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

Administration de la navigation aérienne

# ANA UPDATED ENVIRONMENTAL STATEMENT 2021

## WITH 2020 FACTS AND DATA

## DOCUMENT APPROVAL

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N.B.: This document is an updated version of ANA's environmental statement 2020.

Updated data and facts are flagged with an asterisk in the titles of the document.

# CONTENTS





# FOREWORD *

The challenge for the aviation industry in times of a crisis such as the current COVID-19 is immense: The entire aviation industry is in turmoil. We see low and volatile growth or stagnation of air traffic, a high loss of revenues, pressure on all stakeholders to reduce costs and investments, global asynchrony of the pandemic situation and likelihood of new variants of the virus, an economic downturn in key industries to name some.

Efforts to reduce the environmental impacts of flying and travel in general were and still are one area lightly discarded as ´not important right now´ if not superfluous. Despite the downturn in air traffic, noise complaints of citizens in the vicinity of the airport of Luxembourg increased. Immediate action was required. At ANA, we understand the need to be economically sound and efficient. And we understand, that this cannot be achieved at the cost of the environment. Rather the contrary.

There is no single ´best fit´ scenario for the future, but rather a range of possible futures to which we need to adapt - and to shape - if we have the power to do so. And the environment must be part of that future. As the Director of IATA said recently[1] : `...we must assure the world that aviation's long-term growth prospects are supported with an unwavering commitment to sustainability. Both challenges require governments and industry to work in partnership.´

Therefore, our message in ANA regarding our environmental efforts is clearly a positive one:

We will support all partners to ensure sustainability. We do it by increasing our efforts in managing our environment, becoming sustainable and helping other partners on the same path.

We have to learn to manage risks by accepting a wider range of possible developments and outcomes, to adapt and react flexibly whilst investing in a more sustainable future of aviation. This document gives a strategic outlook and a plan on how we are going to manage this dual demand in future.

Our focus is to maintain safety and efficiency of air traffic, to foster and improve the ecological footprint of aviation in Luxembourg airspace and on the ground, and invest in procedures, technology and infrastructure that benefit our airspace users, our airport and our environment.

The environmental goals at EU and national levels – the "Green Deal" – apply also to the aviation sector. The objective is to undertake more in order to be sustainable. The demands of the Deal are a tall order but cannot be pushed aside. ANA recognised this since long and acted. Our investments and improvements in service provision are designed to help decreasing the environmental footprint of aviation in Luxembourg by reducing fuel consumption, noxious emission and noise by various means that are in our control. EMAS registration is a key milestone in our environmental journey to involve the entire ANA organisation and act on all six pillars of our EMS.

1 *Willie Walsh, IATA's Director General on 27/05/2021; source: https://www.atn.aero/#/article.html?id=80217*



ANA continues these efforts in the Environment Management System (EMS) and invests time and resources in this important area:

- We continue changing or adapting air traffic procedures and airspace to save fuel and cut back on emissions and noise in collaboration with our airlines and ANSP partner Skeyes – PBN and CDO are prominent examples.
- We collect and analyse data to improve operations (on the ground and in the air) as well as investigate and monitor the achievements in collaboration with airspace users and the airport community for common benefit.
- We implement meaningful policies and practical methods in the six policy areas (pillars) for a sustainable future as a certified public service in the voluntary European EMAS framework – a challenging and rewarding task for us in ANA, for our partners at Luxembourg airport, suppliers, and users.
- We are going to help to identify climate change related risks in our area of responsibility and work together with our local partners on the airport on plans to mitigate the impacts of adverse weather.

We are building awareness, involving the people in ANA, and have agreed on concrete targets in our Environmental Management System. The next step is pulling it all together, engaging people in ANA and our partners at Luxembourg airport in action. This requires competence and commitment to the tasks from all of us:

We are committed to change for the better: the safer, the more environmentally and operationally effective.

Enjoy reading the latest update of our environmental statement, with 2020 facts and data.

Claudio Clori

ANA Director

Yves Becker

Environment Manager[2]

2 *The Director of ANA has appointed a management representative for the Environment, function called "Environment Manager".*

## 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 operation of a key part of the airport surface where we provide Air Traffic Control (ATC) services, operate radio navigation, surveillance and communication equipment, the airport power and lighting infrastructure, offering meteorological and aerodrome information services and ensuring 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 competence in 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.



## Services and functions*

Seven departments with allocated function areas form an integrated management structure.

The organigrams below depict the management structure in an organizational chart.

The changes in the organizational chart are that

- the former, separated Safety/Quality/Training Support Cell in the Technical Department was dissolved and is now an integral part of the technical department,
- an operational advisor was nominated by ANA's director to give advise on operational topics, and
- a new deputy director was nominated .

Figure – ANA organization chart

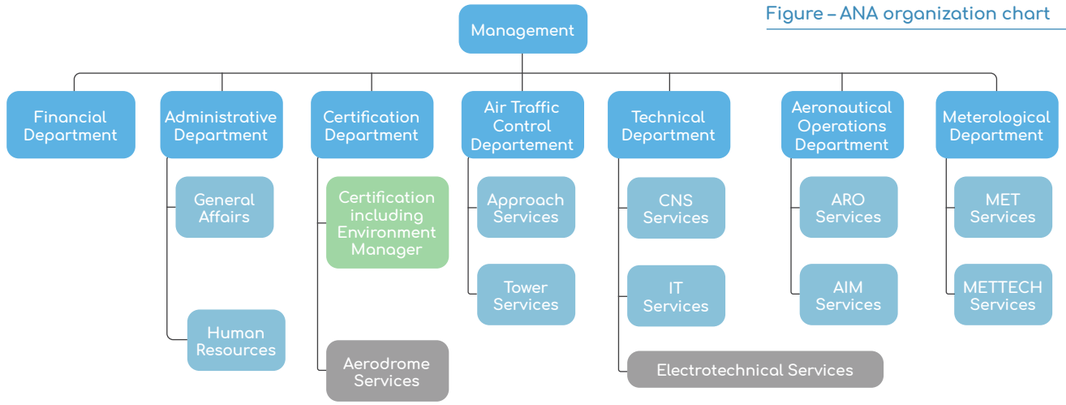
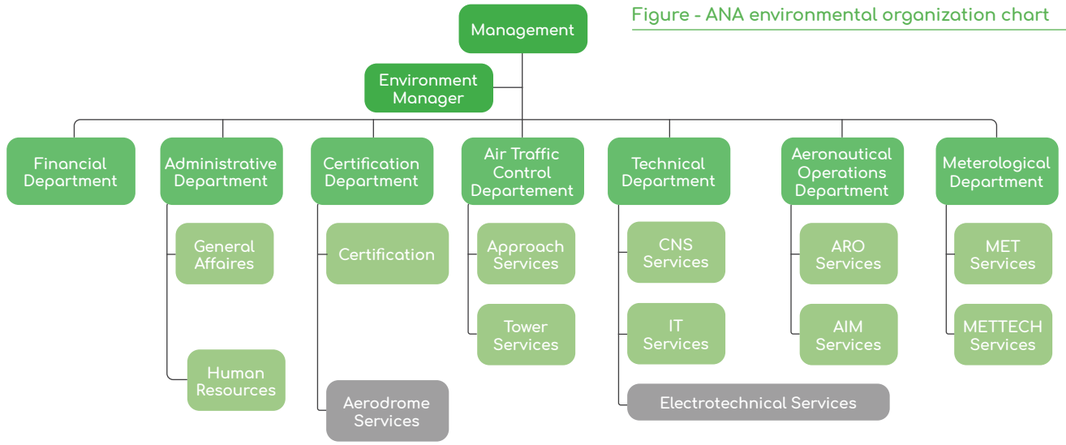



Figure - ANA environmental organization chart




Note: ELE and AER services are identified as 'indirect activities' and are therefore out of scope of the current EMAS registration.

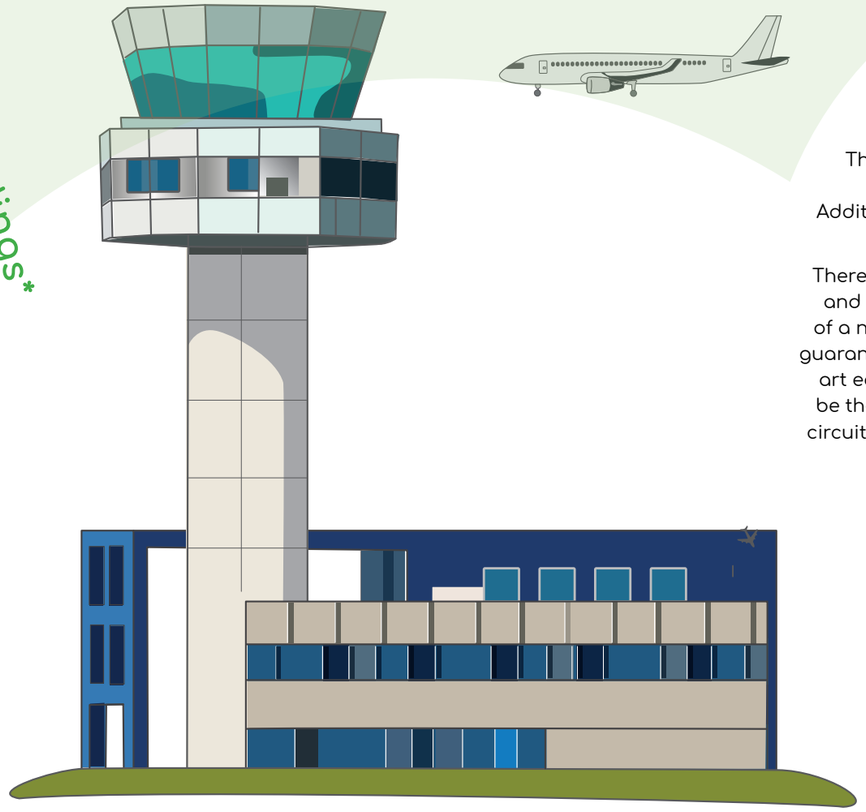
# Service locations and buildings*

## Skypark project*

ANA participates in the ´Skypark' building project in collaboration with Lux-Airport, who is the project owner. Our objective is to relocate ANA Management and ANA support teams in this new building by beginning 2023.

This new building, foreseen to be built with a wooden frame, aims to be a reference regarding sustainability and environmental awareness. 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.

Skypark will provide ANA with a motivating and rewarding working environment and gathering a large part of the staff currently spread over several buildings in a single place.



## New Tower building project*

Another building project currently under study is to relocate the technical and operational teams in a new Control Tower.

The current control tower dates from 1992 in need of complete refurbishment. This would require a very high investment. Additionally, its current positioning facing South (against 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 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. An additional positive impact would be the reduction of noise nuisance by implementing a new standard circuit flown in the north, overflying mostly forest areas and much less inhabited areas.

