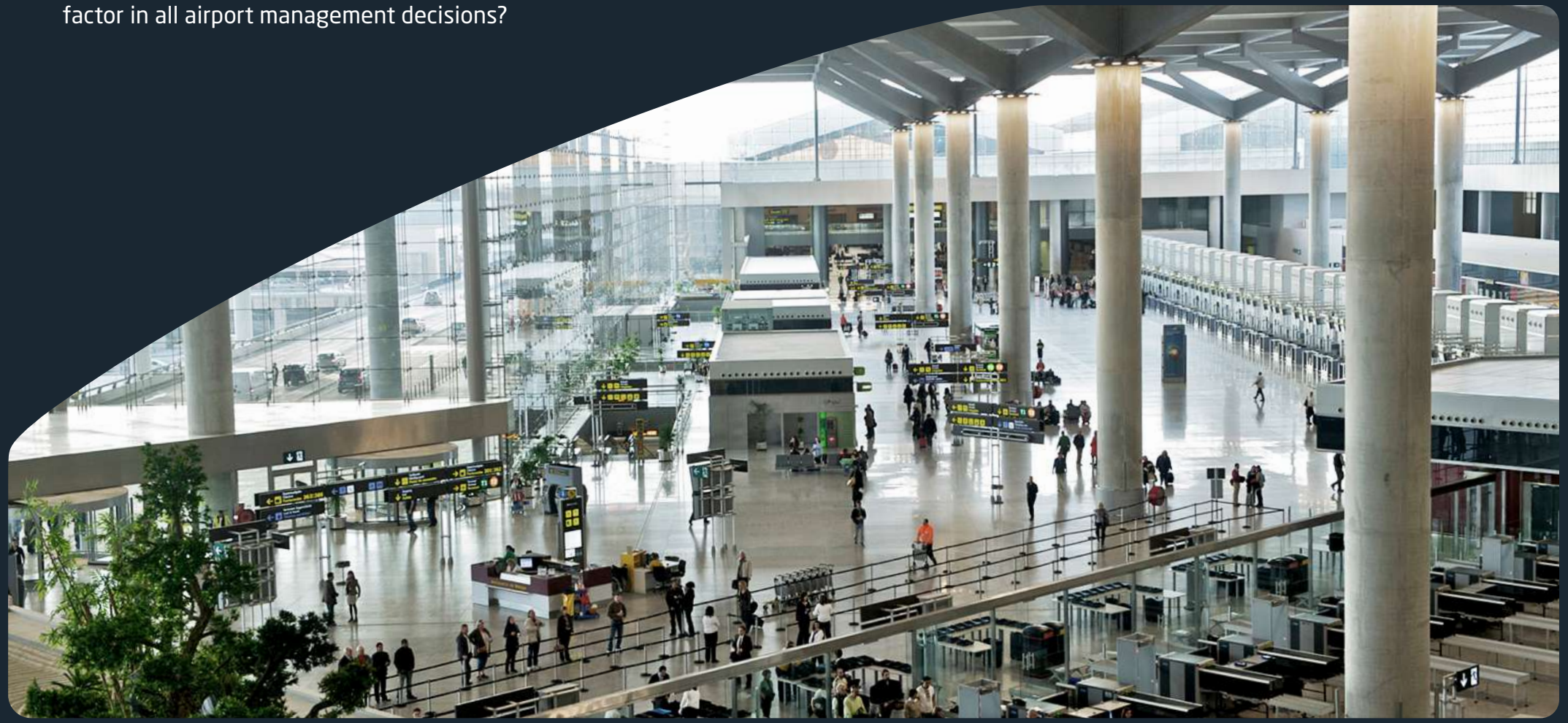
Environmental management

Aena 2018

Contents

Environmental Commitment

Did you know that the concern for our environment constitutes a strategic factor for Aena so that we integrate the environmental factor in all airport management decisions?



We manage **sustainable airports** so that you can be close to what is most matter to you.

Currently, the conservation of the environment is one of the main problems faced by a society that is every time more conscious, that demands a major effort by the governments to take measures To reach a development model that Is more sustainable and respectful in relation to the environment.

But, without a doubt, it is also us the companies that have to act to **minimize our impact on the environment,** carrying out activity respectful toward our environment. At Aena, we join the concern for the preservation of the environment, and we apply measures that us allow manage the resources we use more responsibly.

Moreover, we want to be **transparent in communicating what we do,** with the purpose of demonstrating the indicated goals and making participants of stakeholders interested in our advances, learning how we carry out environmental management environmental at our airport network.

Scope

The present Report gathers information about the environmental performance of Aena in 2018, and it covers our 46 airports and two heliports strategically located throughout the national territory.

The information reported in this document supplements and expands on environmental content in the **Report on Corporate Responsibility (CR) 2018,** published beforehand. To this end, the data compiled in this Environmental Management Report 2018 can slightly differ from the former.

It is worth highlighting that the current report describes the **material aspects of the company** in relation to the environment and identified in the aforementioned CR Report, in addition to supplementing information about other aspects that without being material, comprise part of Aena's environmental management.

