



# ENVIRONMENTAL PERFORMANCE REPORT 2018



# TABLE OF CONTENTS

**1**  
**INTRODUCTION**  
PAGE 04

**2**  
**NOISE AND  
AIR QUALITY**  
PAGE 05

**3**  
**VOLUNTARY CARBON  
MANAGEMENT**  
PAGE 8

**4**  
**ENERGY**  
PAGE 11

**5**  
**WATER**  
PAGE 15

**6**  
**WASTE**  
PAGE 17

**7**  
**BIODIVERSITY**  
PAGE 19

**8**  
**ENVIRONMENTAL  
MANAGEMENT  
OF WORKS**  
PAGE 22

**9**  
**ENVIRONMENTAL  
AWARENESS**  
PAGE 23

**10**  
**CONCLUSIONS**  
PAGE 26

# 1 INTRODUCTION

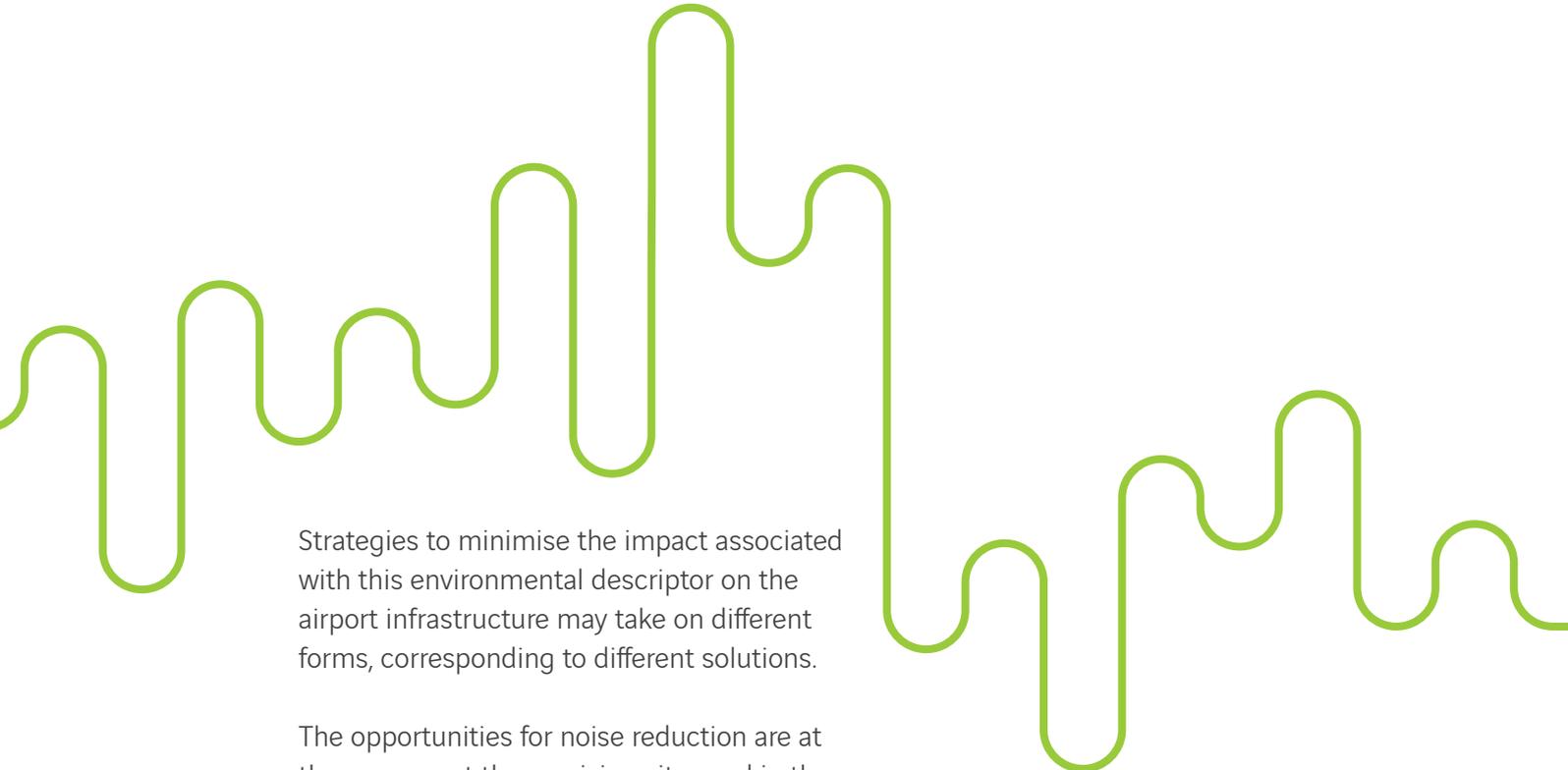
ANA – Aeroportos de Portugal, SA (ANA) seeks to ensure the preservation of the environment in its daily management aiming to improve its performance and, insofar as it can, to contribute to building a more sustainable future.

To that effect, this document presents ANA's environmental management in 2018, constituting an ideal means of disclosure, available to ANA's main stakeholders and to the general public.



