of paper consumption over the last 2 years are the result of the COVID-19 pandemic and the linked measures. However, the paper consumption was higher in 2021 than in 2020 as less home office hours were done .

Target: The target for paper consumption in sheets per employee was evaluated to 1500.

ELECTRICITY CONSUMPTION IN KWH



Note: The electricity consumption was stable over the last years. The calculation linked to the consumption per 10000 aircraft movements with its peak in 2020 and 2021 is also linked to the sanitary crisis.

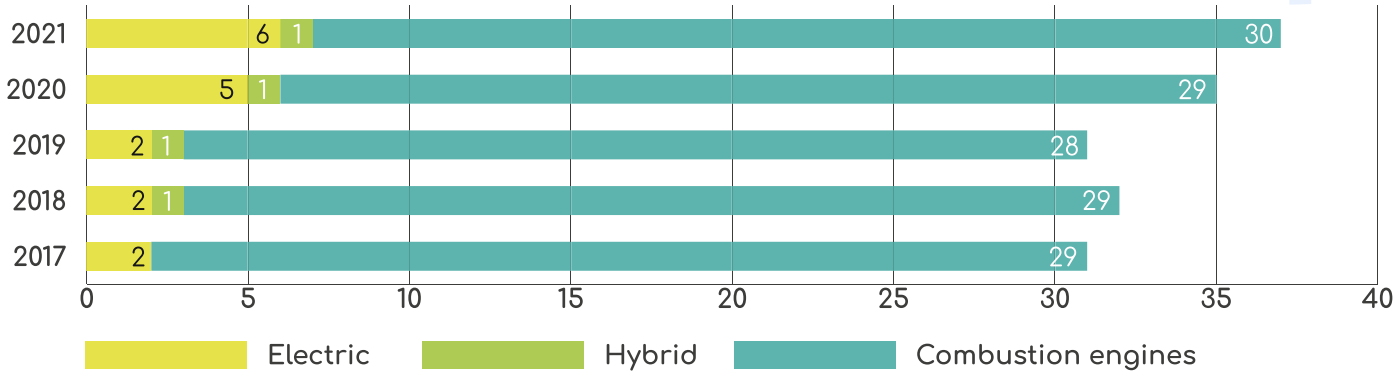
Target: As the electricity consumption is linked to the supply of air navigation and visual aids and has therefore a safety impact, no target will be defined for the moment.

ANA's choice for their electricity supply is 100% European and 100% free of CO2 (view also chapter "Resources")

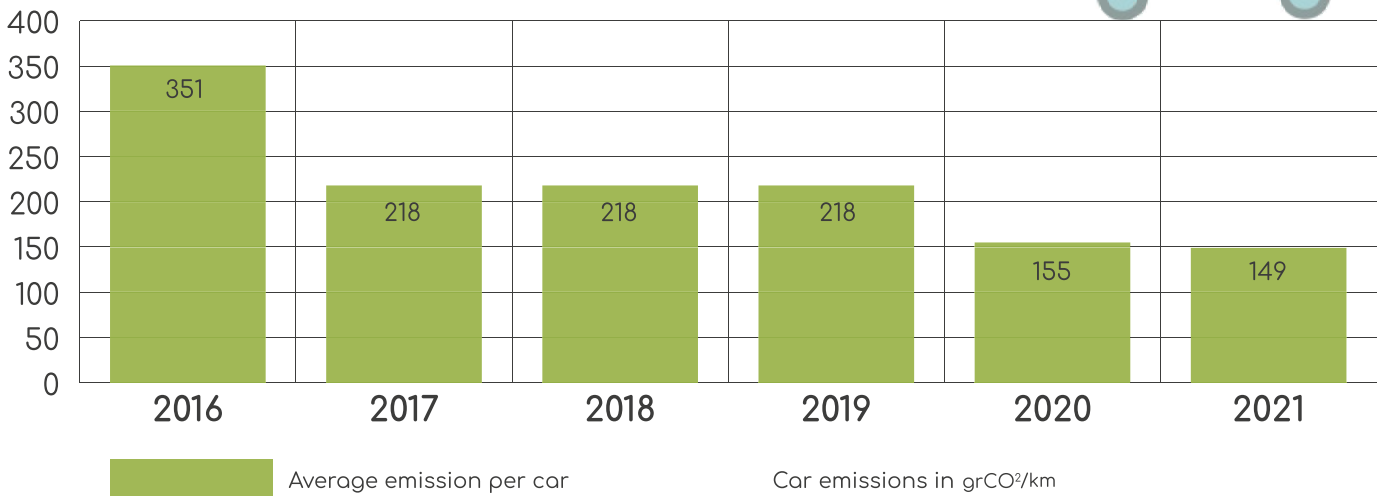
AIR QUALITY*

Note: Those measurements have a direct impact, are under ANA direct operational control and are classified in EMAS Key Area ´Emissions´. Only cars and heating emissions (buildings) within the scope of ANA's direct control are included; other activities such as winter operations by third parties, etc. are out of the scope of this indicator. Fuel and gas emissions are calculated with 2,63 kg CO^2 / l fuel and 2 kg CO^2 / m^3 gas and are directly linked with the values measured in "Consumption of resources (material)" here above.