Moreover, **to secure the quality and accuracy** of the Report, in its preparation we have based ourselves on the array of indicators proposed by the Global Reporting Initiative (GRI) in its edition GRI Standards, a framework reference that is recognized worldwide.

Lastly, we also demonstrate how our goals and initiatives are **connected to the Sustainable Development Goals (SDG)** of the United Nations, in addition to being aligned to the ten principles defined in the United Nations Global Compact, of which we are partners.

Main Figures

Environmental claims and complaints

2016	2017	2018
3,398	5,556	**3,555**

Requests for environmental information

2016	2017	2018
788	1,674	**1,376**

Consumption of water (thousands of m^3)

2016	2017	2018
5,050.55	5,736.96	**5,753.33**

Number of people exposed to noise in 2018

	Lday 65 dB (A)	Levening 65 dB (A)	Lnight 55 dB (A)
SNM phase III	**3,219**	**2,337**	**5,083**

Breakdown of generated waste (tons)

	2016	2017	2018
Non-hazardous waste	47,588	63,984	**69,928**
Hazardous waste	737	399	**650**

Gas Emissions of the Greenhouse Effect

(Scope 1 and 2) (t CO_2eq)

2016	2017	2018
349,909	264,057	**242,789**

Energy generated from renewable sources (Gigajoules)

2016	2017	2018
11,340	10,235	**10,972**

263.7 million passengers

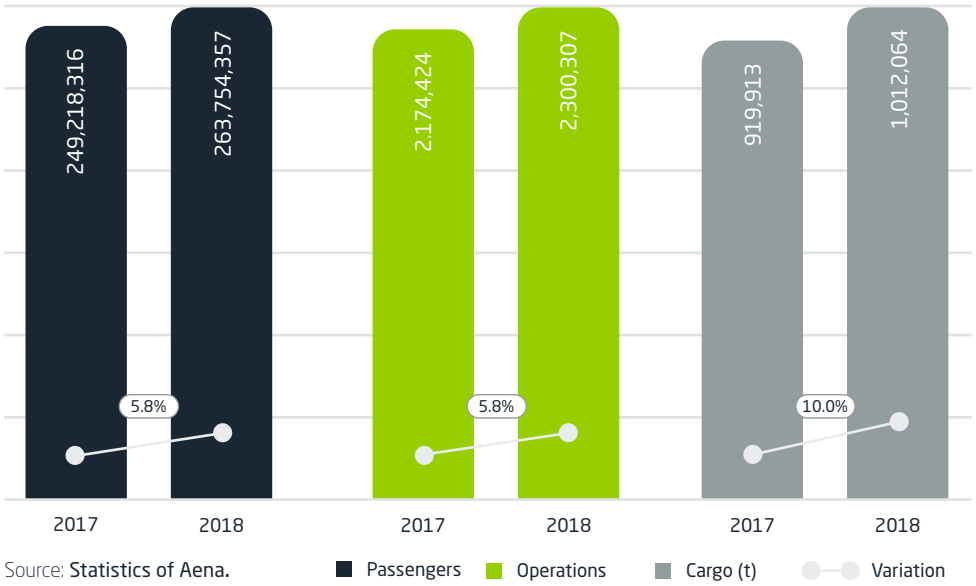
The more than 263.7 million passengers that passed through our facilities in 2018 are equivalent to **more of a third of the population of all Europe.**

Our management

Our activity is oriented on the management of Spanish airports and heliports of interest, which we carry out like a trade company operating under the name Aena EMS, S.A. We also participate in the management of another 17 airports from Europe and the Americas, like London-Luton, of which we own 51% of its capital.

With an increase in the number of passengers with regards to 2017 by 5.8%, we keep positioning ourselves as the first airport operator in the world in terms of number of passengers. In 2018, airport operations increased by 5.8% and the cargo from goods by 10%.

Traffic from passengers, operations, cargo and transit



Source: Statistics of Aena.

We are the first airport operator in the world in terms of number of passengers

Our airport facilities total more than:

The context of our management

Air transport constitutes **a strategic sector in the global economy,** due to Its economic impact and its social contribution in terms of connectivity, accessibility, connection and territorial structuring. In the case of Spain, in 2018 it occupied second place out of the most visited countries in the world, due to the fact from 4 out of every 5 foreign tourists use a plane to visit Spanish territory. In general, the worldwide increase in air travel is apparent, becoming an important challenge for the aeronautical sector, where sustainability is established as a need to ensure the continuity of this means of transport in the future.

Therefore, we understand that it is essential to **continue strengthening our commitment with the conservation of the environment,** maintaining maximum levels of quality in our services. To this end, in addition to the development of new technologies, which reduce the impact of aeronautic operations, **sustainability comprises part of our management of the airport facilities.**

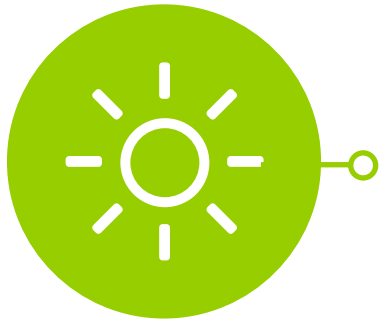
This also us allows **to comply with the demands of a society that is every time more aware,** that demonstrate its clear concern in the environment. At Aena, we listen to your suggestions and work to apply them in our environmental management system.