# NOISE AND AIR QUALITY

Airport activity has been increasingly including environmental and sustainability issues in its agenda, in which “Noise” takes on a special focus. Given the enormous relevance to ANA of issues associated with noise, these are reflected in the Company’s Environmental Policy as a strategic area of priority action.



Strategies to minimise the impact associated with this environmental descriptor on the airport infrastructure may take on different forms, corresponding to different solutions.

The opportunities for noise reduction are at the sources, at the receiving sites and in the routes of propagation.

The optimal solution generally presents itself as a combination of as many alternatives as possible, in order to effectively minimise the effects of noise on the neighbouring community. This is done by safeguarding the operating conditions, associating them with the minimum costs for rational use of resources and taking into consideration the principle of “balanced approach”, which is widely advocated in the European Union.

Associated with the principle of continuous improvement, the minimisation of negative impacts is a permanent challenge, and control and monitoring are crucial tools for the pursuit of this objective.

To that effect, a Noise Monitoring System is implemented at the Airports (in continuous operation) where this environmental descriptor is most relevant, seeking to monitor and control the noise levels, with a special emphasis on the noise generated by aircraft.

In 2018, the system at Humberto Delgado Airport was expanded, with the acquisition of two more monitoring stations.

Within this scope, Lisbon Airport has nine fixed monitoring stations, with Sá Carneiro Airport (Porto), Faro Airport and Madeira Airport equipped with three stations. The monitoring is complemented by one portable station (at each airport), in order to enable analyses to be carried out in places not covered by the fixed stations, or in case of response to possible complaints. A portable station is used for continuous monitoring at Porto Santo Airport.

In the specific case of João Paulo II Airport (Ponta Delgada), the Noise Monitoring Reports are carried out by an external laboratory, based on monitoring campaigns carried out per IATA period.

Simulations/forecasts are also carried out, through the regular preparation of Noise Maps, which characterise the acoustic environment around the larger airports, where the occurrence of more significant impacts regarding aircraft-specific noise is expected.

For this purpose, Noise Maps are made for the airports of Lisbon, Porto, Faro and Madeira, and also for Porto Santo Airport, constituting integral elements of that airport's noise monitoring reports.

The results are presented in dB(A), and the noise indicators used are those resulting from the provisions of the General Noise Regulation, namely LDEN and LNight.

Their execution is based on the Noise Simulation System installed at ANA, and on the modelling software "INM – Integrated Noise Model" developed by the Federal Aviation Administration (FAA) specifically for air traffic, using, for this purpose, the calculation method recommended in the applicable legislation and guidelines of the Portuguese Environment Agency (APA) for the production of Noise Maps.

For this purpose, real data associated with aircraft movements during the reference periods are used, thus enabling higher accuracy of the results obtained. These are preceded by validation using the results of continuous noise monitoring stations installed in the airport envelope.

Being considered Major Air Transport Infrastructures, in 2018, the corresponding Noise Reduction Action Plans of the airports of Lisbon and Porto were reviewed and submitted to APA.

Similarly, a study to analyse the benefits of noise abatement measures at Lisbon Airport was initiated in 2018, and is expected to be completed in the first half of 2019.

In 2018, two complaints were received at Faro Airport, and nine at Lisbon Airport.



# VOLUNTARY CARBON MANAGEMENT

For the ninth consecutive year, the company assessed its carbon footprint, this time for 2017, which was subject to verification by an external entity, namely the footprints associated with direct emissions and with those it can control (scopes 1 and 2).





**Table 1** Emissions (Metric Tons CO<sub>2</sub> eq) of ANA

<b>Emissões (Ton Co<sub>2</sub> eq)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>Var. 16/17</b>
Scope 1 (direct emissions)	8,354	7,976	9,068	14%
Scope 2 (indirect emissions from electricity)	50,472	37,352	46,325	24%
Scope 3 (other indirect emissions)	699,237	718,855	821,336	14%
<b>Total</b>	<b>758,063</b>	<b>764,182</b>	<b>876,729</b>	<b>15%</b>

Overall, emissions increased in 2017 by about 15% compared to 2016, as a result of the increase in emissions in all three scopes. As in previous years, scope 3 accounts for the largest share of emissions, with 94% of ANA's total. The activities that most contribute to scope 3 continue to be the LTO (concerning aircraft landing and take-off) with 60% of scope 3 emissions, passenger transport (36%) and consumption of electricity by third parties (1%). Thus, the increase in emissions observed in this scope is predominantly related to the increase in activity at ANA's airports.

Regarding scope 1 emissions, they increased by 14% in 2017 compared to the previous year, which is directly related to the increase in emissions associated with refrigerant gas leaks. Although ANA fulfils all its legal obligations associated with the maintenance and management of the equipment associated with these emissions, sometimes, there are situations in its operation that ANA cannot prevent and avoid.

Also in scope 2, there was an increase in GHG emissions, in this case about 24%, due to the increase in electricity consumption (9%). These increases are related to the increase in ANA's activity and to the emission factors determined by the electricity suppliers. The energy mixes of the suppliers are intrinsically linked to the weather conditions recorded during the year they pertain to, influencing the means of electricity production.