FLEET MANAGEMENT



FLEET MANAGEMENT – AVERAGE OF EMISSION PER CAR (grCO²/KM)



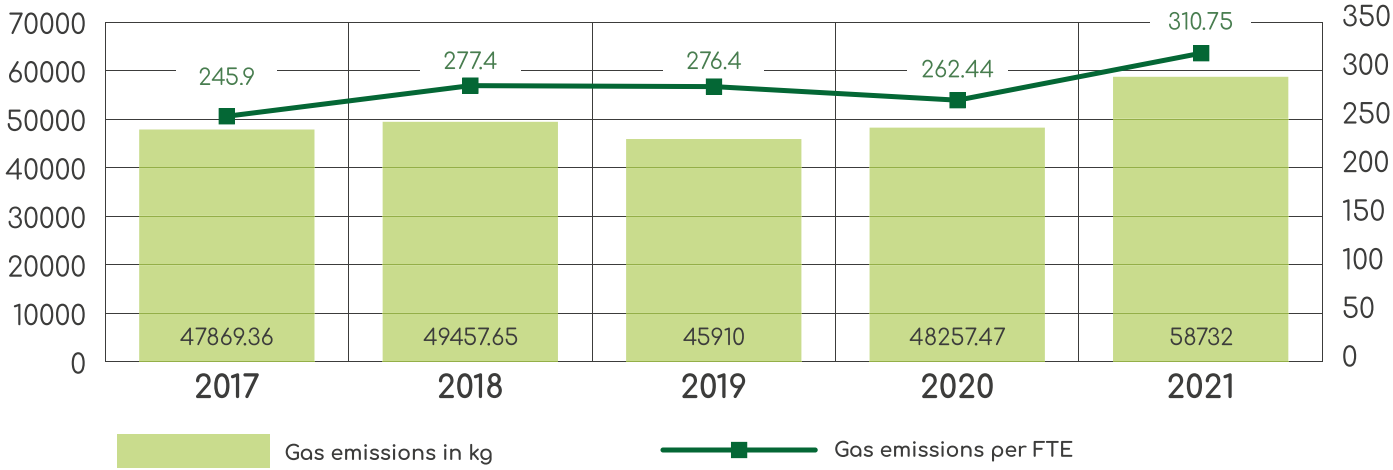
Note: ANA is replacing more and more internal combustion cars with electric or plug-in hybrid cars. In 2021 we had more cars in total because 4 cars have been taken out of service and replaced but not yet sold as the auction to resell old cars is still pending. When the sale is done, ANA's fleet will count a total of 31 cars, same as the year before.

Target: ANA will replace, if possible, all cars at the end of their lifecycle by cars with electric or plug-in hybrid technologies. The target will be to replace all cars with internal combustion engines. A timeline needs to be defined. The target for next year will be 135 $grCO^2$/km in average emission per car.

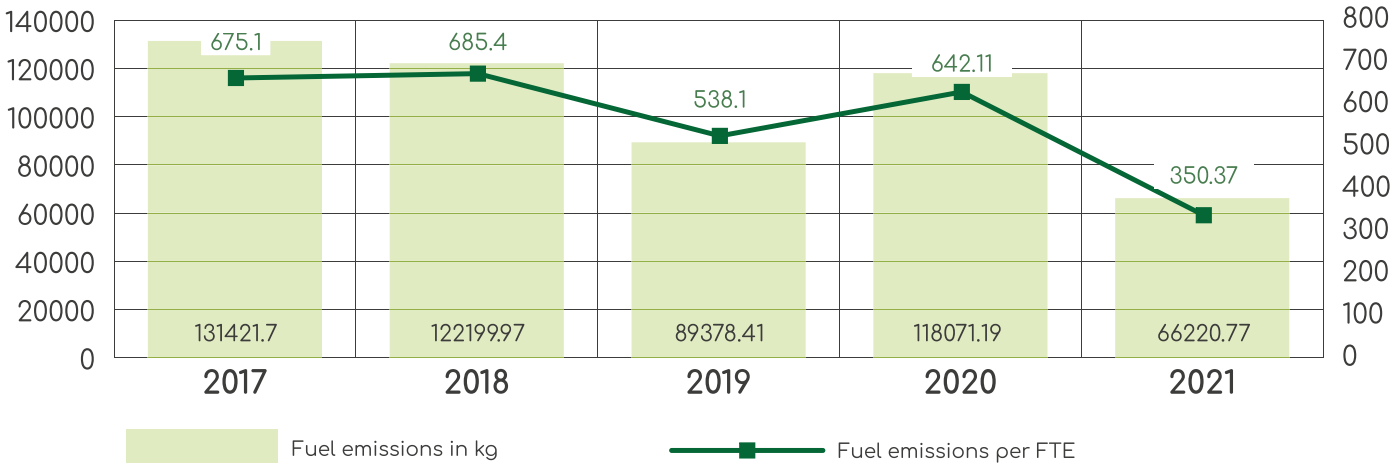
Note: The replacement of high emission cars by electric and hybrid cars is resulting in a significant drop of emissions.