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

The first preparatory meetings should take place in the near future. At this stage there is no precise schedule for this ambitious project.

## 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 including 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.



### Our 'environmental journey' *

In November 2020, the Environmental Management System of ANA was successfully ISO 14001:2015 recertified and EMAS registered. The next re-certification audits are foreseen in 2023.

### Our 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 and national working groups as the Sustainability Managers Club organized by IMS Luxembourg.

The Environmental Transparency Working Group will develop 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.

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.

And finally, the Sustainability Managers Club organized by IMS Luxembourg will help ANA to integrate the issues related to Sustainable Development Goals into their corporate strategy.

During 2020, EMS 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 MP and Airport CDM (Collaborative Decision Making) and to work together on a common charta.

ANA is as well in constant dialogue with the airport citizens and contributes actively to the 'Plan d'action Bruit' (Noise action plan) from the Ministry of the Environment, Climate and Sustainable Development in cooperation with the Environment Agency.

## 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 *

People in ANA get practical guidance, training, and support on the topic of environmental protection and the environmental management system. The aim is to go beyond awareness, reach everyone in ANA, and engage them to act independently and competently when it comes to the daily task performance with an innovative touch.

Staff competence is developed to enhance the ´technical´ qualities needed for the job as well as to promote supplementary skills in teamwork, cross-sectional skills, innovative work practices, communication and approaching their work with a positive, supportive attitude.

The environmental survey done at the end of 2019 achieved a satisfactory response rate of 63.5%. While 51% of ANA employees felt very concerned about environmental issues, 18% felt even extremely concerned. 84% were informed that ANA is ISO 14001 certified, only 55% knew that ANA is working on the EMAS registration. ANA's environmental maturity is considered as intermediate with 55%.

Many suggestions have been made to increase ANA's environmental maturity, like undertaking symbolic actions (e.g. planting a tree), involving more ANA staff in actions, improving advertising for environmental achievements, developing competence in environmental management in the ATM domain, starting clarification and sensitization campaigns, etc. In addition, 84% were in favor of becoming single-use plastic free.

All ideas on how to develop the environmental management system were analysed in order to be integrated to the environmental action plan.



## 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 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 Risk & 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 annual Management 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 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 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 | Y | Y | Direct | Low | • Purchasing procedures, Project management |
| | Air Quality | Y | Y | Y | Direct | Medium | |
| | Resources | Y | Y | Y | Direct | Medium | |
| | Waste | Y | Y | Y | Direct | Medium | |
| Purchasing of ANA office materials | Noise | Y | Y | Y | Direct | Low | • Purchasing procedures, Project management |
| | Air Quality | Y | Y | Y | Direct | Medium | |
| | 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 |
| | Resources | Y | Y | Y | Direct | Medium | |
| | Waste | Y | Y | Y | Direct | Medium | |
| Fleet management | Resources | Y | Y | Y | Direct | Medium | • Water for cleaning recycled (if possible) or filtered<br>• Measure consumption |
| | Air Quality | Y | Y | Y | Direct | Medium | |
| Use of hazardous products | 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 | 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 | 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 transport (on airport / between ANA facilities) | Resources | Y | Y | Y | Direct | Medium | • E-bikes for employees, purchasing policy for vehicles (e- or plug-in hybrid), communication |
| Business travels * | Air quality * | Y * | Y * | Y * | Direct * | Medium * | • Internal policy (car versus planes), measure Co2 impact * |



### Table of indirect aspects and their environmental impacts:

| Environmental Aspect | Impact | Responsibility | Decision (control) | Influence | Aspect type | Stakeholders impact | Means of Influence or Control |
|---|---|---|---|---|---|---|---|
| Aircraft approach, take off, VFR traffic | Noise | N | N | Y | Indirect | High | • ATC, airlines procedures, Charging fee per aircraft type, Night curfew quota, CDO/PBN procedures |
| | Air Quality | N | N | Y | Indirect | Medium | |
| Aircraft on ground (taxiing, reverse thrust, engine test, Auxiliary Power Unit) | Noise | N | N | Y | Indirect | High | • ATC, airlines, aerodrome procedures |
| | Air Quality | Y | N | Y | Indirect | Low | |
| Maintenance of airport infrastructure/surface | Noise | N | N | N | Indirect | Medium | • Coordination meetings, Project management procedures |
| | Air Quality | N | N | N | Indirect | Low | |
| | Waste | N | N | N | Indirect | Low | |
| Supply of water to whole airport | Resources | N | N | N | Indirect | Low | • Measure consumption |
| Purchasing of AER equipment | Noise | Y | N | Y | Indirect | Low | • Purchasing procedures, Project management |
| | Air Quality | Y | N | Y | Indirect | Medium | |
| | Resources | Y | N | Y | Indirect | Medium | |
| | Waste | Y | N | Y | Indirect | Medium | |
| Implementation, Use & Maintenance of AER equipment | Noise | Y | N | Y | Indirect | Low | • Purchasing procedures, Project management, Maintenance procedures, equipment follow up |
| | Air Quality | Y | N | Y | Indirect | Low | |
| | Resources | Y | N | Y | Indirect | Medium | |
| | Waste | Y | N | Y | Indirect | Medium | |
| De-icing of manoeuvring area | 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 management) | Biodiversity | N | N | Y | Indirect | Medium | • Airside and surroundings inspections, Honey production, biodiversity surveys |
| Commuting to work | Resources | N | N | Y | Indirect | Medium | • Free public transport as of march 2020, charging station for e-cars, communication |

# THE SIX ENVIRONMENTAL PILLARS *


Figure– EMS Pillars

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

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

## 1 Noise reduction *

### Background *

Reducing gaseous and noise emissions – NOX and noise – and saving aircraft fuel are immediate goals to achieve. A comparison with 2019 is inappropriate as traffic in 2020 dropped drastically due to the sanitary crisis. However, in 2020, two-third of incoming flights used the available CDO approaches. Most CDO flights (46%) were so called ´Fuel CDOs´ that is with no level-off segment between FL100 (top of descent) and 3000 ft. These CDOs offer most saving of fuel consumption (compared to the ´Noise CDOs´ that start from FL60 downwards) and reduce emissions (noise and gaseous emissions) during approach.

On the other hand, 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 to November during the time of much reduced IFR (Instrument Flight Rules) traffic.

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

It is expected that the noise complaints will further raise in 2021. Actions, as the update of the citizen complaints process were introduced (via a noise complaints form on ANA's website) and meetings and working groups organized together with the ministry, DAC and the associations and the update of the national airport noise plan (Plan d'action contre le bruit aéroportuaire) are still on-going.

Noise complaints form

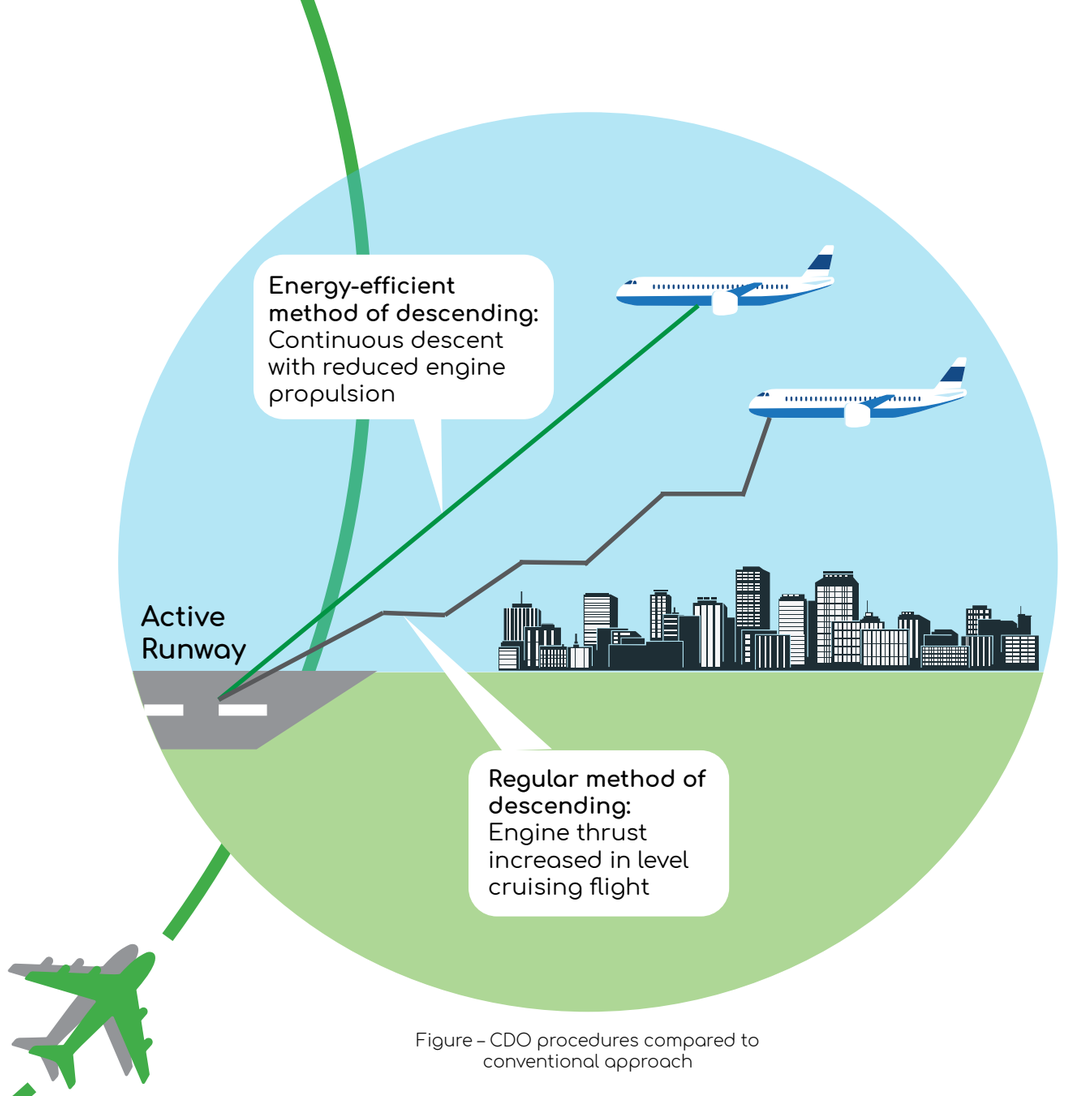




Figure – CDO procedures compared to conventional approach

### Implementation of CDO for ´smooth landing´ *

ANA investments in new ATC procedures and terminal airspace and route changes (CDO and PBN approaches) are already reducing aircraft fuel, CO2 emission and noise as environmental improvements. There is potential for further savings thanks to changed procedures in CDO, flexible ground operation and advancing in PBN for example.