Likewise, the operations carried out at the airports are governed by strict environmental regulations in issues like noise pollution, air quality, protection of water resources and waste management. At Aena, we take on these restrictions **as opportunities to carry out** a more efficient management and improve our environmental performance.

We transform our material issues into opportunities to improve our management

Management of noise

An issue of maximum relevance that affects the **communities near to the airports,** for which we work to manage and minimize its impact with the end of making our activity compatible with the aforementioned communities.



Energy efficiency, renewable energies and reduction of greenhouse gas emissions (GHG)

Acting on these three key aspects, we **contribute to the fight against climate change** while attaining a more responsible energy consumption.

Environmental complaints

Allow us to learn about the possible negative impacts resulting from our activity that we then analyse, and based on the results, we can **develop strategies for their prevention and correction.**

To gradually make progress and focus all our effort on concrete purposes, we have **established goals in our environmental management** that will bring our goals to life:

Improvement of the image perceived by society and the communication channels with our stakeholders.

Maximization of energy efficiency from our activity and boosting renewable energies, contributing to the minimization of CO_2 emissions to reach carbon neutrality at our facilities.

Compatibility of the management of airports relating to the environment where they are located.

Reinforcement of a model that **guarantees a sustainable coexistence with the communities and environment,** especially the issue of noise.

Answering the needs of society, going beyond the established legal requirements, through the implementation of Innovative solutions.

Based on the opportunities and goals detected in relation to environmental management, we have defined a series of **objectives to 2021** that we set out in our **Strategic Plan 2018-2021,** where environmental sustainability is established as one of its main strategic lines. By means of its application, we try to achieve a more sustainable air transport, carrying out our activity in a way that allows us to make it compatible with the progress of the communities where we operate.

Environmental Strategic Goals 2018-2021

Management of Noise

Improvement of noise control and management through the implementation of Noise Monitoring Systems and Interactive Noise Maps in all airports with more than 50,000 operations.

Reinforcement of the coordination and monitoring from the implementation of the measures including in the Action Plans for Noise and Sound Rights and Strategic Noise Maps.

Soundproofing of 29,000 homes and sensitive buildings included in the Noise Insulation Plans.

Fight Against Climate Change

Launching actions resulting from the **Climate Change Strategy.**

Reduction of 30% of CO_2/ATU* emissions.

Obtaining level 3 accreditation (Optimization) for Airport Carbon Accreditation in the airports of Madrid and Barcelona (which comprise 70% of passengers from the network).

Consumers of electricity with a **100% guarantee of renewable resource.**

Increase of **energy supply from renewable resources in our own facilities.**

Gradual reduction of CO_2 emissions of "Handling and third-party equipment."

- Reduction of **30% at the Madrid airport.**
- Reduction of **20% in remaining airports.**

Environmental

Support of circular economy, with the aim of promoting the decrease of waste and maximizing available resources.

Calculation of **water footprint.**

Preparation of **Management Plan for Biodiversity** for our airports.