Target: ANA will keep this trend, and further reduce the emissions caused by its fleet, by renewing it with electric or plug-in hybrid technologies. The target for next year will be 135 gr/km in average emission per car.

USE OF BUILDINGS- FUEL EMISSIONS IN KG CO^2 (HEATING ANA BUILDINGS) PER FTE (EMAS KEY AREA EMISSIONS)



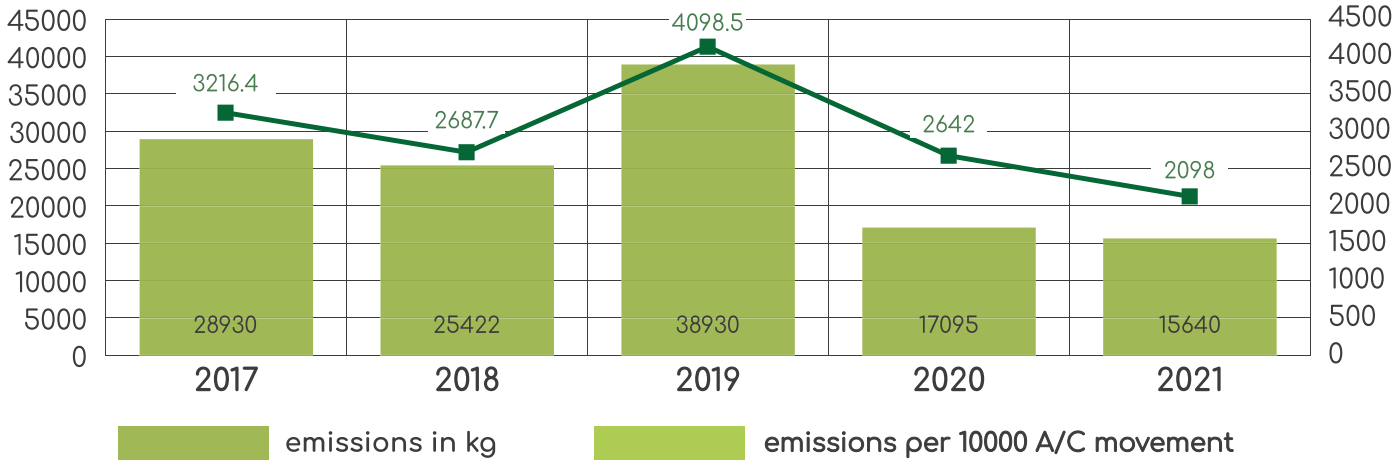
USE OF BUILDINGS- GAS EMISSIONS IN KG CO^2 (HEATING ANA BUILDINGS) PER FTE (EMAS KEY AREA EMISSIONS)



Note: An overall reduction of Fossil resources for Heating in 2021 is observed. This is also valid for the heating emissions. The winter months of 2017 and 2018 were colder with 4.95°C and 4.71 °C and 5.53°C and 5.88°C for 2019 and 2020 (calculated average temperature for the 6 winter months January to March and October to December). The average winter temperature for 2021 was 4.46°C colder than the 4 years before. The reduction can be explained as more gas and less fuel was consumed. Gas has a better emission factor than fuel (2.63 kg CO^2/l fuel and 2 kg CO^2 /m^3 gas).

Target: The target for fuel and gas emissions in heating ANA buildings is in total 48 tons of CO^2 for gas and 118.5 tons of CO^2 for fuel.

USE OF ANSP EQUIPMENT – EMERGENCY GENERATOR FUEL EMISSIONS IN KG CO2 PER 10000 AIRCRAFT (EMAS KEY AREA EMISSIONS)



Note: As the fuel is not ordered regularly, but depending on different factors, the quantities are fluctuating. A higher amount of fuel was ordered in 2019, which is why the quantity ordered in 2020 and 2021 was very low. Those variations can also be found in the emission footprint.

Target: As emergency generator fuel emissions are linked to the supply of air navigation and visual aids and have therefore a safety impact, no target will be defined.