### What´s New: ´Green Climbing´ - Continuous Climb of aircraft

ANA will implement, in cooperation with local airlines, stakeholders and DAC, procedures and ATC clearance for Continuous Climb Operation (CCO), will monitor and, when applicable, improve the operational use and effects in environmental terms: fuel savings of airlines, and emission and noise reduction for our residents.

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.

## Satellite-based navigation *

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

## PBN - Performance Based Navigation *

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.

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.

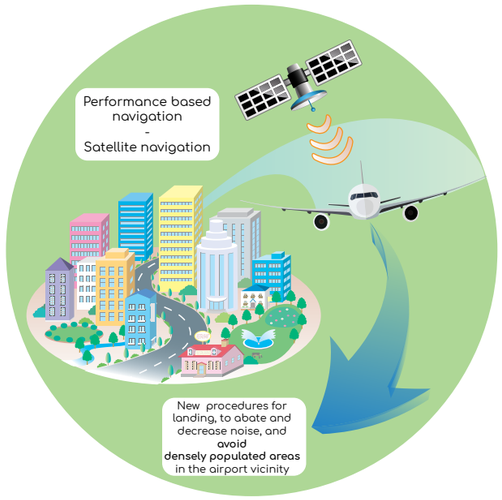



Figure - PBN procedures compared to conventional routing

## 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 promoting the use of less disturbing departure times in terms of noise. Aircraft 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 ANAs 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

## 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.




Figure – Charta "Against the noise" with Cargolux

## 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.

## 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. Those new measurements are now integrated in our Environmental Plan and will allow a better monitoring of ANA's electricity consumption.

### Using LED technology *

This year the runway refurbishment works started 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 runway refurbishment works (planned to run between April 2021 and October 2022), all lights on the runway (except of the approach lighting systems) will be replaced by this long-lasting and energy efficient technology.



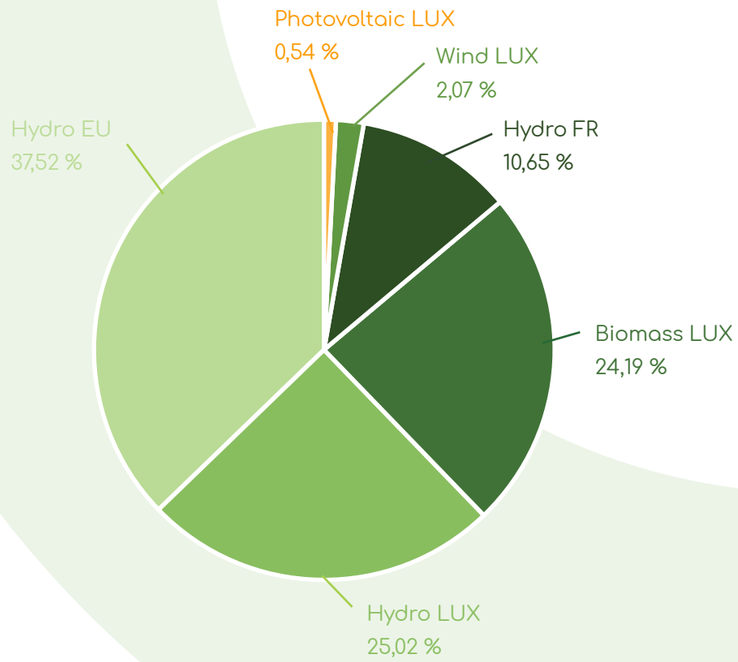

### Eco-responsible project management

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 (TÜV Rheinland certified ID No 0000053913 for 100 % renewable energy). The purchased electricity is powered by 0.54 % Luxemburgish photovoltaic energy, 2.07 % Luxemburgish wind energy, 10,65 % French water energy, 24.19 % Luxemburgish biomass, 25.02 % Luxemburgish water energy and 37.52 % outside Luxembourg water.

(Source: enovos.lu 20/05/2021)



## Saving trees – reducing paper *

Paper used in ANA is 100% recycled and received 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.

## Staff awareness *

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

A contest for the 'best practice' environmental ideas of ANA's employees was launched in may 2021. Their ideas on how to save energy or reduce our ecological footprint will be considered and will if possible be introduced in the ENV 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 2020, ANA released one environmental bulletin which briefed about:

- the rise in noise complaints after the COVID-19 lockdown and its consequences,
- on the 2020 honey production,
- the environmental audit results,
- the EMAS registration and
- facts about food containers.



# 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 purchasing plugin hybrid or electric cars. We encourage the reduction of carbon emissions by making e-cars and e-bikes available to staff during their daily work. Charging stations for service or private electric cars have also been installed.

The determination of ANA's carbon footprint was in 2020 in the focus of 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 stemming from waste and fuel consumptions of ANA's car fleet.


## Fleet management *

In fact, ANA acquired 3 new full electric cars in 2020, to replace older and high fuel consuming cars. Currently there is now a total of 5 full electric and one Hybrid plug in car amongst a fleet of 35 cars.

With this new acquisition, we reduced the average of CO2 emissions from our car fleet to 155g/km CO2 compared to 218g/km CO2 in 2019.

This year, another full electric and 2 Plugin Hybrid cars are going to be acquired. Discussions are on-going with lux-Airport to allow hybrid cars on the RWY for operational and technical departments.

Additionally, all historic data is now verified and corrected in order to provide accurate and valid measurements.

ANA also started to keep track of their km's driven over the year for each car (since August 2020).

## Business travel *

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

The calculations were made separating 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.

During COVID crisis, business travels were reduced to an absolute minimum. The sanitary crisis urged the use of video-conference meetings. Most ANA employees have been trained 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 method a standard practice. In the same spirit, home working enabled continuity of service in times of crisis and the intention of ANA Management is to facilitate this new way of working. This reduction of commuting has a positive impact on environment that is considered as an indirect impact.

ICAO Carbon Emissions Calculator

## 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 closely monitors and seeks to improve the level of biodegradability of runway and taxiway de-icing products and optimizing the consumption of de-icing products.

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

### Biodegradability of de-icing products *

As ANA is still responsible for the purchasing of de-icing liquids for the manoeuvring area, we select a green labelled product within the purchasing procedure.

### Environmental emergency procedure

The design of our services ensures 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.

## 5 Waste Management *

In our working environment, the amount of waste produced can be substantial. The waste collected is entrusted to collection and/or recycling service providers (Superdreckskëscht (SDK), Valorlux, SIDOR). The amount of recycled and not recycled waste is monitored.

ANA promotes best practices and raises awareness for eco-responsible behaviour among its staff.

As for the resources pillar, the waste management was also in the scope of an internal audit. Procedures, stakeholders and contracts were reviewed to find new ways of reducing waste.

In line with the evaluation of ANA's carbon footprint, ANA contacted the environmental agency, SDK and Valorlux to get their carbon footprint for produced waste per type to include their carbon footprint calculation.

As the waste management process is laborious and depends on several different stakeholders., we were able to calculate the emissions of the biggest part of our domestic waste produced and included it in ANA's carbon footprint calculations.

### 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.

## 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.

### Airport greens management

Green spaces and meadows are important to conservation of nature. Therefore, we reduced the frequency of mowing in order to support the appearance of a wide variety of vegetation forms.

The extensive management and late mowing practiced on the airport, in collaboration with the road and bridge administration (Ponts & Chaussées), contributes to the preservation of the existing biodiversity on the airport platform. Contrary to the preconceived idea, several endemic species are present on the airport like butterflies.

### 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 their stakeholder "Natur & Emwelt Asbl" detected 32 butterfly species of which 6 are endangered, and 224 plant species of which 3 are endangered.

### Beehives - production of honey *

ANA's busy Honeybees produced, from the 4 beehives, a total of 120 kg of Honey in 2020.

This year ANA, in cooperation with LuxAirport, will add a fifth beehive to their Honeybees bee's population.

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

The Honeybee population is plummeting 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 200000 in total in 2020
- Our bees can help in monitoring the air quality
- We have one queen per hive (she lives 3-5 years)
- Our worker-bees are living for 35 days and are travelling up to 8000 km during their life
- Their population is reduced during the winter period to 5000 – 8000 bees
- Two thirds of the honey production is 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) *

**General Note:**

ANA has reviewed the set of indicators with the aim of calculating a precise environmental footprint: 28 new indicators were introduced and 11 were deleted as not relevant anymore.

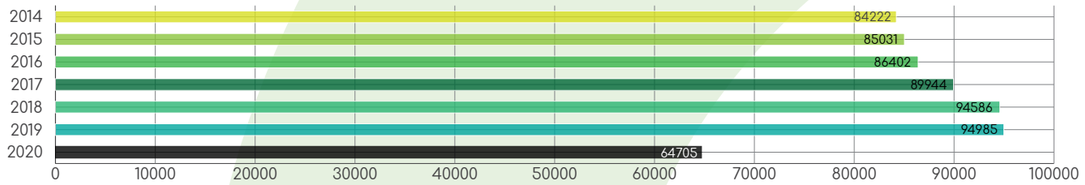
## Table – EMAS core indicators vs. ANA core indicators