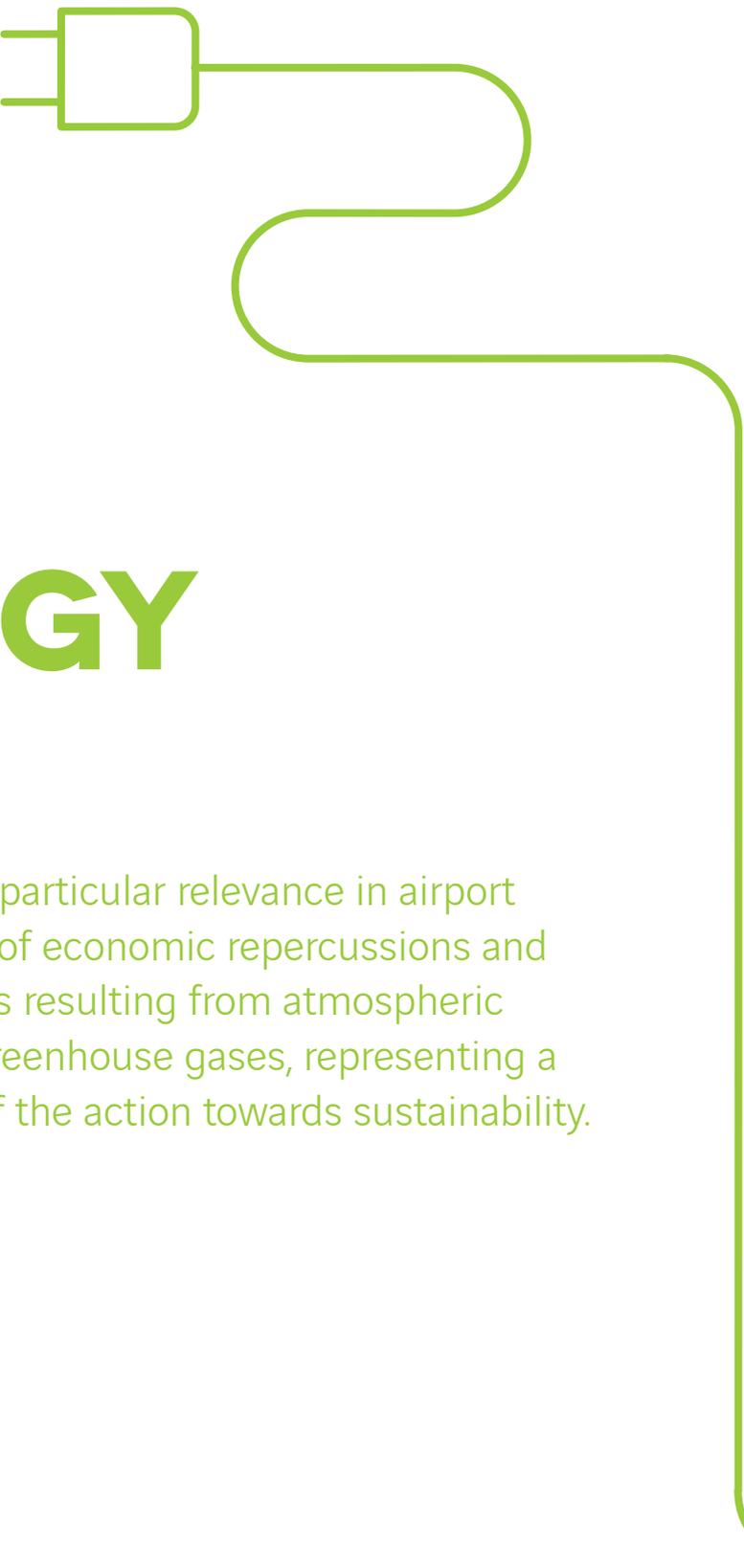
Regarding the Airport Carbon Accreditation, in 2018, the accreditation of the company's ten airports was renewed at level 2 "Reduction", attesting the positive results achieved regarding the reduction of relative emissions (i.e., emissions per traffic unit).

With the results of the 2017 footprint, ANA is in a position to maintain this level of accreditation in 2019:

**Table 1** Analysis of the placement in ACA's level 2 – 2017 carbon footprint vs. average of the previous three years (CO<sub>2</sub> emissions, scopes 1 and 2, by TU)

Airports*	2014	2015	2016	Average 13/15	2017	Δ
<b>AHD</b>	0.00112	0.00101	0.00082	0.00098	0.00074	-2,9%
<b>ASC</b>	0.00133	0.00112	0.00103	0.00116	0.00089	-23.5%
<b>AFR</b>	0.00063	0.00059	0.00042	0.00055	0.00051	-5.9%
<b>AJP</b>	0.00103	0.00081	0.00066	0.00083	0.00055	-34.3%
<b>ASM</b>	0.00288	0.00273	0.00239	0.00267	0.00219	-18.1%
<b>AHR</b>	0.00120	0.00108	0.00092	0.00107	0.00087	-22.7%
<b>AFL</b>	0.00066	0.00052	0.00048	0.00055	0.00044	-19.7%
<b>ABJ</b>	0.15526	0.55725	0.35538	0.35596	0.13184	-63.0%
<b>AM</b>	0.00088	0.00064	0.00057	0.00070	0.00049	-29.4%
<b>APS</b>	0.00273	0.00211	0.00155	0.00213	0.00133	-37.5%