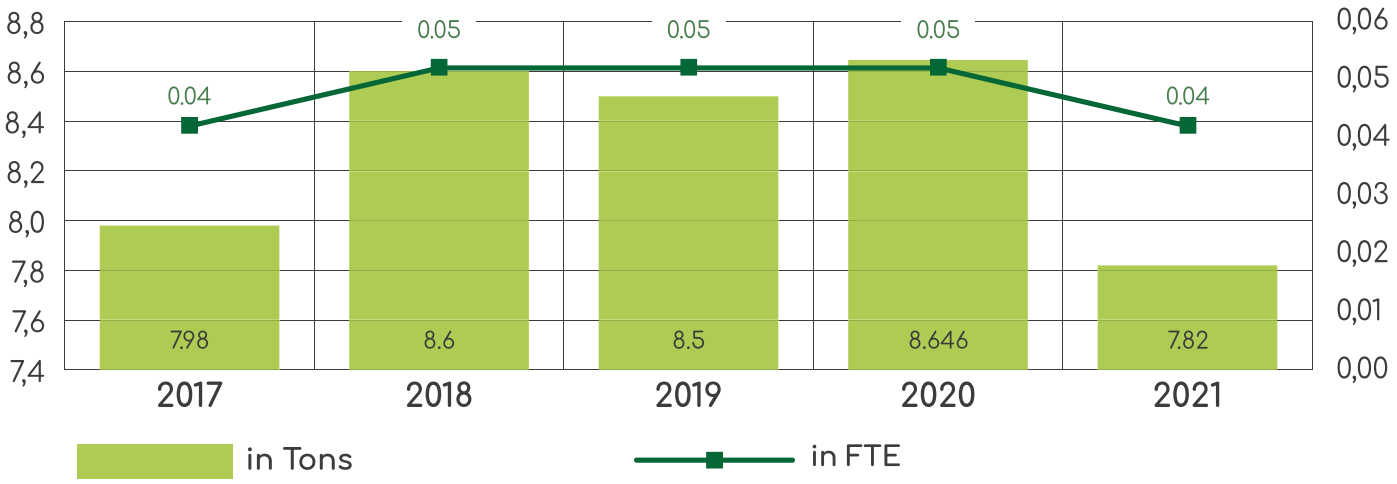
PROTECTION OF WATER, GROUNDWATER & GROUND*

Note: ANA has the operational responsibility on the manoeuvring area of the aerodrome but has no direct impact on this aspect in the EMAS key area. The impacts of these activities are indirect as the combined activities of ANA and other parties are required to protect water, groundwater and ground. Those activities are measured and evaluated but are not shown in this document as they are classified as indirect.

WASTE MANAGEMENT*

Note: Those measurements have a direct impact, are under ANA direct operational control and are classified in EMAS Key Area 'Waste'. Measurements include the waste from Corps Grand-Ducal d'Incendie et de Secours (CGDIS) as these are not yet dissociable from ANA waste. The road and bridge administration (Ponts & Chaussées) was excluded in our waste management policy, this after an update of our common working agreement. Ways and means to manage this better in future will be investigated and are part of ANA's environmental action plan.

ANNUAL TOTAL GENERATION OF DOMESTIC WASTE IN KG PER FTE



Note: The total quantity of domestic waste from 2018 to 2020 was more or less identical. Waste quantities decreased in general in 2021. This is mainly related to the exclusion of the road and bridge administration (Ponts & Chaussées) in our waste management policy. ANA was in the past responsible for the waste management of the road and bridge administration (Ponts & Chaussées) and for CGDIS. Waste management within CGDIS is still under discussion.

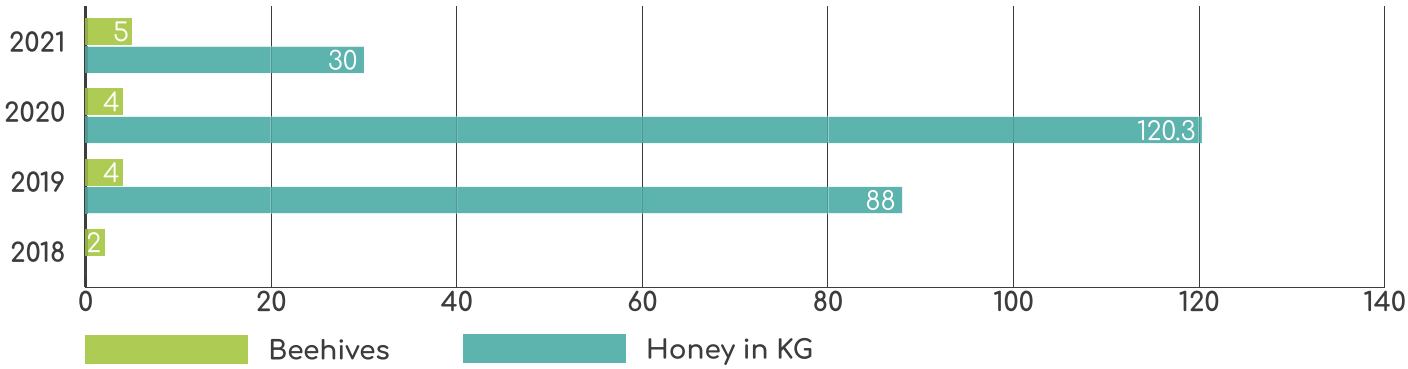
Target: Due to the exclusion of the road and bridge administration (Ponts & Chaussées) the target for annual total generation of domestic waste was adapted to 7.8 tons.

Data on volume of special waste per type (electrical devices (commercial), electrical devices (domestic), incandescent and halogen lamps, cable (copper), carton/paper, plastic film, plastic products, fluorescent light bulb, spray cans, Styrofoam, toner cartridge, dry batteries, etc.) is collected and evaluated.

MAINTAIN AIRPORT BIODIVERSITY*

Note: ANA has the operational responsibility on the manoeuvring area of the aerodrome but has no direct impact on this aspect in the EMAS Key Area. The impact of this performance indicators is indirect as the combined activities of ANA and other parties are required to protect the natural environment and habitat of specifies. ANA contributes substantially and directly through the following actions under their operational control.