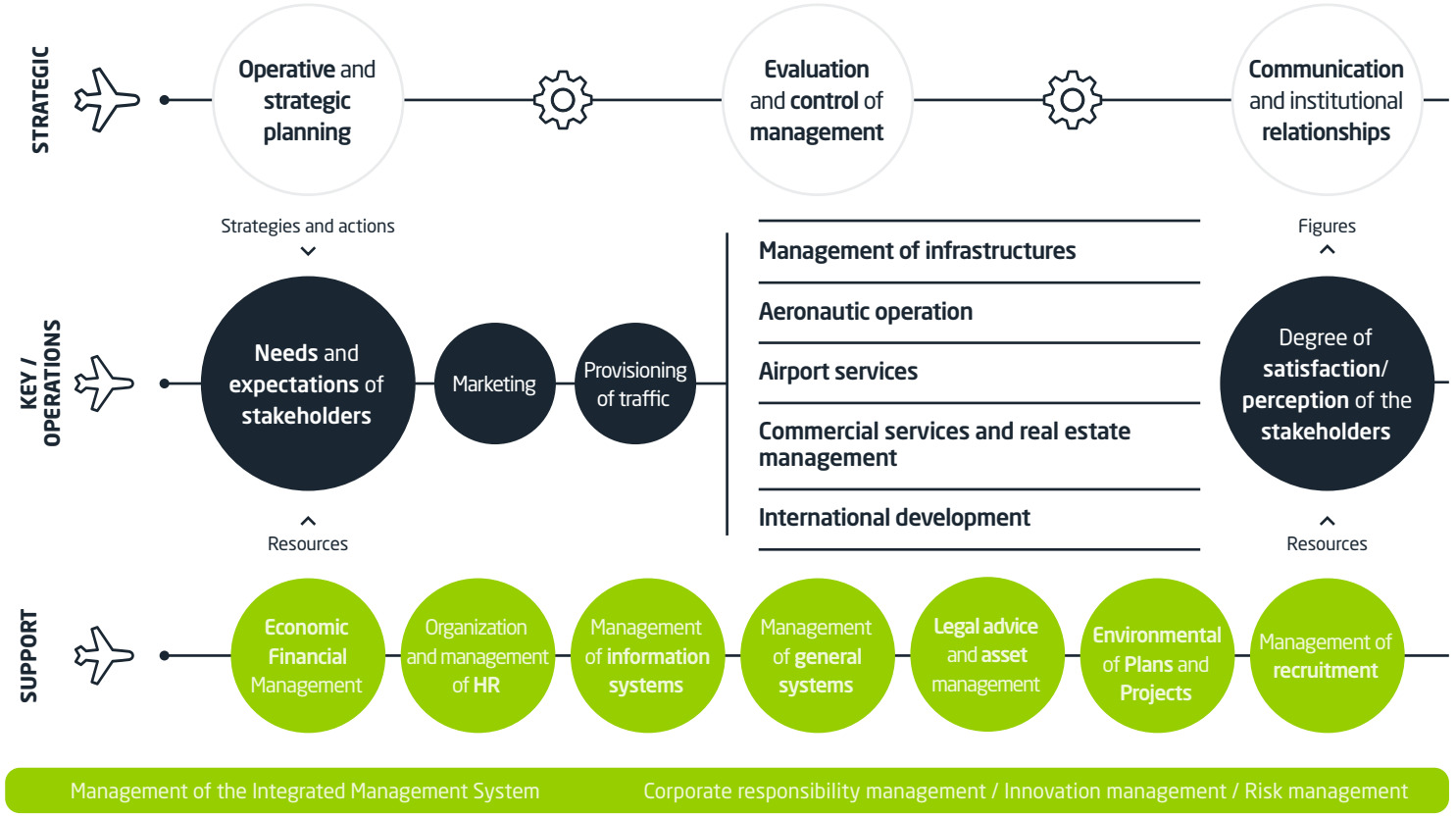
*ATU: Parameter that reflects the activity of an airport, considering its operations, passengers and volume of annual cargo. ATU = Passengers + (100*Operations) + (10*Tons of cargo)

Our Management System

To succeed everything that has been set forth. We are working on the integration of sustainability in our daily performance, thus aligning ourselves with the model of development that we follow. To this end, through our **Integrated Management System for Quality and the Environment** (IMS), certified According to international standards ISO 9001 and ISO 14001, we face our Responsibilities and commitments to guarantee optimum service.

The IMS additionally allows us to comply with Principles established in our own **Policy of Integrated Management for Quality, the Environment and Energy Efficiency.**

Process interaction of Aena's Integrated Quality and Environment Management System



The efficiency of the IMS depends on the commitment and participation of everyone. To this end, we carry out **Training and awareness campaigns** that inform and involve our staff, the companies that carry out their activity at our facilities and the users themselves. in this manner we teach the value the IMS for the environment.

Likewise, we carry out the monitoring of the companies that work at our airports, supervising their environmental behaviour and transferring our commitment and support in the carrying out of improvement initiatives in environmental protection in this sense, those contracts associated to actions with a potential impact on the environment are controlled through **regular environmental monitoring,** like visits to facilities or the evaluation of compliance with Environmental Surveillance Plan, as well as all its related aspects.

We align our business model to SDG

The contribution to the **Sustainable Development Goals** (SDG) of the United Nations passes through local actions that should be launched to reach these set objects on a global scale. For this purpose, we have aligned our business model with this Sustainable Development Agenda, linking the actions that we launch alongside concrete SDGs.

In this way, the work we carry out to favour compatibility of our activity with the environments in which we operate, contributing to SDG 6, 7, 11, 12, 13 and 15, which relate to the conservation of the environment, the efficient use of resources and the fight against climate change in particular. **It is our local contribution to achieve a more sustainable global future.**

Alignment with the SDGs

At Aena, we are convinced of the importance of the private sector in achieving the Sustainable Development Goals (SDG) Therefore, we have aligned our business model with the United Nations Agenda 2030 to contribute to their achievement.

Aena with SDG. Path to Sustainable Development

Company committed to the Sustainable Development Goals (SDG) of the United Nations.