| EMAS core indicators | PI name | Measurement name | Measurement detail |
|---|---|---|---|
| Energy | Consumption of resources | Electricity | • ANA total electricity Consumption kwh Station South*<br>• ANA total electricity Consumption kwh Emission Center*<br>• ANA total electricity Consumption kwh Station North*<br>• ANA total electricity Consumption kwh Stock Lorang (decomissioned)*<br>• ANA total electricity Consumption kwh Station Hamm*<br>• ANA total electricity Consumption kwh Station NDB (Berg)*<br>• ANA total electricity Consumption kwh Station Pompes*<br>• ANA total electricity Consumption kwh Cité de l'Aéroport*<br>• ANA total electricity Consumption kwh Station NDB (Leudelange)*<br>• ANA total electricity Consumption kwh Station EMU (Mensdorf)*<br>• ANA total electricity Consumption kwh Station DVOR (Ingeldorf)*<br>• ANA total electricity Consumption kwh<br>• ANA total electricity Consumption kwh / 10 000 aircraft mvt |
| | Consumption of resources | Project Management | • Environmental impact of internal ANA projects, Index 5/+5 |
| Material | Consumption of resources | Fossil resources (heating) | • Fuel consumption ANA (without emergency generators) incl. CGDIS<br>• Fuel consumption ANA (without emergency generators)<br>• Fuel consumption ANA (without emergency generators) per FTE<br>• Fuel consumption ANA (without emergency generators) ADM building*<br>• Fuel consumption ANA (without emergency generators) Tower building*<br>• Fuel consumption ANA (without emergency generators) ELE building*<br>• Fuel consumption ANA (without emergency generators) CGDIS building*<br>• Gas consumption (without emergency generators, m3)<br>• Gas consumption (without emergency generators, m3) per FTE<br>• Gas consumption in m3 Emission Center*<br>• Gas consumption in m3 Tower building* |
| | | Fossil resources (emergency generator) | • Emergency generator fuel consumption<br>• Emergency generator fuel consumption / 10 000 aircraft mvt |
| | | Paper | • Paper Consumption block<br>• Paper Consumption block / FTE |
| Water | Consumption of resources | Water (ANA) | • ANA facilities drinking water consumption in $m^3$ in ANA<br>• ANA facilities drinking water consumption in $m^3$ in ANA / FTE<br>• Total annual waste water produced, expressed in $m^3$ in ANA facilities / FTE<br>• Total annual waste water produced, expressed in $m^3$ in ANA facilities / FTE |
| Waste | Waste Management | Domestic waste | • Annual generation of waste in tons<br>• Annual generation of waste in tons / FTE |
| | Consumption of resources | Special waste | • Annual total generation of special waste in kg - electrical devices (commercial)<br>• Annual total generation of special waste in kg per FTE - electrical devices (commercial)<br>• Annual total generation of special waste in kg - electrical devices (domestic)<br>• Annual total generation of special waste in kg per FTE - electrical devices (domestic)<br>• Annual total generation of special waste in kg - incandescent and halogen lamps<br>• Annual total generation of special waste in kg per FTE - incandescent and halogen lamps<br>• Annual total generation of special waste in kg - cabel (copper)<br>• Annual total generation of special waste in kg per FTE - cabel (copper)<br>• Annual total generation of special waste in kg - carton/ paper<br>• Annual total generation of special waste in kg per FTE - carton/paper<br>• Annual total generation of special waste in kg - plastic film<br>• Annual total generation of special waste in kg per FTE - plastic film<br>• Annual total generation of special waste in kg - plastic products<br>• Annual total generation of special waste in kg per FTE - plastic products<br>• Annual total generation of special waste in kg - fluorescent light bulb<br>• Annual total generation of special waste in kg per FTE - fluorescent light bulb<br>• Annual total generation of special waste in kg - spray cans<br>• Annual total generation of special waste in kg per FTE spray cans<br>• Annual total generation of special waste in kg - styrofoam<br>• Annual total generation of special waste in kg per FTE - styrofoam<br>• Annual total generation of special waste in kg - toner cartridge<br>• Annual total generation of special waste in kg per FTE - toner cartridge<br>• Annual total generation of special waste in kg - dry batteries<br>• Annual total generation of special waste in kg per FTE - dry batteries |
| Emissions | ANAs Carbon Footprint | Fleet management | • Establish number of vehicles in use<br>• Establish number of vehicles in use / FTE<br>• Number of existing / new acquired plug in / hybrid / electric cars of fleet<br>• Average emission / car (gr/km) - Total emission of car fleet<br>• Total CO2 emissions on km driven*<br>• Total of Km driven* |
| | | Use of buildings | • Fuel emissions in kg CO2 (heating ANA buildings) per FTE*<br>• Gas emissions in kg CO2 (heating ANA buildings) per FTE*<br>• Complete CO2 emissions (Fuel and Gas)*<br>• Complete CO2 emissions (Fuel and Gas) per FTE* |
| | | Use of ANSP equipment | • Emergency generator fuel emissions in kg CO2*<br>• Emergency generator fuel emissions in kg CO2 per 10 000 aircraft |
| | | Business Travels | • Total CO2 Emissions on Business Travels by Aircraft*<br>• Total CO2 emissions on Business Travels by Car* |
| | | Domestic Waste CO2 | • Total emissions of domestic Waste incinerated (80% of total Domestic Waste)* |
| | | Total CO2 Footprint | • Total CO2 emissions* |
| Land use with regard to biodiversity | N/A (indirect) | | |

## Reference values *

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

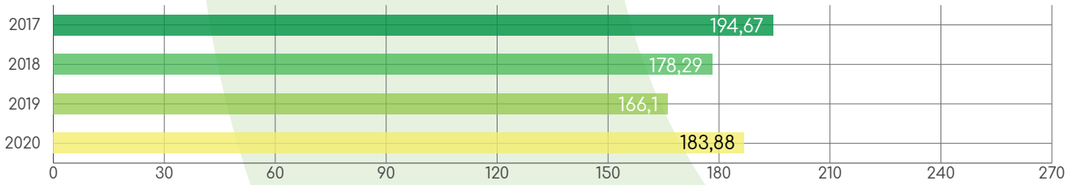
### Number of aircraft movements on ELLX




**Note:**

Due to the sanitary crisis, aircraft movements in Luxembourg dropped to almost 85% during the lockdown to 40% to 50% less until June 2021.

### Number of FTE (Full time equivalent)




**Note:**

Most of the recruited people in 2020 were employed in the framework of the third working position project for ATC approach and tower.

*Target: The reference values have no target.*



## Airport Noise & Emissions Footprint *

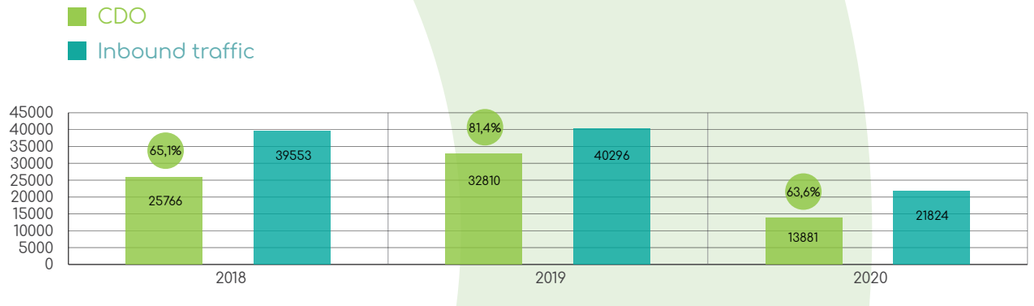
**Note:**

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

Foster the application and use of the available CDO (continuous descent operations) procedures: CDO - Number of CDO approaches established / flown into ELLX / total # of approaches.

This procedure, which reduces fuel consumption and noise emissions of aircraft, was implemented in 2017.

### CDO application



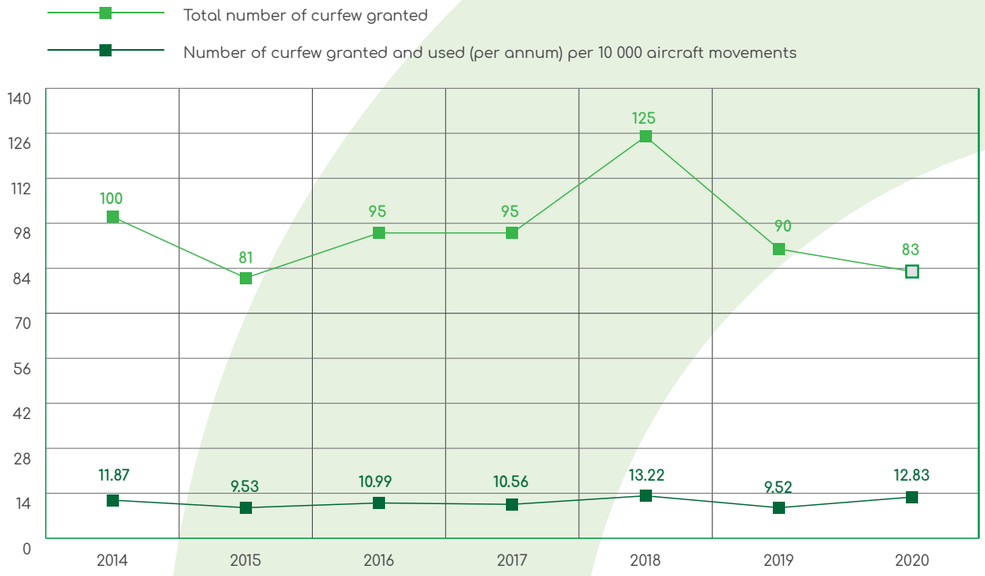

**Note:**

CDO application fell in 2020 below the 2018 level. During 2020 the existing CDO procedures published in AIP ("direct to baseleg") have been upgraded by a network of PBN transitions (further explanations on PBN can be found in the "Noise" chapter). These transitions are meant to replace the published CDO procedures as they include a vertical profile considering all airspace restrictions.

As a culture to request (pilots) or to offer (air traffic controllers) those transitions is not yet fully present (due to the pandemic situation in 2020 and training of new ATCO's with the need to practice vectoring), the percentage of CDO's might have dropped.

*Target: The target of the CDO application will be defined in 2022 as the definition will change from European Commission level.*

## Source of noise

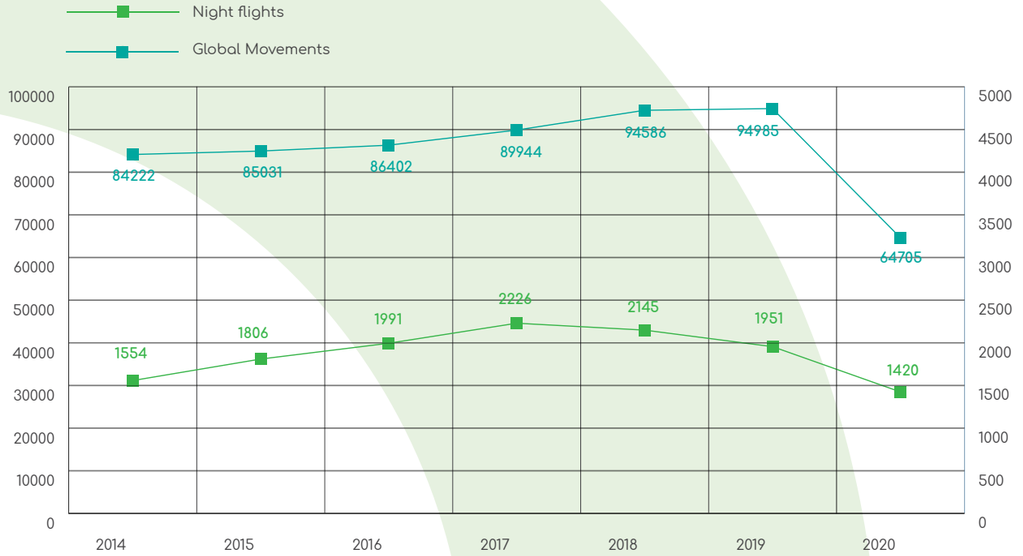



Note:

Less curfew extensions were granted in 2020 which leads to a diminution over the last 3 years. However, due to the sanitary pandemic, and with it the drop of the commercial movements, an increase is noticeable in the number of curfew granted per 10000 aircraft movements.