TOTAL PRODUCED HONEY



Note: As explained in Pillar 6 - "Biodiversity" in the Chapter "the 6 Environmental Pillars", due to bad weather conditions (rain and overall cold temperatures) not much honey could be produced in 2021.

Target: No target applicable as honey production is depending on the weather and temperatures.

CARBON FOOTPRINT*

INTRODUCTION*

ANA aims to become carbon neutral before 2050.

In the Carbon Footprint calculation, we consider, in order of magnitude, the emissions of greenhouse gases generated by all the physical processes that are necessary for the existence of a human activity or organization, when it is possible to assign clear borders.

HORIZON FOR A CARBON-NEUTRAL ADMINISTRATION*

Emissions are broken down into three categories by the Greenhouse Gas Protocol (GHC) to better understand the source.

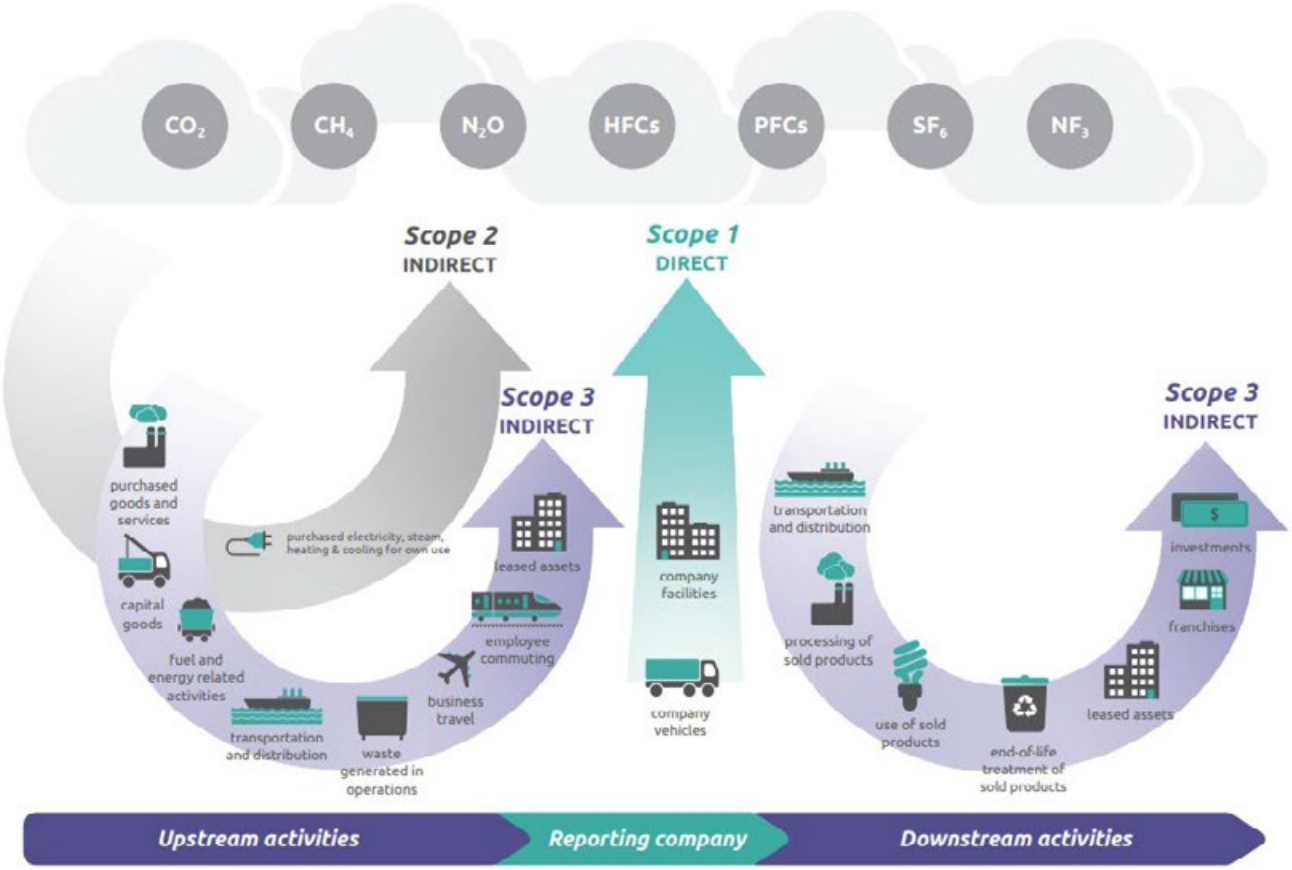
Scope 1 – All Direct Emissions from the activities of an organization or under their control. Including fuel combustion on site such as gas boilers, fleet vehicles and air-conditioning leaks.

Scope 2 – Indirect Emissions from electricity purchased and used by the organization. Emissions are created during the production of the energy and eventually used by the organization.