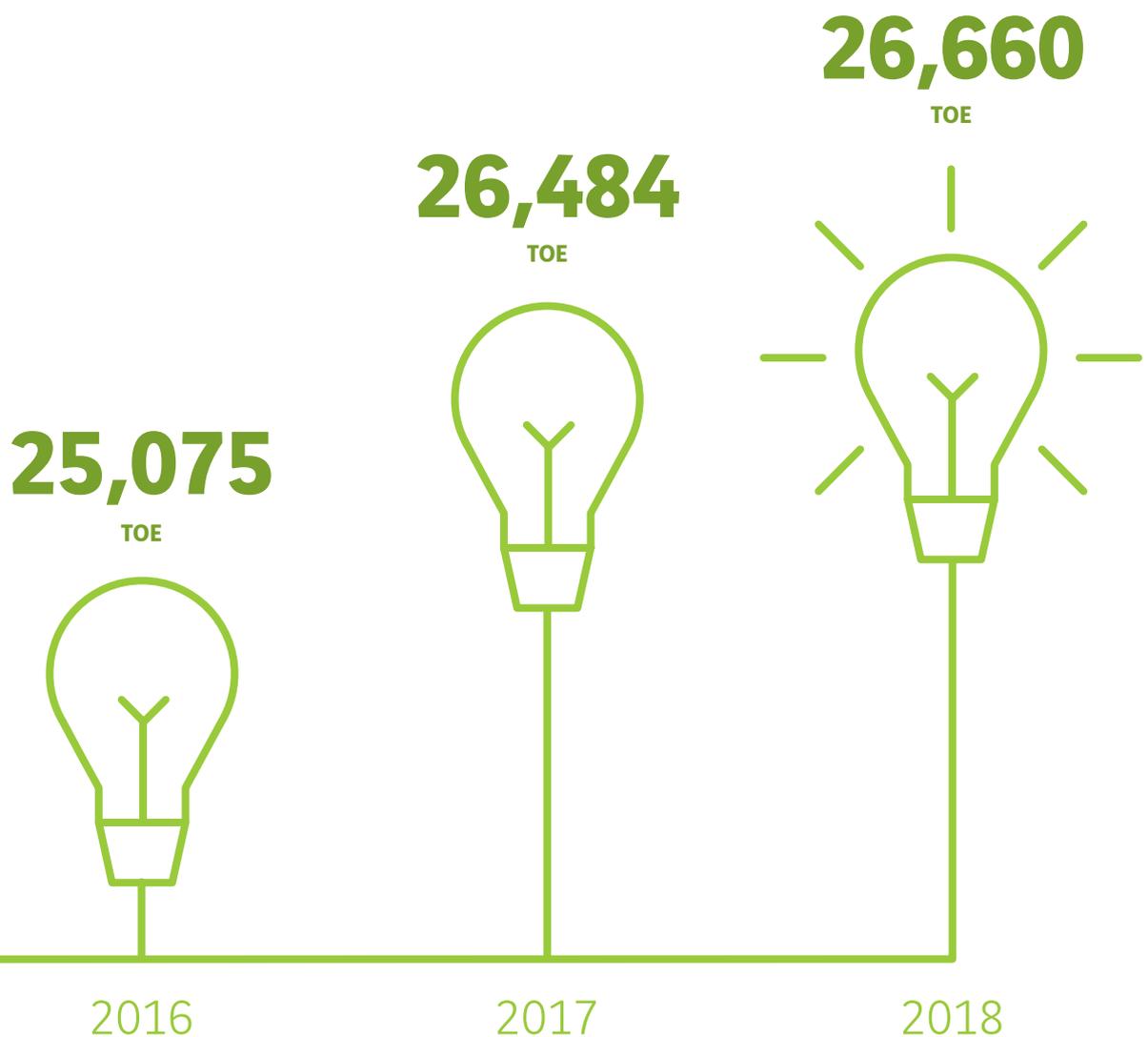
\* Humberto Delgado Airport (AHD), Francisco Sá Carneiro Airport (ASC), Faro Airport (AFR), Beja Airport (ABJ), João Paulo II Airport (AJP), Santa Maria Airport (ASM), Horta Airport (AHR), Flores Airport (AFL), Madeira Airport (AM), and Porto Santo Airport (APS)



# 4 ENERGY

Energy efficiency is of particular relevance in airport activity, both in terms of economic repercussions and environmental impacts resulting from atmospheric emissions and from greenhouse gases, representing a fundamental aspect of the action towards sustainability.

Direct energy (gasoline, diesel, natural gas, butane gas and propane gas) and indirect energy (electricity) are consumed at ANA. In 2018, electricity continued to be the most representative energy source. The following graph shows the corresponding energy consumption at ANA.