2015 ——— 2030

SDG		Theme	Our contribution
6 CLEAN WATER AND SANITATION	Guarantee the availability of water and its sustainable management and sanitation for everyone.	**Water**	We promote initiatives targeted at **reducing water consumption** at our airports, in addition to **minimizing the generated discharges** to preserve nearby ecosystems.
7 AFFORDABLE AND CLEAN ENERGY	Guarantee to safe, accessible, sustainable and modern energy for everyone.	**Climate change**	We have facilities for the **generation of renewable energies** in self-consumption at our airports, in addition to opting for cleaner alternative energy.
11 SUSTAINABLE CITIES AND COMMUNITIES	Achieve that cities and human settlements are inclusive, safe, resilient and sustainable.	**Climate change and air quality**	We focus our efforts on **minimizing the noise impact** in the environment surrounding our airport facilities, at the same time **maintaining the quality level for optimum air.**
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Guarantee modes of consumption and sustainable production.	**Material resources**	We work to **reduce the waste** generated in the airport surroundings, evaluating those that could not be prevented and correctly managing the rest. Moreover, we incorporate **environmental criteria in the acquisition of products and services,** and we support actions related to the circular economy.
13 CLIMATE ACTION	Adopt urgent measures to combat climate change and its effects.	**Climate change**	We work to **reduce GHG emissions** generated in activities carried out at the airport facilities.
15 LIFE ON LAND	Sustainably manage forests, fight against desertification, detain and revert the deterioration of land and detain the loss of biodiversity.	**Biodiversity**	We promote the **conservation of natural spaces** near to the airport facilities.

Certifications and Endorsements

The management carried out by many of our airports has been verified according to various international standards. Achieving these certificates and maintaining them involves undergoing exhaustive audits each year to verify the correct implementation of the system, the procedures established and the development of our actions to achieve the objectives set.

Certifications:

EMAS Regulation. The Eco-Management and Audit Scheme (EMAS) facilitates the evaluation and improves the environmental behaviour of the company and favouring transparency.

ISO 14001: Environmental Management System Allows the control and minimization of the impact on the environment, which can originate according to our activity.

ISO 50001: Energy Management System Contributes to the definition of procedures to reduce energy consumption, minimizing the carbon footprint of the company and diminish costs resulting from energy consumption.

14064: Calculation of Carbon Footprint. Permits the verification and validation of the calculation of greenhouse gas emissions of the company.

Airport Carbon Accreditation (ACI Europe). Accredits the calculation of the carbon footprint of our airports and the carrying out of the commitments to the reduction of the acquired CO_2 emissions.

ISO 9001: Quality Management System. Oriented on customer satisfaction and the capacity to provide products and services that comply with the internal and external requirements of the company.

EFQM Model of Excellence and Quality in the Corporate Management Instrument for self-assessment and the determination of continuous improvement process in corporate environments.

Seal in the reduction of the carbon footprint granted by the Ministry of Environment of Spain (MITECO) to Adolfo Suárez Madrid-Barajas Airport in relation to registering the carbon footprint, offsetting and absorption protection of carbon dioxide.

Endorsements:

FTSE4Good. This stock exchange index evaluates the degree of sustainability of the companies and recognizes their good practices in the social, environmental and good governance spheres.

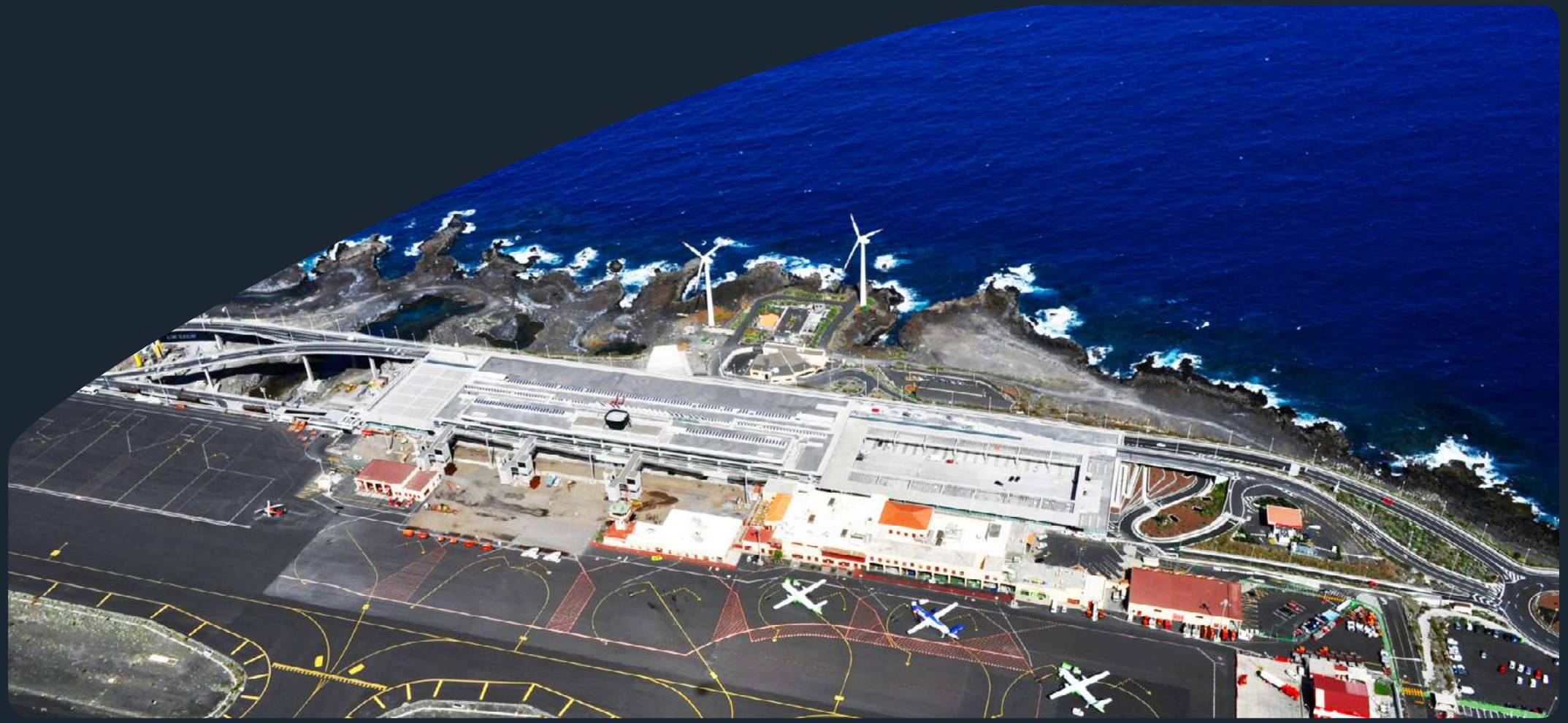
Global Compact. Organization to which we have belonged since 2017, committing us to its ten principles.