Scope 3 – All Other Indirect Emissions from activities of the organization, occurring from sources that they do not own or control. These are usually the greatest share of the carbon footprint, covering emissions associated with business travel, procurement, waste and water.

Overview of GHG Protocol scopes and emissions across the value chain (source: GHG Protocol):

GHG Protocol Scope	GHG emission or removal categories
Direct GHG emissions and removals from facilities within its organizational boundaries related to:	
SCOPE 1	Stationary
	Mobile
	Fugitive
Energy indirect GHG emissions:	
SCOPE 2	Indirect from imported electricity
Other indirect GHG emissions and removals:	
SCOPE 3 Upstream	Purchased goods and services
	Capital goods
	Fuel- and energy-related activities
	Waste generated in operations
	Business travel
	Employee commuting
	Upstream leased assets



Source: GHG Protocol

OUR CALCULATION METHOD*

The methodology used is based on the GHG Protocol.

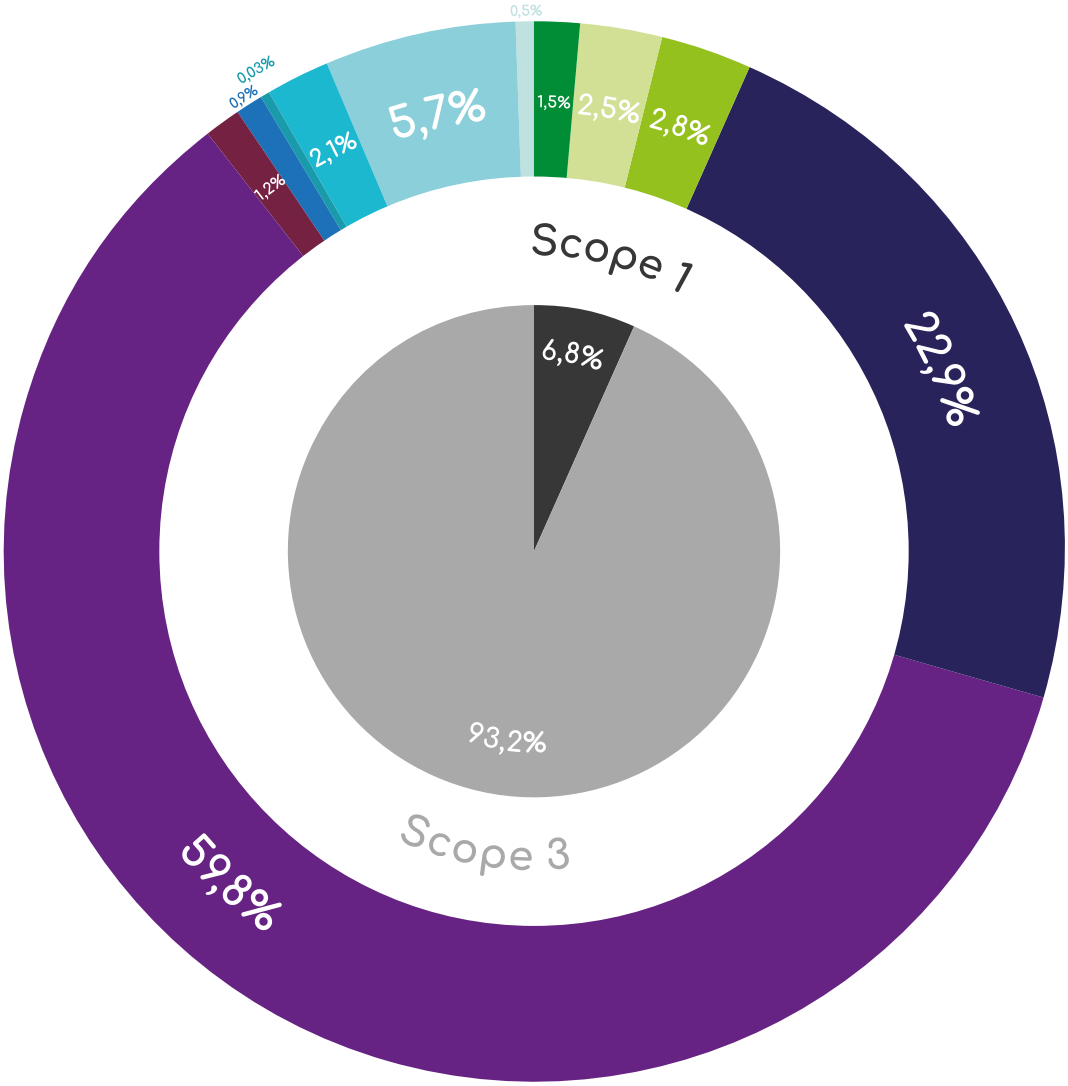
The source of the emissions factor is always identified with the details of the calculation. The main source of information is the online database Base Carbone®. Base Carbone® is a public database of emission factors as required for carrying out carbon accounting exercises, administered by ADEME, the French Environment and Energy Management Agency.