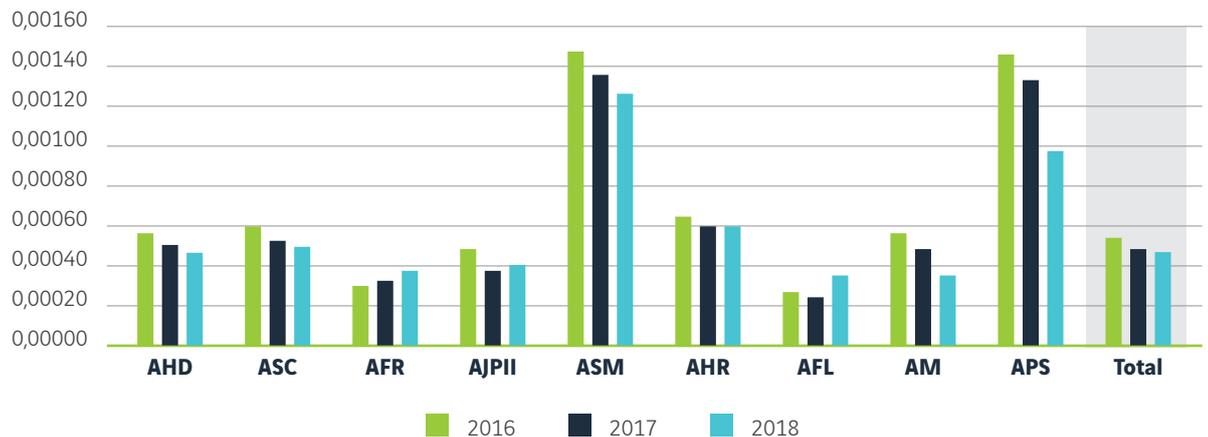


Although there was again an increase in airport activity, there was only a slight increase in overall energy consumption at ANA (+0.7%), resulting from the stabilisation/reduction of consumption at the airports of Lisbon, Madeira and Porto Santo, in addition to the Head Office.

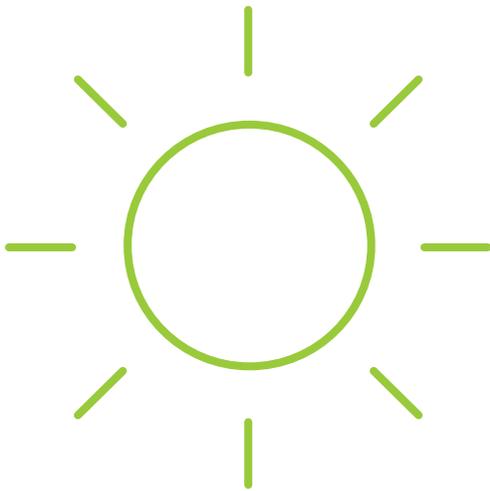
The correct evaluation of the evolution of the energy behaviour of the airports (including consumption of electricity, liquid fuels and natural/propane gas) needs to be weighted by Traffic Unit (TOE/TU)<sup>1</sup>, characterised according to specific energy, which is presented in the following figure (Fig. 2). In this case, there was a reduction of the specific energy consumptions in all of ANA's airports, except in the airports of Faro, Ponta Delgada, Horta, and Flores.

In fact, at Faro Airport, the terminal's remodelling works are not yet fully completed, and, therefore, the Terminal's Command and Control System is not in operation, making it impossible to perform a more efficient energy management of this infrastructure. The increase in energy consumption at these airports in the Azores is due to the increase in traffic and, in the case of Horta Airport, is also due to the execution of a Large-Scale Emergency Exercise Drill in 2018.

**Figure 2** Energy consumed TOE/TU

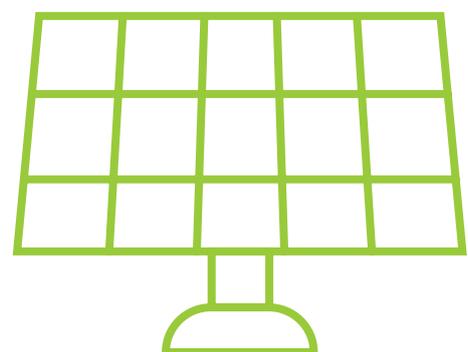
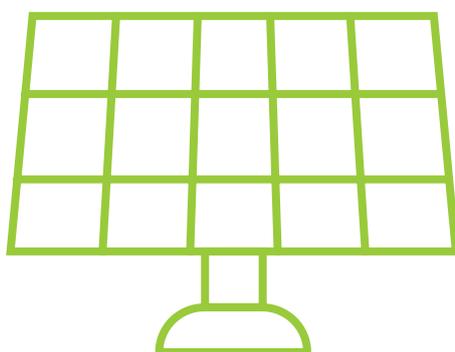


<sup>1</sup> TU calculated according to sector-specific DL No. 254/2012 of 28 November.

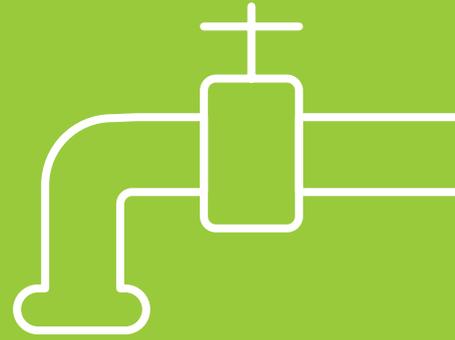


The airports' performance regarding energy efficiency is the result of the implementation of a set of measures that, for 2018, had a strong focus on the replacement of existing lighting by LED technology. A few airports have additionally opted for other types of measures, such as the replacement of existing vehicles by electric vehicles, and the replacement of equipment.