#PorElClima. Community established by society, SDG, companies and administrations aware of the urgent necessity to act against climate change, to which we have belonged since 2017, with the commitment to reduce our GHG emissions.

CDP. Recognizes the commitment of Aena against climate change, maintaining qualification B, situated above absorption protection of carbon dioxide the European average and its sector.

Energy and climate change

Did you know that nowadays a flight produces half the emissions the same flight would have produced 20 years ago, since aircrafts are more and more efficient?



Adolfo Suárez Madrid-Barajas Airport reduces its emissions

In 2018 airport of Madrid renewed its **registration in the Carbon Footprint,** Offsetting and Absorption Projects Register of the Ministry of Environment of Spain, reaching the second level of recognition of the granted seal, in **Reduction.**

This is a voluntary register verified recognition, verified and regulated by Royal Decree 163/2014, whose objective is to **support the calculation and reduction of the carbon footprint** by organizations, while reflects the effort adopted by them in the battle against climate change.

CO_2 Emissions

Climate change carries a great environmental challenge that we must confront on a global scale, where governments and organizations from the entire planet should join together to search for mitigation and adaption measures in regard to effects that are already being produced.

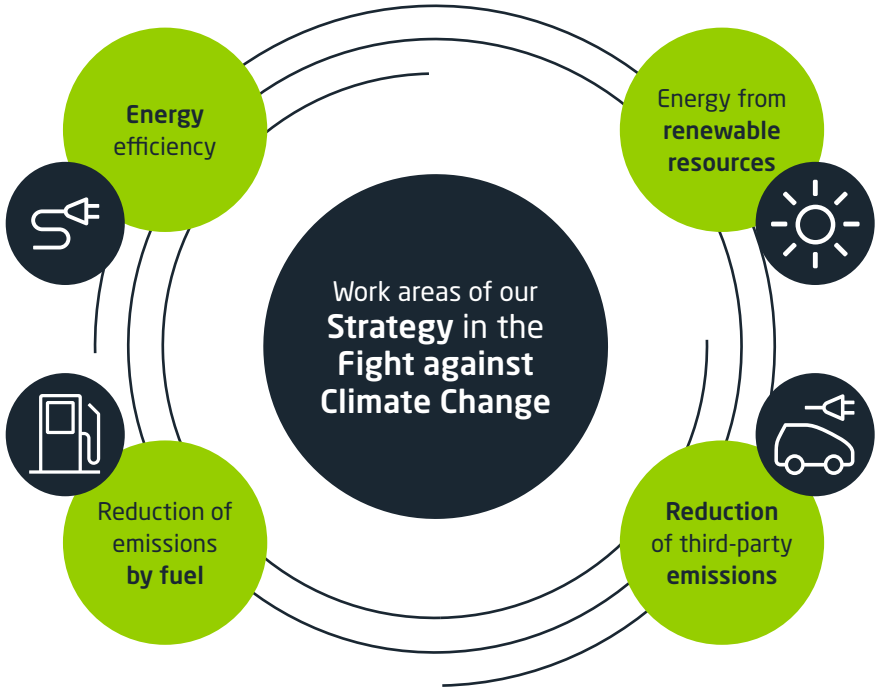
We know that passengers value air transport and the benefits it contributes at the economic cultural and personal level, as well as want to **fly in a more sustainable manner.** To this end, at the airports we should make an additional effort, working in a collaborative manner with all entities in the sector to achieve that aviation counting on the **decarbonization of the sector** and progress in sustainability.

In this respect, the total greenhouse gas emissions (GHG) on a global scale, approximately 2.5% corresponding to the aviation sector. 95% of these emissions are generated by aircraft, while the rest are attributable to the direct control of airports, i.e., activities carried out at their facilities and which involve numerous entities in their supply chain.

Our Climate Change Strategy

At Aena, we are working to confront climate change and mitigate its effects. To this end, we are counting on a **Climate Change Strategy,** whose main objective is to attain the gradual reduction of CO_2 emissions resulting from our activity.