ANA CARBON FOOTPRINT ANALYSIS*

ANA CARBON FOOTPRINT 2021 – DETAILS OF CATEGORIES

SCOPE 1

- Fuel consumption - cars
- Natural gas consumption
- Fuel consumption - building



SCOPE 3

- Waste
- Fuel- and energy related activities
- Capital goods
- Purchased goods & services
- Upstream leased assets
- Commuting
- Business Travel
- Visitors

GHG emission or removal categories	Item name	t CO_2e	% category
SCOPE 1			6,8%
Stationary	Fuel consumption - building	82	1.5%
	Natural gas consumption	136	2.5%
Mobile	Fuel consumption - cars	152	2.8%
Fugitive	Refrigerants	0	0.0%
SCOPE 2			0%
Indirect from imported electricity	Purchased electricity	0	0.0%
SCOPE 3			93,2%
Purchased goods and services	Purchased goods and services	1251	22.9%
Capital goods	Capital goods	3265	59.8%
Fuel- and energy- related activities	Fuel- and energy- related activities	68	1.2%
Upstream transportation and distribution	Visitors	2	0.03%
Waste generated in operations	Waste	48	0.9%
Business travel	Business travel	114	2.1%
Employee commuting	Commuting	314	5.7%
Upstream leased assets	Upstream leased assets	29	0.5%
	ANA'S Total carbon footprint 2021 (t Co_2e)	5463	

>90%

According to the Carbon Disclosure Project, today more than 90% of company emissions are at the scope 3 level. The carbon footprint analysis has demonstrated that the majority of ANA greenhouse gas (GHG) emissions and cost reduction opportunities lie outside their own operations. By measuring Scope 3 emissions, organizations can:

- Assess where the emission hotspots are in their supply chain;
- Identify resource and energy risks in their supply chain;
- Identify which suppliers are leaders and which are not and should potentially be challenged in terms of their sustainability performance;
- Identify energy efficiency and cost reduction opportunities in their supply chain;
- Engage suppliers and assist them to implement sustainability initiatives
- Improve the energy efficiency of their products and services
- Positively engage with employees to reduce emissions from business travel and employee commuting.

The carbon footprint analysis has enabled ANA to identify the categories with the highest impact on GHG emissions and to prioritize the research for solutions and actions that will significantly reduce the carbon footprint.

The carbon footprint analysis has proven to be an excellent management tool for the Environmental Management review, feeding the Environment action plan with result-oriented actions.

As a result of our last environmental review, environmental objectives were agreed and defined. The plan is to do a yearly re-evaluation of our carbon footprint analysis. This new management tool for prioritizing environmental actions will allow us to track progresses on the reduction of our emissions and resources. A roadmap, to the attention of our ministry, will be elaborated in order to identify the actions, and their impact on ANA carbon footprint, in order to align with the ambitious national carbon reduction and net-zero goals.

Concrete actions were also already tackled. ANA wants to define a new process for the purchase of new equipment linked to CO2 equivalent and home office.

NEXT STEPS - ENVIRONMENTAL GOAL*

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

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

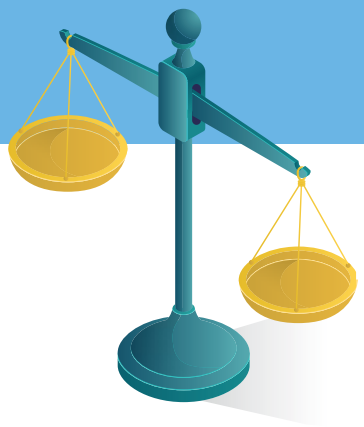
For each core indicator, results achieved versus set targets are measured, verified, and evaluated annually. Each core indicator is linked to the environmental goals as well as the environmental program. The objective of these efforts is a continuous improvement of our environmental impacts, which is directly in line with ANA's environmental policy and supported through specific projects and environmental actions.

TABLE – UPDATED ENVIRONMENTAL TARGETS – 2020 ACHIEVEMENTS AND 2021 TARGETS

Environmental target	EMS pillars	Measure	Results achieved in 2021 / Target reached	Target for 2022
Application and use of available CDO (continuous descent operations) procedures and other ATC/airline procedures	Noise	Current: # / percentage us of CDO	YES – The values were for 2020 and 2021 stable in flown CDO with noise and resource savings The CDO definition changed in 2020. A recalculation of the years before 2020 was not done. Therefore only 2020 and 2021 are counted under the new definition*	• Improve contact to national airlines & airport • Analyse availability of aircraft & airport operations data Investigate potential of operational improvements ground/air • Decide on local actions for further improvements • Implement innovative flight OPS and ANS solutions
Limit number of curfew (night flights) granted and used (per annum) per 10 000 aircraft movements to 95	Noise	Current: # of flights outside normal operation time	YES Limited by Grand-Ducal Regulation Participation in working groups and committees with airport residents and airlines*	• Limit of 95 curfew granted needs to be maintained • Continue and intensify collaboration with local airlines.
Reduce fuel consumption in l (heating ANA buildings) per FTE	Resources	Quantity of fuel (liters)	YES Poster campaign and best practices for sensitization of employees implemented Yearly training for a sensitization of employees Calculation of ANA's CO^2 footprint Fuel consumption is always depending on average temperatures	• Monitoring • Investigation of methods to further reduce fuel • New tower and new administration building in planning phase resp. building phase*