In 2018, ANA joined a project of VINCI Airports, where the feasibility of installing photovoltaic solar energy for self-consumption is being studied, and whose conclusions are expected in 2019. It should also be noted that, last year, the energy certification of all applicable ANA buildings was renewed, in accordance with the requirements of Decree-Law No. 118/2013 and subsequent amendments.



# 5 WATER

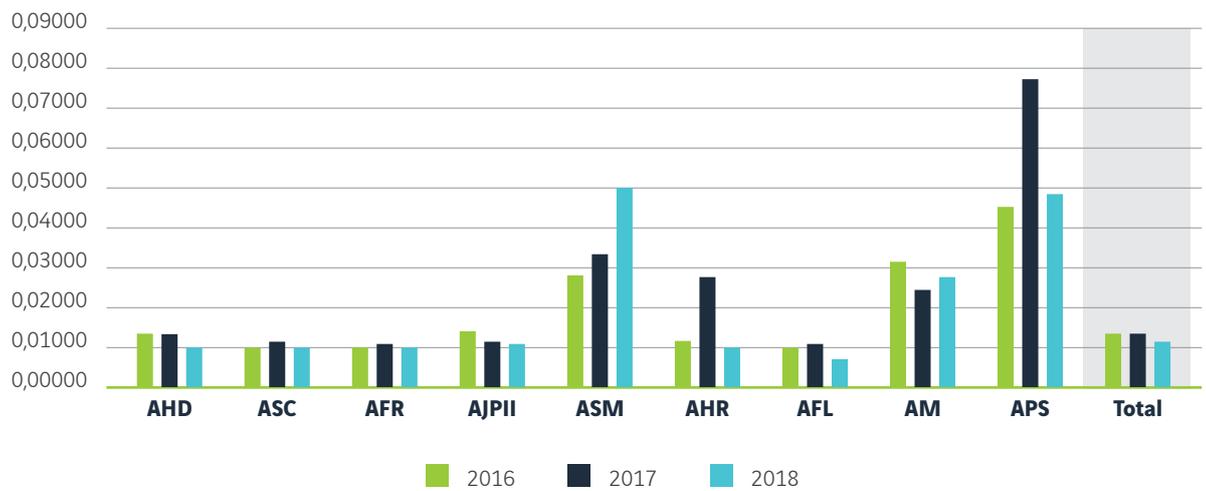


During 2018, ANA was responsible for the total consumption of 673,982 m<sup>3</sup> of water, which represented a decrease of 5.3% compared to 2017. With regard to specific consumption, in 2018, the global value was 0.01183 m<sup>3</sup>/TU, which meant a reduction of 15.3% compared to 2017.



While in general terms the evolution was globally positive, with slight increases in the company's overall water efficiency, the analysis of the airports' specific evolutions reveals the separate reality of each.

**Figure 2** Water consumed m<sup>3</sup>/TU



Regarding the production of liquid effluents and contaminated rainwater or run-off, ANA has been investing in the improvement of drainage systems at its airports, with the reformulation, in some cases, of existing networks, and with the introduction or improvement of programmes to monitor the quality of the produced wastewater, rainwater and run-off.



# 6 WASTE

ANA was responsible for the production of 8,823.5 metric tons of waste, an increase of 0.5% compared to 2017, mainly due to the overall increase in movements and passengers processed in these infrastructures.

## ANA AEROPORTOS DE PORTUGAL

Despite the increase in waste production, there was an overall decrease in ANA's waste reuse rate compared to 2017, with a rate of 77.2% recorded in 2018, considering only the performances of the airports of Lisbon, Porto, and Faro. In fact, although the practice of forwarding waste to the most appropriate destination has been continued, with a preference for reuse solutions rather than landfill, the company's performance was highly conditioned by the performance of Faro Airport, whose terminal was subject to a significant remodelling.

In terms of specific waste production per traffic unit, ANA recorded a decrease of 5.9%, with the company's overall value in 2018 being 0.1549 kg/TU.

Regarding the total weight of hazardous waste, there was an increase, since the values were 415.4 metric tons in 2017 and 534.5 metric tons in 2018.

It should be noted that in Madeira and Porto Santo airports, and in the Azores airports, MSW are not included, since they are collected by the municipal services.

At Beja Airport, only MSW are produced, and these, too, are managed by the municipal services; so, this indicator is not included for this infrastructure.

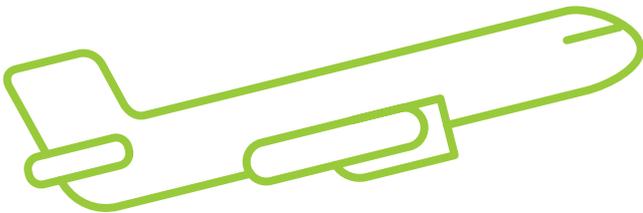
**Figure 5** Reuse Rate, ANA, %





# BIODIVERSITY

With a corporate strategy imbued with the appreciation and protection of the natural and human environment, ANA actively contributes to the promotion of biodiversity. For this reason, its business plan includes, as integral parts, the protection and conservation of species and ecosystems, which are indispensable for the balance of environmental quality.



The Company believes that the promotion of “flagship projects” is a crucial activity to develop collective awareness about the challenges of biodiversity, and to achieve the mobilisation and commitment of all.