*Target: As defined in the Grand-Ducal Regulation of 2 November 2012 amending the amended Grand-Ducal Regulation of 24 May 1998 setting the conditions for technical and operational operation of Luxembourg airport, curfew extensions are defined to a maximum of 95 per year.*

## Nightflights vs. global movements




Note:

Please be aware that the values presented in the environmental statement 2020, with data from 2019, for the global movements were only showing the commercial movements. Here you can find the total movements with the values falling after 2019 due to the sanitary crisis. Night flights are on a decrease from 2017 onwards and are reaching a record low value in 2020 due to the fall in the movements.

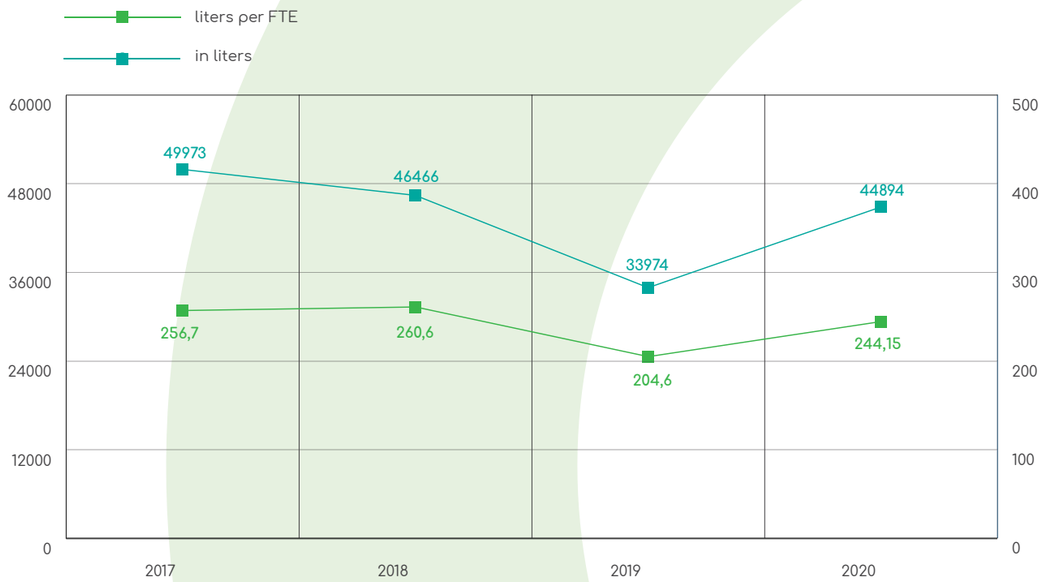
*Target: No target applicable as ANA has no direct impact on the number of night flights.*

## Consumption of resources (material) *

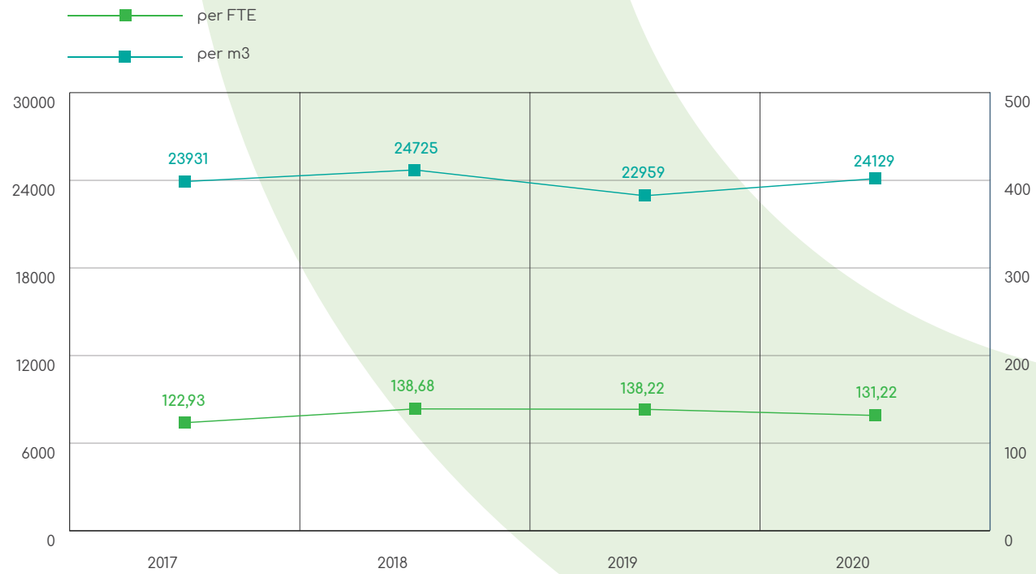
**Note:**

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 $m^3$ (heating ANA buildings) per FTE (EMAS Key Area Material)

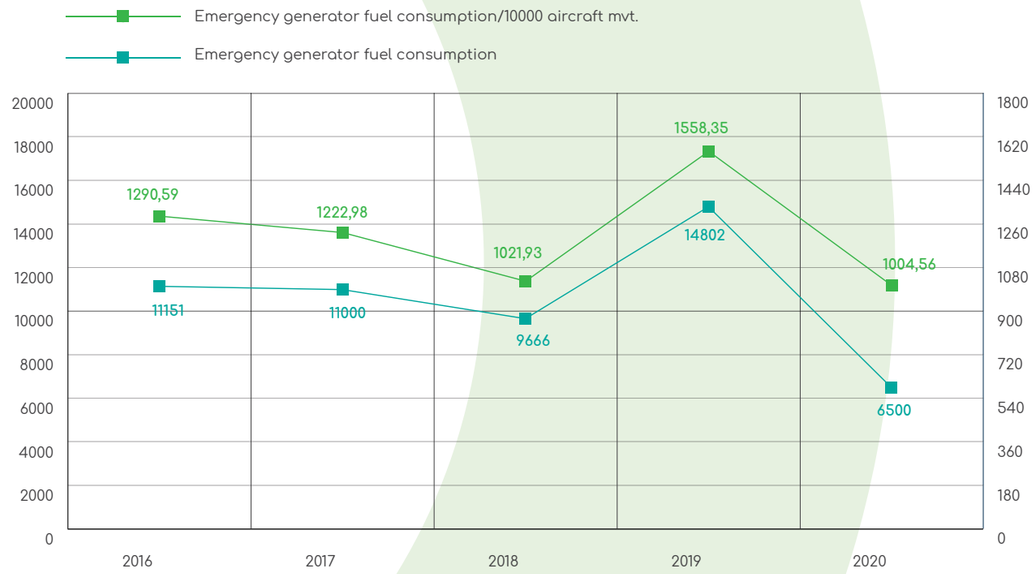



**Note:**

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). Less fuel was consumed for heating buildings in 2019 and 2020. The total gas consumption was more or less stable over the years.

*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

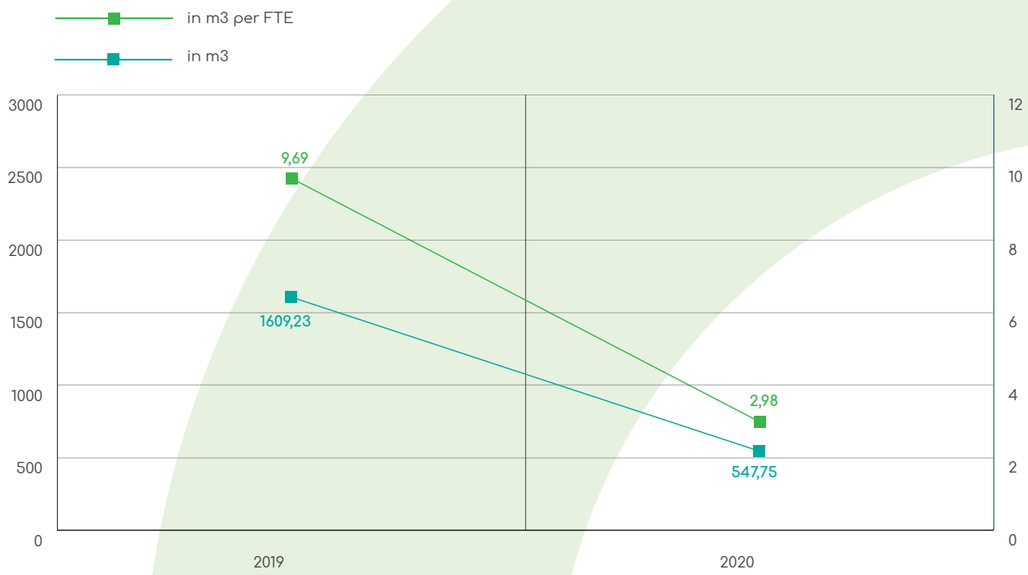



**Note:**

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 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 $m^3$ in ANA facilities / FTE (EMAS Key Area Water)

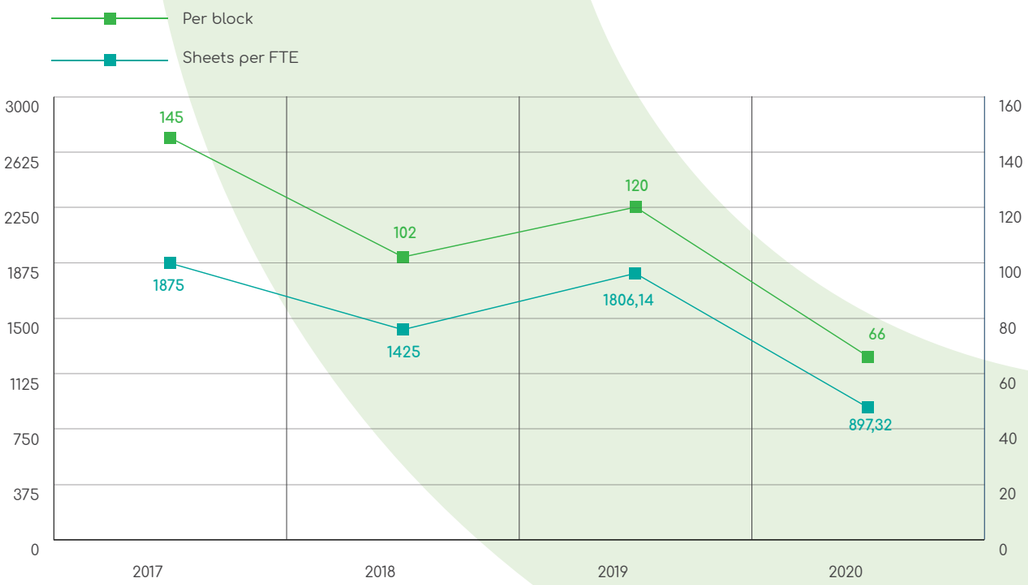



**Note:**

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 was very low as a majority of the ANA employees were in home office.