Environmental target	EMS pillars	Measure	Results achieved in 2021 / Target reached	Target for 2022
Reduce total annual water consumption and waste water consumption, expressed in m3 in ANA facilities per FTE	Resources	Quantity (in m^3)	NO Poster campaign and best practices for sensitization of employees implemented Yearly training for a sensitization of employees Water consumption was stable*	• Investigation of further improvement to reduce • Implementation of a water management plan on-going
Reduce paper consumption in sheets / kg FTE	Resources	Quantity (in sheets / kg)	First year monitored Poster campaign and best practices for sensitization of employees implemented	• Yearly training for a sensitization of employees • Investigation of further improvement to reduce • Evaluation by CO2 neutral paper and/or thinner paper.
Reduce Electricity Consumption kwh / 10 000 aircraft movement for ANSP equipment	Resources	KWh	NO Poster campaign and best practices for sensitization of employees implemented Centralised printer concept is used. Yearly training for a sensitization of employees Less paper was used in 2020 and 2021 due to an higher amount of home office (pandemic)*	• Investigation of further improvements to reduce
Environmental impact of internal ANA projects	Resources		NO	• Environmental impact of internal ANA projects
Fleet management - average of emission per car	Air quality	gr/km	YES New cars purchased with plug in / hybrid / electric technology	• Further renewal of car fleet in plug in / hybrid / electric vehicles
Annual generation of waste in tons /FTE	Waste	Quantity (tons) Quality / type of waste	YES Further improvement of ANA's waste policy (chapter waste management)*	• Investigate further improvements to reduce • Reduce hazardous waste
Reduce ANA's CO2 Footprint	Air quality	Kg of CO2	NO First complete CO2 footprint calculated in this document. New measurements and new calculation tool introduced	• Investigate further improvements to reduce • Awareness campaign • Awareness campaigns as trainings, bulletins, survey for all ANA employees

LEGAL FRAMEWORK*



- Règlement (CE) n o 1221/2009 du Parlement européen et du Conseil du 25 novembre 2009 concernant la participation volontaire des organisations à un système communautaire de management environnemental et d'audit (EMAS), abrogeant le règlement (CE) n o 761/2001 et les décisions de la Commission 2001/681/CE et 2006/193/CE
- Règlement (UE) 2017/1505 de la Commission du 28 août 2017 modifiant les annexes I, II et III du règlement (CE) n° 1221/2009 du Parlement européen et du Conseil permettant la participation volontaire des organisations à un système communautaire de management environnemental et d'audit (EMAS).
- Systèmes de management environnemental - Exigences et lignes directrices pour son utilisation. (ISO 14001:2015)
- Loi du 1er août 2018 portant modification de 1) la loi modifiée du 21 décembre 2007 portant création de l'Administration de la navigation aérienne ; 2) la loi modifiée du 31 janvier 1948 relative à la réglementation de la navigation aérienne.
- Règlement grand-ducal du 2 août 2006 portant application de la directive 2002/49/CE du Parlement européen et du Conseil du 25 juin 2002 relative à l'évaluation et à la gestion du bruit dans l'environnement.
- Règlement grand-ducal du 2 novembre 2012 portant modification du règlement grand-ducal modifié du 24 mai 1998 fixant les conditions d'exploitation technique et opérationnelle de l'aéroport de Luxembourg.
- Règlement grand-ducal du 19 décembre 2008 portant approbation de l'avenant 2 au contrat sur le développement, la mise en valeur et l'exploitation de l'Aéroport de Luxembourg.
- Règlement grand-ducal du 25 août 2021 portant création de zones de protection autour du site de captage d'eau souterraine "Birelergronn" situées sur les territoires des communes de Niederanven, Sandweiler et Schuttrange.
- Loi du 1er août 2018 portant modification de 1) la loi modifiée du 21 décembre 2007 portant création de l'Administration de la navigation aérienne ; 2) la loi modifiée du 31 janvier 1948 relative à la réglementation de la navigation aérienne.
- Règlement grand-ducal du 22 juin 2016 relatif à 1) aux contrôles d'équipements de réfrigération, de climatisation et de pompes à chaleur fonctionnant aux fluides réfrigérants du type HFC, HCFC ou CFC); 2) à l'inspection des systèmes de climatisation.
- Règlement grand-ducal du 26 juillet 1999 fixant les prescriptions générales pour les dépôts de gasoil d'une capacité allant de 300 litres à 20.000 litres en matière d'établissements classés.

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 2022 with facts and data from 2021.

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 has 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 2022 with facts and data from 2021 reflect a reliable, credible and correct image of all the organisations 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 14/10/2022

Erich Grünes

TÜV Rheinland Cert GmbH
Am Grauen Stein
D-51105 Köln

GLOSSARY OF TERMS*

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 for 2020: 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 organization by this organization.

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.

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) center, delivers research, innovation and development by the EUROCONTROL Experimental Center 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 employees, 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.

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