Given that the airport activity is not compatible with the existence of birds at and near the airport, specific measures are implemented to scare away the birds, such as the use of bioacoustics and gas cannons, and the control of plant species. However, ANA also uses falconry as a complement to the traditional methodologies, namely in Lisbon, Faro and Madeira airports, where its application is admittedly more efficient.

In view of the above, the application of biodiversity protection measures around airports is very limited. To this end, and in a compensatory manner, ANA joined the Business & Biodiversity project, promoted by the then Instituto de Conservação da Natureza (Institute for Nature Conservation), within the scope of which it has been sponsoring two centres for wildlife recovery, thus contributing to the conservation of biodiversity in Portugal. These are, at the central level, CERVAS – Centro de Ecologia, Recuperação e Vigilância de Animais Selvagens (Ecology Centre for Recovery and Surveillance of Wildlife) and, at Faro Airport, RIAS – Centro de Recuperação e Investigação de Animais Selvagens (Wildlife Recovery and Research Centre).

Additionally, a cooperation protocol was signed between ANA, SA and Associação ALDEIA, aimed at promoting awareness-raising and dissemination activities about nature conservation and the preservation of biodiversity. These activities also included a one-year monitoring study of birds in the surroundings of AFR, which began in September 2018. This study aims to identify the most common species and their behavioural movements, which will improve wildlife management in this airport infrastructure, with a view to promoting aeronautical safety and preserving biodiversity.

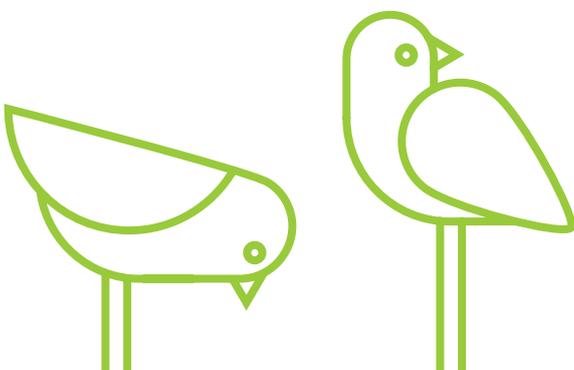


Also at this airport, Project CED (Capture – Sterilize – Return) was continued in partnership with PRAVI.org, developed to minimise and control the population of feral cats in the airport’s perimeter. With this project, the number of cats was strongly reduced (from around 60 individual cats, with some of them pregnant, in 2016, to nine in 2018), reaching an optimal number for population control, which avoids repopulation by new individuals existing in neighbouring communities (Gambelas, Montenegro, and Praia de Faro).

In order to comply with the Environmental Impact Statement of the “Infrastructure for ILS and Runway 10 Approach Line, Expansion of Platforms and Circulation Paths, and Expansion and Remodelling of Faro Airport’s Terminal” project, the 4th annual monitoring campaign of the environmental descriptor “Aquatic Ecology”, in the exploration phase, was carried out.



Groundwater from a noria located in the airport continues to be used at the Ramalhete Scientific Research Station. It has excellent characteristics due to the mixture of fresh water and salt water from saline intrusion, and is great for the reproduction and development of cuttlefish in aquaculture – the first worldwide scientific research project of its kind. The use of water from this borehole was authorised by the competent authority as an exception, since it is intended for scientific use. Finally, it should also be noted that the Regional Health Administration (ARS) of Algarve / ACES Central Algarve controlled the spread of disease vectors (different species of mosquitoes), mainly from tropical and subtropical areas, inside the airport perimeter.





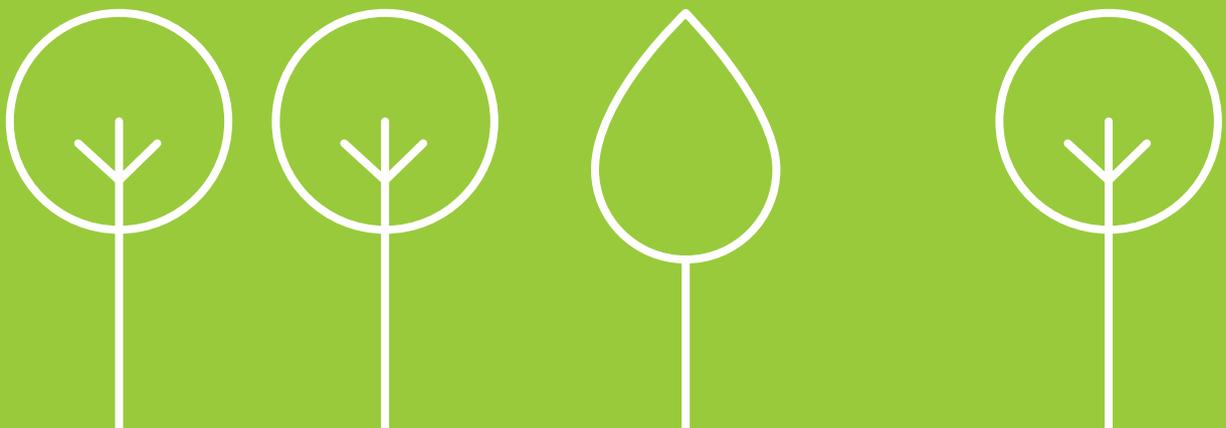
# ENVIRONMENTAL MANAGEMENT OF WORKS

In 2018, the implementation of the Company's Plan for the Environmental Management during Works, in force since 2004, was maintained, seeking to ensure the implementation of environmental requirements / measures to minimise environmental impacts via the timely definition of roles, responsibilities, and procedures in all phases of project execution, tendering process and work execution.