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

**Paper -** Paper consumption in sheets / FTE (EMAS Key Area Material)

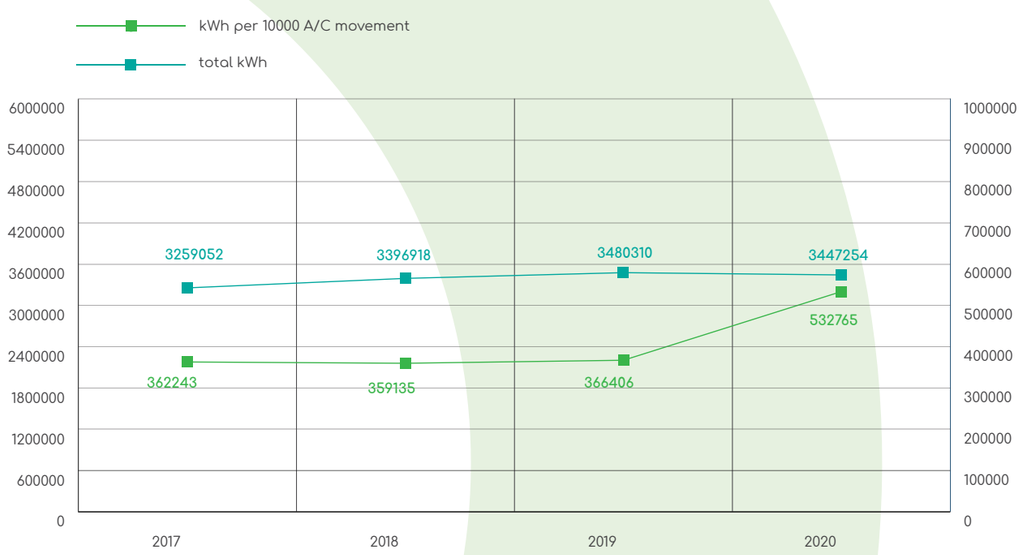



**Note:**

Less paper consumption in 2020 due to COVID-19 pandemic and the linked measures.

*Target: The target for paper consumption in sheets per employee is 1800.*

Electricity consumption in kWh




**Note:**

The electricity consumption was stable over the last years. The reference value was impacted by the sanitary crisis, nevertheless the infrastructure needed to be operational and required the same consumption.

*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")*

## ANA's Carbon Footprint *

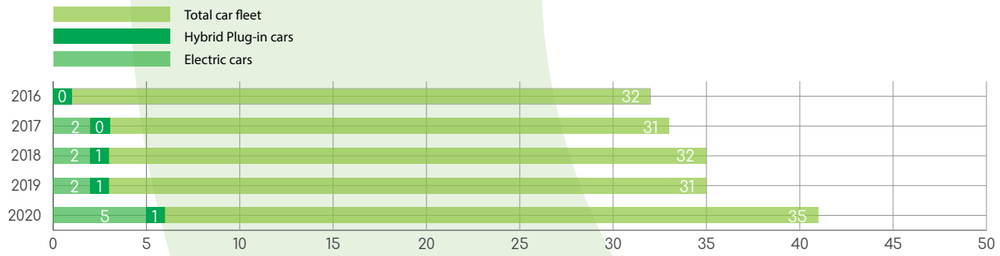
**Note:**

The following measurements have a direct impact, are under ANA direct operational control and are classified in EMAS Key Area "Emissions". Only Fuel consumption cars, Use of Buildings Fuel, Use of Buildings Gas, Business Travels by aircraft, Business Travels by car, Emissions caused by Domestic Waste produced and Use of ANSP equipment, which are within the scope of ANA's direct control, are included; other activities 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 CO2/l fuel and 2 kg CO2 /m3 gas and are directly linked with the values measured in "consumption of resources (material)" here above. As no Data was collected before September 2020 on the km driven by ANA's car fleet, we calculated the emissions times 3, to get an idea of a yearly consumption. Emissions by Domestic Waste are calculated with 80 % of the total of the waste, as the rest remains untraceable at this stage. Business travels by car are evaluated with the average CO2 emissions on the used vehicles and km driven. Business travels by Aircraft are calculated with the ICAO CO2 emissions calculator for each trip.

N.B. ANA's choice for their electricity supply is 100% European and 100% free of CO2 (TÜV Rheinland certified ID No 0000053913 for 100% renewable energy), hence the carbon footprint for electricity consumption is zero.

**As ANA was able to collect a lot of CO2 emissions Data in 2020, we elaborated a CO2 Footprint.**

**Fleet management**



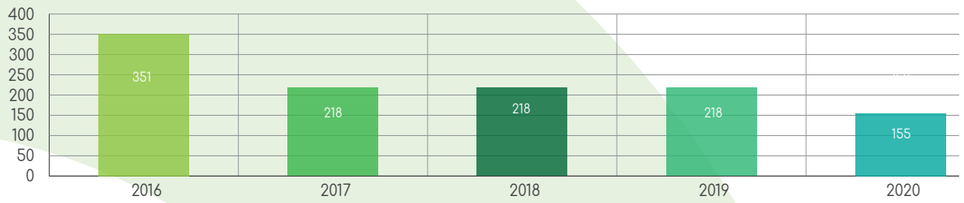

**Note:**

ANA is replacing more and more cars with internal combustion engine with electric or plug-in hybrid cars. In 2020 we have 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 31 cars, same as the year before.

*Target: ANA will replace, if possible, all cars with internal combustion engine, at the end of their lifecycle, by cars with electric or plug-in hybrid technologies. A timeline needs to be defined.*



**Fleet management** - Average of emission per car (gr/km)

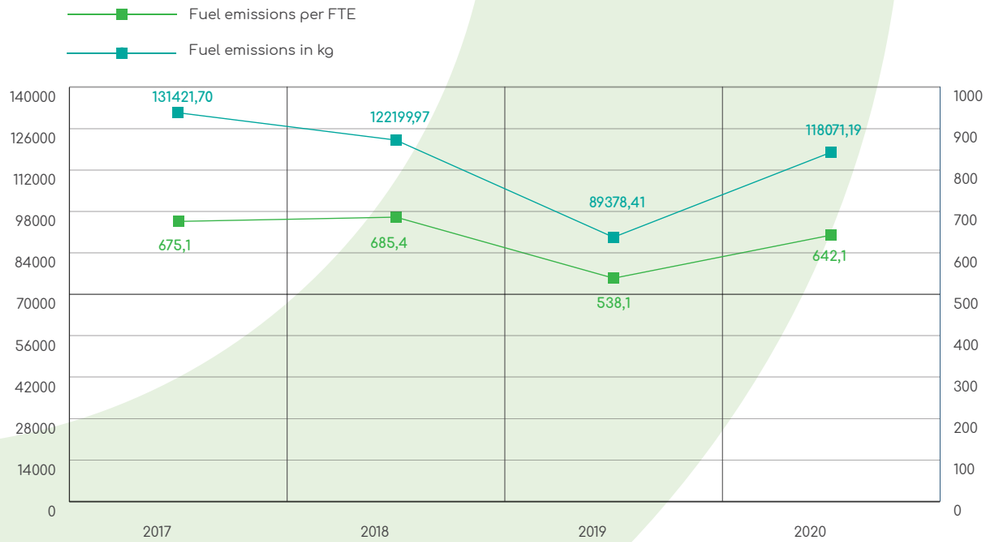



**Note:**

Please be aware that due to a calculation error in the environmental statement 2020 the average emission per car was wrong. In 2020 this indicator was revaluated and all years since 2016 were recalculated. Due to the increase in electrical cars ANA was able to decrease the carbon footprint for their car fleet.

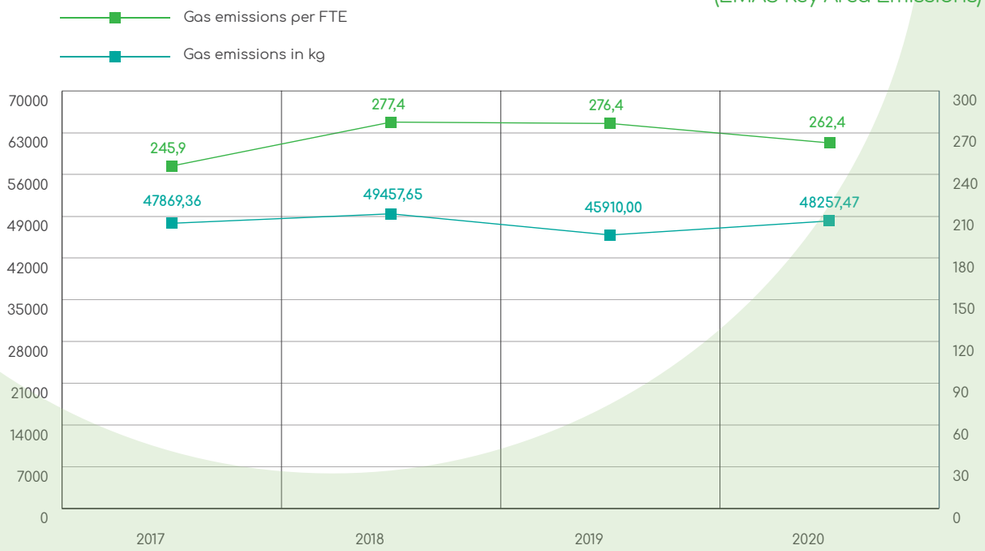
*Target: ANA will keep this trend, and further reduce the emissions caused by their fleet, by replacing them by cars with electric or plug-in hybrid technologies. The target for next year will be 135 gr/km in average of emission per car.*

**Use of buildings** - Fuel emissions in kg CO2 (heating ANA buildings) per FTE (EMAS Key Area Emissions)



**Use of buildings** - Gas emissions in kg CO2 (heating ANA buildings) per FTE

(EMAS Key Area Emissions)

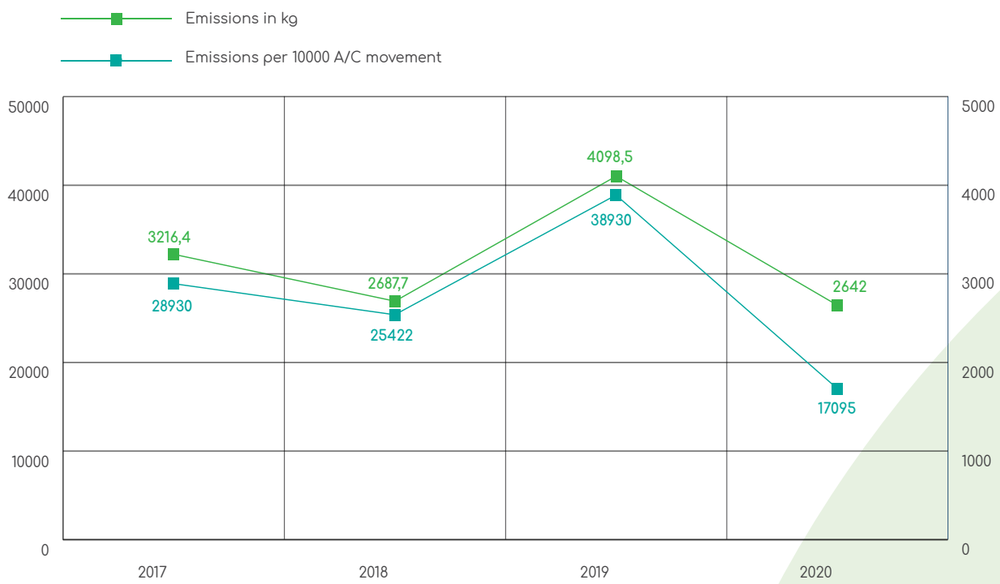



**Note:**

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). Less CO2 was generated for heating buildings in 2019 and 2020. The emissions from the gas consumption was more or less stable over the years.