This Strategy is carried out in four work area that include a series of **specific goals on the reduction of emissions** and a wide array of measures allowing their fulfilment.



*Source European Commission.

We have obtained Qualification B in the Carbon Disclosure Project (CDP)

The CDP is a non-profit international organization that promotes sustainable economy. Its goal is to improve the dissemination of **environmental information of the main** companies to facilitate investment decisions that incorporate climate change as a strategic factor.

Through an annual survey carried out at large companies throughout the world, the CDP compiles information on the climate risks and opportunities to reduce CO_2 emissions. Aena is found among these companies and our efforts have been recognized with qualification B, above the European average and the sector. This result adds value to our **Strategy in the Fight Against Climate Change.**

Our carbon footprint

At Aena we calculate our **carbon footprint** every year, which allows us to track our Climate Change Strategy and identify the efficiency of the applied measures.

Aena's GHG emissions

AENA'S EMISSIONS

SCOPE 1. Emissions directly resulting from sources or procedures and activities controlled by Aena at the airports. The GHG emission sources are the following:

- **Stationary combustion.** Emissions generated by generators, portable generators, boilers, fire service and auxiliary water tank pumps for fires.
- **Combustion from mobile sources.** Emissions resulting from airport vehicles, both light and heavy.

SCOPE 2. Indirect emissions produced by electricity generation or acquired thermal energy and consumed at our airports. The source is the following:

- **Electricity consumption.** Emissions related to electricity consumption of activities carried out airports for air conditioning, lighting and operation of various facilities.

THIRD PARTY EMISSIONS

SCOPE 3. Integrates the rest of indirect emissions mainly proceeding from:

- **LTO Cycle.** It's about the landing and take-off of aircraft of the airline companies that operate at the airports.
- **APUs.** Auxiliary power units that supply energy to aircraft when they are grounded.
- Vehicles and machinery that provide the **services for Handling** or assistance to passengers and aircraft in airports.
- Other **(Energy consumption of dealers, land access, employee travel, etc.).**

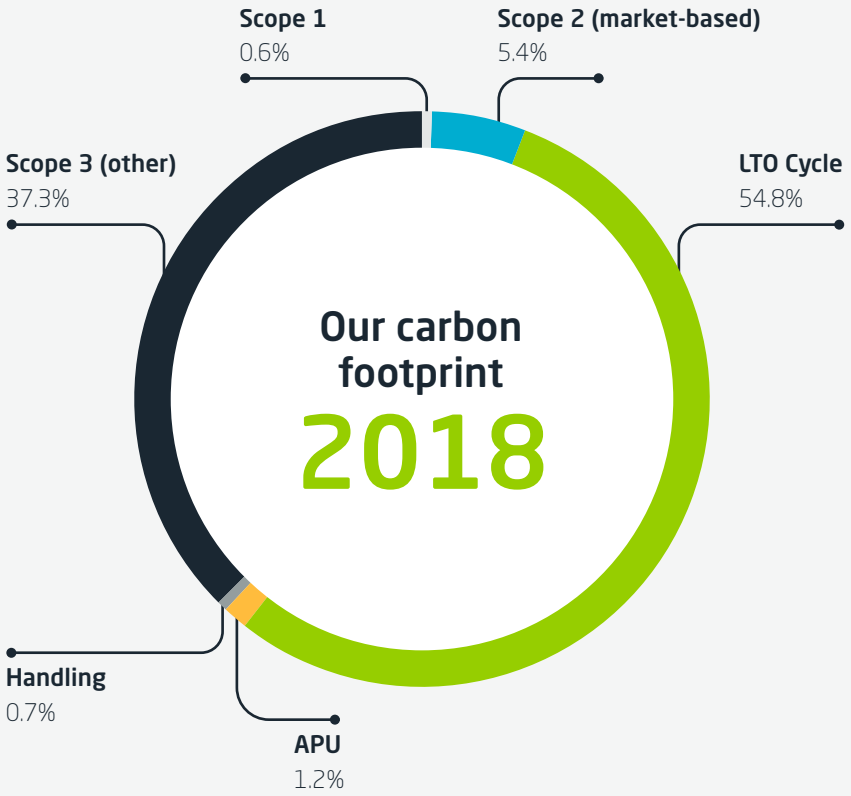
Direct Greenhouse Effect Gases (Scope 1) and indirect emissions from electricity (Scope 2)*

2018	tCO_2eq
Scope 1	23,852
Scope 2	218,937
Total scopes 1 y 2	**242,789**

Main indirect emissions from Greenhouse Gases from third parties (Scope 3)

2018	tCO_2eq
LTO Cycle**	2,213,225
APUs***	47,552
Handling	29,292
Other emissions****	1,505,373
Total scope 3	**3,795,442**

In 2018, **we managed to reduce our emissions by 6.3%** compared to 2017 in Scope 1 and 2, thanks to the measures implemented based on our Climate Change Strategy.