# ENVIRONMENTAL AWARENESS

ANA invests in environmental awareness as a primary tool to promote a change in behaviour, developing multiple actions throughout the year, both informative and requesting active participation of its employees, holders of occupation and/or operating licences, customers and/or neighbouring community.





In 2017, at a cooperative level, we would like to highlight the celebration of World Environment Day, which took place on 5 June, and happened in all ANA's airports, in the mainland and in the Autonomous Region of Madeira, with passengers, visitors and the general public. As part of this celebration, messages were posted on airport information monitors about fighting plastic pollution. Internally, there was also an environmental quiz for all ANA employees.

Locally, airports also promote multiple initiatives. At Lisbon Airport, the Environment Day Celebration was also marked by the already traditional "breakfast" for employees. Awareness was also raised among third parties about Supply Water and Waste Water.

In turn, Porto Airport participated in the European Week for Waste Reduction 2018, with an exhibition and a video about this topic in the terminal, in addition to dissemination on the airport's Facebook page. The results of the water analyses and information about the airport's environmental management were also published monthly at this airport's terminal. This year, there was also an awareness-raising session for the waste management service operators, with the aim of involving and motivating the Airport's corresponding teams. In addition, six awareness-raising sessions were held for the entities whose activities are considered to have a greater impact on the airport's waste management, namely catering concessionaires, store owners and teams from the cleaning services provider.

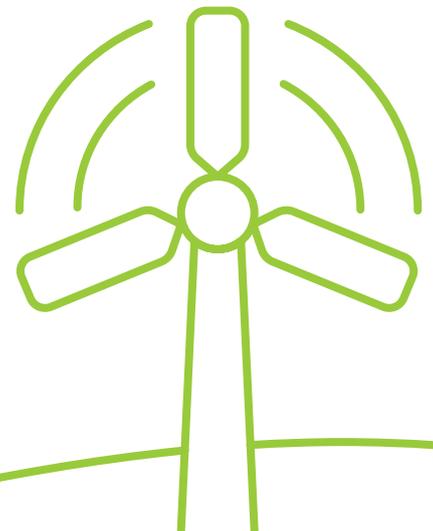
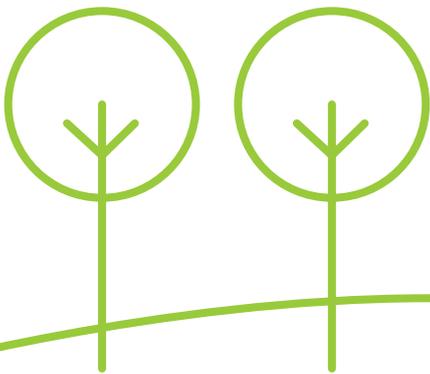




At Faro Airport, on 22 April, International Earth Day was highlighted in the Airport's Facebook page, disclosing the partnership between this infrastructure and RIAS, whose work was also exhibited at check-in area 1. At Faro Airport, there was also an awareness-raising session for concessionaires about the management of urban solid waste, aiming to raise airport's community awareness regarding its contribution to increasing reuse rate of the airport's waste. The airport also participated in the "Seminar on bird strikes", with a communication on this subject from the Portuguese Association of Airport Operations Officers, which took place on 15 November 2018.

The airports in the Azores offered all DAA employees a glass bottle for consumption of tap water, replacing PET bottles. These airports continue to collaborate in the SOS Cagarro campaign and, during 2018, there was also a participation in several workshops on the regional programme for Climate Change in the Azores. A partnership agreement was also reached with the international Urban Waste project, with the implementation of the translation and dissemination of waste separation instructions in other languages at DAA's airports.

Awareness-raising activities were carried at all airports for service providers, customers and holders of occupation and/or operation licences through environmental monitoring visits.



# 10 CONCLUSIONS

In summary, the environmental performance of the airports in 2018 enables us to infer a markedly positive assessment of the company's environmental management system, which stems from the multiple environmental actions that are enshrined in structured plans, as a way of ensuring proper monitoring and follow-up by the company's stakeholders.

This year posed growing environmental challenges, as traffic continued to increase, imposing an increase in the number of occurrences and activities to be developed in order to minimise possible impacts and to minimise consumption, in parallel with successive gains in environmental efficiency. It was this effort that made it possible to reduce the company's average global energy and water consumption.

Also noteworthy are the important construction changes underway at Faro Airport's terminal, which introduced greater pressure on the management of environmental matters, as well as the continuous changes in Lisbon Airport's terminal area.

In any case, we must highlight the importance of local and corporate environmental actions to reduce energy consumption, CO2 emissions, water consumption, and waste production, in addition to compensation actions related to the promotion of biodiversity, and environmental awareness-raising actions for all of the airports' stakeholders.