*Target: The target for fuel and gas emissions in heating ANA buildings is in total numbers 48 tons of CO2 for gas and 118.5 tons of CO2 for fuel.*

**Use of ANSP equipment -** Emergency generator fuel emissions in kg CO2 per 10 000 aircraft (EMAS Key Area Emissions)





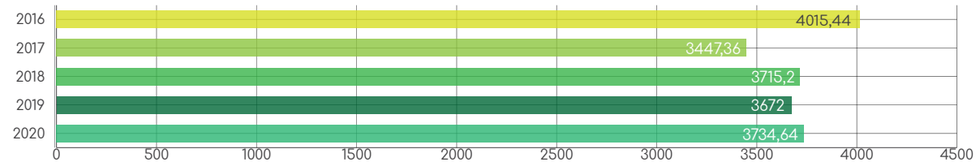

**Note:**

As the fuel is not ordered regularly, but depending on different factors, the emissions calculated are fluctuating. A higher amount of fuel was ordered in 2019, which is why the quantity ordered in 2020 was very low.

*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.*

**Total emissions of domestic waste incinerated (80% of total domestic waste)**

(EMAS Key Area Emissions)

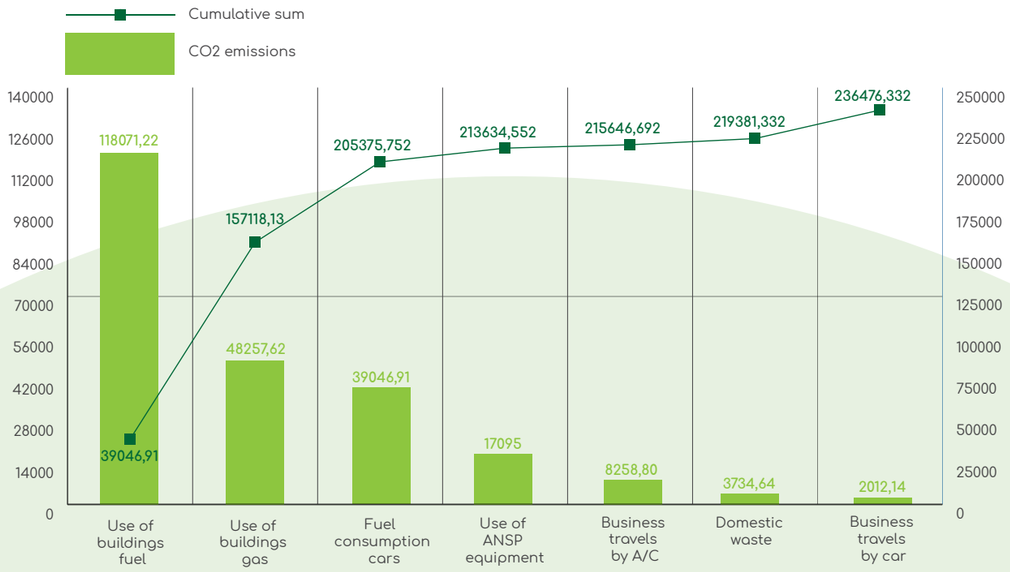



**Note:**

The total emissions generated by domestic waste over the last 3 years are stable.

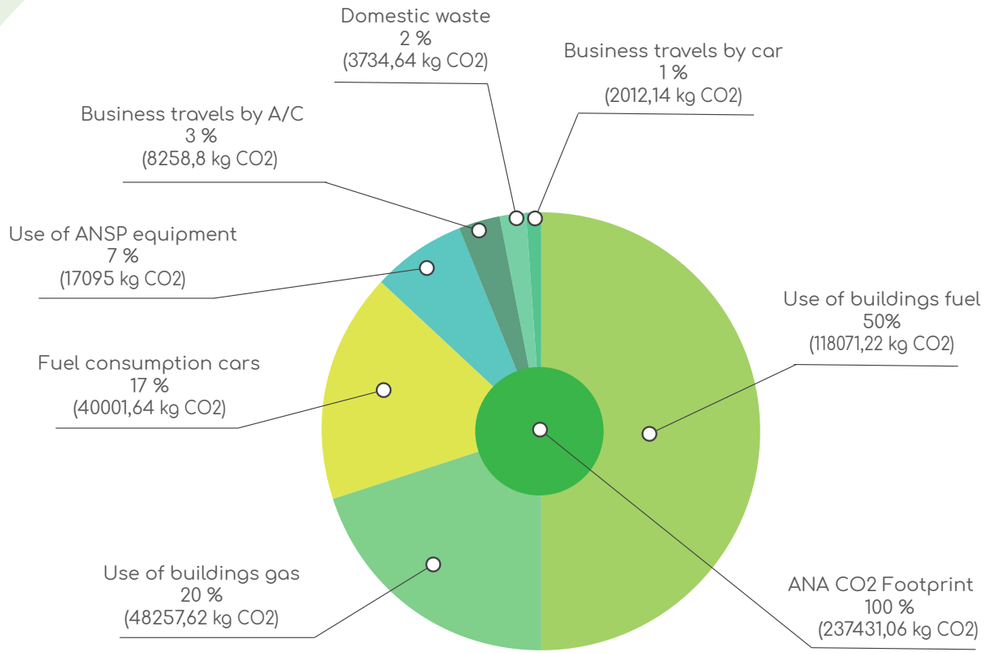
*Target: The target for annual total emissions caused by domestic waste is in total 3750 kg CO2.*

ANA CO2 Footprint




*Target:*

*Considering these are new measurements, with no baseline of comparison, and that 2020 was a non-standard year due to the pandemic, targets for the fuel consumption of ANA cars, business travels by aircraft and by car, and the ANA CO2 total footprint will be defined in the next year's update of ANA's environmental statement.*






## Protection of Water, Groundwater & Ground *

**Note:**

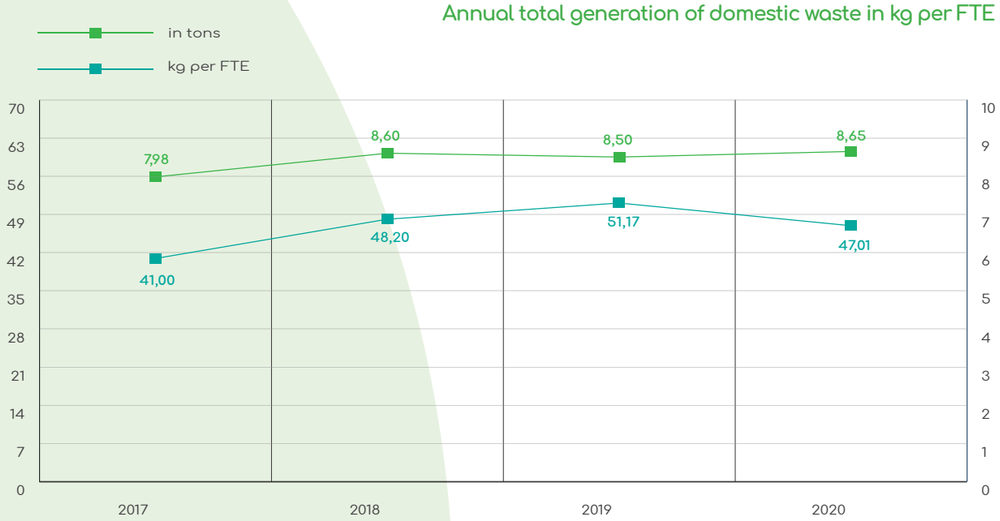
ANA has the operational responsibility on the manoeuvring area of the aerodrome but has no direct impact on this aspect in the EMAS Key Area. The impact of these activities are indirect as the combined activities of ANA and other parties are required to protect water, groundwater and ground. ANA contributes substantially and directly through the following actions under their operational control. This includes inter alias the acquisition, ways and means of use and distribution of de-icing and other products used by (external) services and management of the contracts and Service Level Agreements (SLAs). 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 Ponts et Chaussées and Corps Grand Ducal D'Incendie et de Secours (CGDIS) as these are not yet dissociable from ANA waste. 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 in domestic waste over the last 3 years is stable.

*Target: The target for annual total generation of domestic waste is in total 8.6 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 also collected and evaluated.

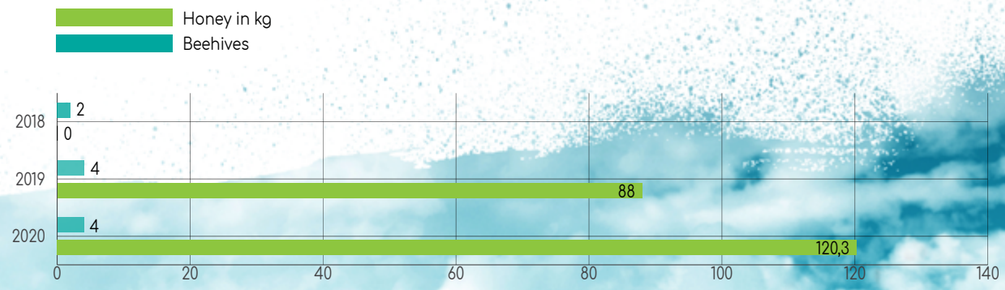
## Maintain Airport Biodiversity *

**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 PI 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: 2019's honey production was performed with 2 beehives, while 2020 we had 4 beehives.

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

# NEXT STEPS - ENVIRONMENTAL GOALS STATUS 2020 & PROGRAM 2021 *

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

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 targets set 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 2020 / Target reached | Target for 2021 |
|---|---|---|---|---|
| Application and use of available CDO (continuous descent operations) procedures and other ATC/airline procedures | Noise<br>Resources | Current: # / percentage use of CDO<br>Future: Custom-tailored operational procedures | YES<br>High increase in flown CDO with noise and resource savings | • Deepen contact to national airlines & airport<br>• Analyze availability of aircraft & airport operations data Investigate potential of operational improvements ground/air<br>• Decide on local actions for further improvements<br>• Implement innovative flight OPS and ANS solutions |
| Reduce number of curfew (night flights) granted and used (per annum) per 10 000 aircraft movements | Noise | Current: # of flights outside normal operation time | YES<br>Limited by ministry Participation in working groups and committees with airport residents and airlines | • Limit of 95 curfew granted needs to be maintained<br>• Continue and intensify collaboration with local airlines |
| Reduce fuel consumption in liters (heating ANA buildings) per FTE | Resources | Quantity of fuel (liters) | NO *<br>Heating equipment in administration building verified and updated after external audit<br>Poster campaign and best practices for sensitization of employees implemented<br>Yearly training for a sensitization of employees *<br>Calculation of ANA's CO2 footprint * | • Monitoring<br>• Investigation of methods to further reduce fuel<br>• New tower and new administration building in planning phase * |
| Reduce fossil resources - Gas consumption in $m^3$ (heating ANA buildings) per FTE | Resources | Quantity (in $m^3$) | YES<br>Poster campaign and best practices for sensitization of employees implemented<br>Yearly training for a sensitization of employees * | • Monitoring<br>• Investigation of further improvement methods to reduce Renovation of Tower building foreseen.<br>• New tower and new administration building in planning phase * |
| Reduce total annual water consumption and waste water consumption, expressed in $m^3$ in ANA facilities per FTE | Resources | Quantity (in $m^3$) | YES *<br>Second year monitored<br>Poster campaign and best practices for sensitization of employees implemented *<br>Yearly training for a sensitization of employees * | • Investigation of further improvement to reduce<br>• Implementation of a water management plan on-going * |
| Reduce paper consumption in sheets / kg FTE | Resources | Quantity (in sheets / kg) | YES *<br>Poster campaign and best practices for sensitization of employees implemented<br>Centralized printer concept is used<br>Yearly training for a sensitization of employees | • Investigation of further improvements to reduce |
| Reduce Electricity Consumption kwh / 10 000 aircraft movement for ANSP equipment | Resources | KWh | NO<br>Each change of equipment will be evaluated on the power consumption due to project management (view here under) | • Monitoring<br>• Further installation of LED lights on the manoeuvring area. 100% replaced by LED lighting by 2022.<br>• Implementation of an electricity management plan on-going * |
| Environmental impact of internal ANA projects | Resources | evaluated index -5/+5 | NO | • Monitoring |
| Fleet management - average of emission per car (gr/km) | Air quality | gr/km | YES<br>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 tonnes /FTE | Waste | Quantity (tonnes)<br>Quality / type of waste | NO<br>Internal Audit on waste management performed * | • Investigate further improvements to reduce<br>• Reduce hazardous waste |
| Reduce ANA's CO2 Footprint | Air quality | kg of CO2 | NO *<br>First complete CO2 footprint calculated. New measurements introduced as Fuel consumption cars, Business Travels by aircraft, Business Travels by car, Emissions caused by Domestic Waste produced * | • Investigate further improvements to reduce *<br>• Awareness campaign * |

## Review of 2020 initiatives *

### Initiative Area 1 –
### Investigation & Implementation of advanced flight procedures *

ANA has been implementing, in cooperation with local airlines, stakeholders and DAC procedures and ATC clearance for Continuous Climb Operation (CCO) and monitoring and in case improve the operational use and effects in environmental terms: fuel savings of airlines, emission and noise reduction:

- CCO: Employing measures to achieve optimum climb engine thrust and other operational benefits for airlines.
- CDO/CCO: Reduction of fuel consumption/ emissions; possibility for further noise reductions and fuel savings through use of airlines ´quick access data´ for performance monitoring.
- The stepwise implementation of PBN enables the implementation of ´custom tailored´ arrival (STAR) and as a next step, departure (SID) routes. Enabling PBN STARs, transition and final approaches to both RWYs for accordingly equipped aircraft will show environmental benefits (noise abatement; fuel saving).

This initiative is still on-going. Concrete actions for 2020 are described in the "Noise reduction" (page 22) and "Our stakeholders" chapter (page 13).

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.

### Initiative Area 2 –
### Increase efforts in fossil fuel consumption reduction *

Concrete actions taken in 2020 can be found in the "Resources (material)" chapter. As becoming CO2 neutral is a future goal for ANA this initiative will be further developed in the coming years. A first definition of the metrics, with a detailed action plan for reduction / compensation, needs to be developed and validated.

### Initiative Area 3 –
### Implementation of an electricity and water management plan *

This initiative is still on-going. Concrete actions for 2020 are described in the "Resources (material)" chapter.



### Initiative Area 4 –
### Ecological sector engagement with improved communication *

Concrete actions taken in 2020 are described under the "Awareness-raising", "Staff Awareness" and "Our Stakeholders" in this document. Further steps to improve internal and external communication are under development.

### Initiative Area 5 –
### Supplier involvement *

The tender process has been reviewed and a paragraph was included in the tender documents for submission packages. Further action, as the update of the supplier process and a procedure for dealing with renovation works are still on-going.

## 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 organisation 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 organisation. Emissions are created during the production of the energy and eventually used by the organisation.
- Scope 3 – All Other Indirect Emissions from activities of the organisation, 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.

Being the first public administration in Luxembourg to be EMAS registered, ANA wants to keep leading the way in becoming the first carbon neutral administration.

In 2020 for the first time a comprehensive carbon footprint calculation, has been elaborated. The goals for 2021 are:

- to understand the drivers for carbon footprint reduction,
- to identify the right initiatives towards carbon reduction and, where needed, compensation opportunities.

Overall, the challenge will be to set a realistic, although ambitious, target-year to reach carbon neutrality, in line with emission allowances and reduction targets by sector stated in the integrated National energy and climate plan for 2021-2030 (Luxembourg from May 2020).





ANA is eagerly pursuing the obligation to address the shared responsibilities of ANA with Lux-Airport and airlines (Cargolux and Luxair) on the environmental aspects. This legal obligation is clear and directly asks for measures to avoid impacts on air, water, soil, flora and fauna, and to reduce noise as well as energy use. Proposals will be made for the development of concrete measures and environmental performance indicators that we in ANA – as the ANSP – and Lux-Airport mutually push forward.

The common framework for this development is the ATM MP with the following two (voluntary) mplementation objectives we in ANA embark on:

- ´Airport Collaborative Environmental Management' (ATM MP Objective ENV02) and
- ´Airport CDM´ (Collaborative Decision Making) (ATM MP Objective AOP05)

Both Objectives are next steps in progressing on ENV matters, namely towards an even closer cooperation on a common map and plan with a common set of concrete targets and performance indicators of airport partners and ANA.

With regard to the first bullet, Airport CDM on ENV, the plan of ANA is:

- Establishing a formal working partnership agreement with the airport and airlines
- Sharing information and data on noise, emissions, procedures and de-icing activities
- Adapting policies and procedures that work for all partners, mitigating environmental impacts of operations and training of operational staff.

ANA is already aware and active as described in length before. Sharing what we have learned, inspiring, and engaging our local partners is our attitude to approach partners on this objective.

The second bullet item ´Airport CDM´ has a broader scope including environmental goals when addressing the operational efficiency of airports. Also, here, ´collaboration´ is the key term: joining the forces of the ANSP, the airport operator and airlines to achieve the following as a next step:

- Define and agree on performance objectives and KPIs for the ANSP, the airport and airlines to improve operational efficiency.;
- Each partner to establish and implement effective internal procedures on their operations for the entire process from landing, taxiing, turnaround at gates up to and including pre-departure, and in case of need, de-icing and taking account of adverse weather etc.

Information and data exchange is crucial for all actions pursued. New or revised procedures will be created and agreed. These improvements will help to indirectly reduce the environmental footprint of flying in return.

Overall, improving the operational efficiency has direct and indirect benefits for the environment.

# LEGAL FRAMEWORK *

- Regulation (EC) 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), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC
- Commission Regulation (EU) 2017/1505 of 28 August 2017 amending Annexes I, II and III to Regulation (EC) No 1221/2009 of the European Parliament and of the Council on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS)
- ISO 14001: 2015 (Environment Management)
- European Standard EN ISO 14031:2013 adopted as Luxembourgish Standard ILNAS-EN ISO 14031:2013 in August 2013: Environmental management - Environmental performance evaluation – Guidelines
- Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (the framework Regulation)
- Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council
- Agreement from 10 September 2017 for airside operations at Luxembourg Airport between Lux Airport and ANA, and the coordination agreement Aerodrome Operator – Air Navigation Service Provider from 10 September 2017Arrêté ministériel 1/02/0130/C pour l'exploitation de l'aéroport
- Amended Luxembourg law of 21st June 1976 on noise abatement as well as the Grand-Ducal Regulation of 2nd August 2006 implementing Directive 2002/49 / EC on the assessment and management of environmental noise
- Grand-Ducal Regulation of 2 November 2012 amending the amended Grand-Ducal Regulation of 24 May 1998 setting the conditions for technical and operational operation of Luxembourg airport
- Regulation (EU) 598/2014 on rules and procedures on noise-related operating restrictions at Union airports
- 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
- 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 a) aux contrôles d'équipements de réfrigération, de climatisation et de pompes à chaleur fonctionnant aux fluides réfrigérants du type HFC, HCFC ou CFC; b) à l'inspection des systèmes de climatisation.
- Luxembourg's integrated national energy and climate plan for 2021-2030

  In accordance with REGULATION (EU) 2018/1999 of the european parliament and of the council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council
- Law of 18 july 2018, concerning the protection of nature and natural resources; Code of Environment, Mémorial A - 529 from 5 August 2019
- Charte des usagers et des riverains
- Plan d'action bruit aéroportuaire MDDI, December 2016
- Commodo/ Incommodo ; Liste établissements classés
- ANA & Cargolux (2018), Charte de lutte contre les nuisances sonores



# ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES *

Environmental verifier's declaration on verification and validation activitiesTÜV 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)

the updated environmental statement 2021 with facts and data from 2020.

Administration de la Navigation Aérienne (ANA), 4, rte de Trèves , 2632 Findel / Luxemburg

with registration number LU-000008

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 2021 with facts and data from 2020 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 01/10/2021

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:

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.

Next ANA environmental statement

will be published in September 2022.

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

Administration de la navigation aérienne

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