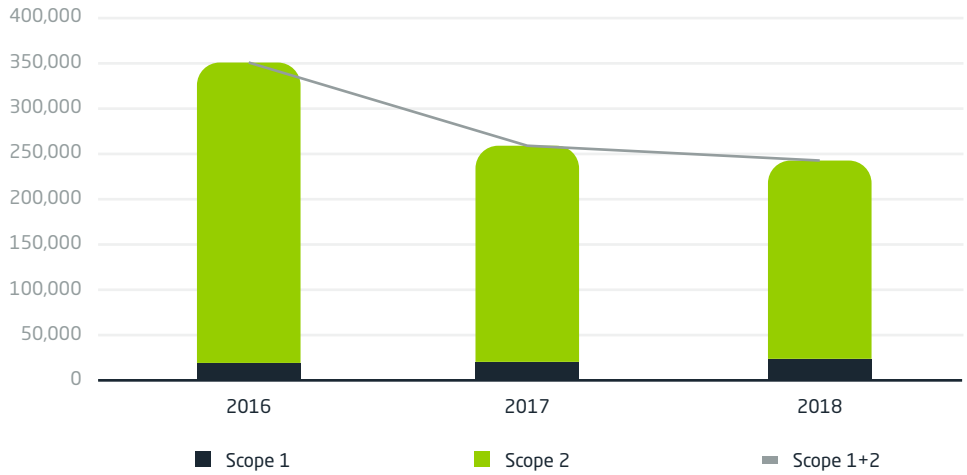
*The carbon footprint data represented in this Environmental Management Report differ from those published in the Annual Report on CR 2018 and earlier ones, as these have been updated with the consolidated consumption data and the emission factors of 2018. The market criterion has been used for the calculation of Scope 2 emissions.

**LTO cycle (take-off and landing of aircraft)

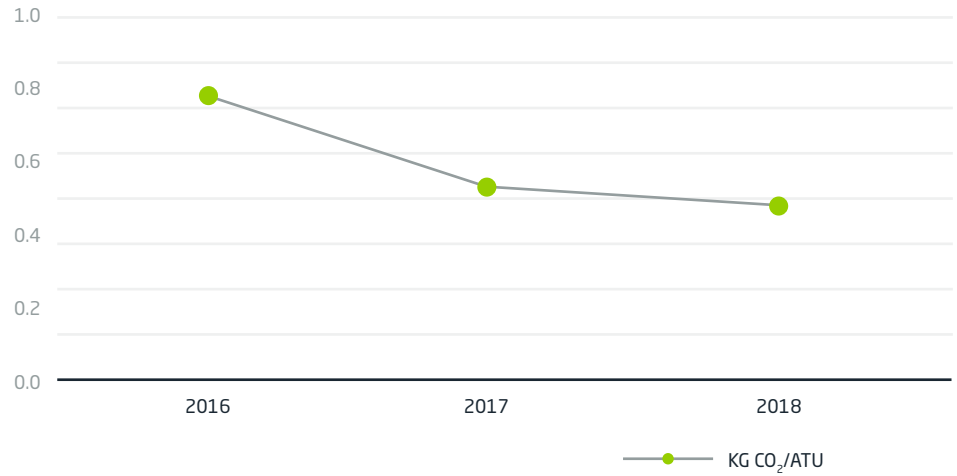
*** APUs (Auxiliary Power Unit)

****Includes emissions corresponding to the acquisition of goods and services, capital goods, business travel, employee travel, assets leased by the organization, and transport and distribution downstream, among others.

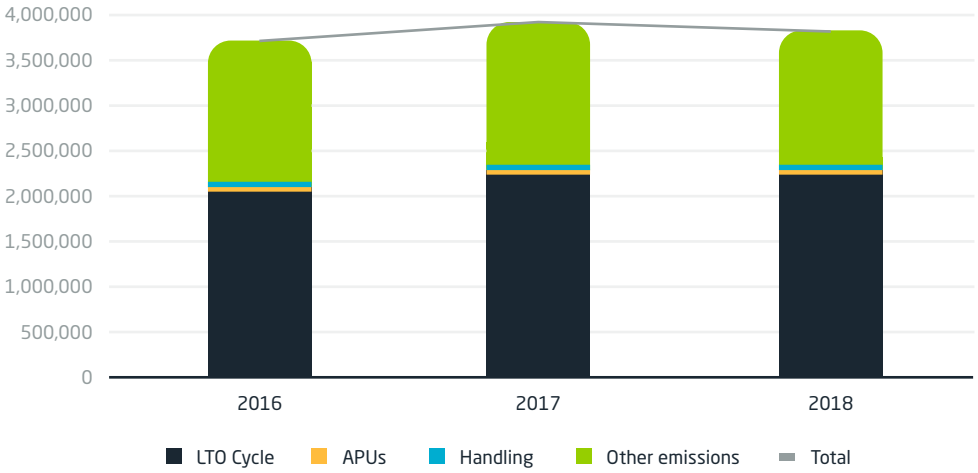
Development of Aena's emissions | Scopes 1 y 2
tCO_2e



Intensity of Aena's emissions | Scope 1 y 2
KG CO_2/ATU



Development of Aena's emissions | Scope 3
tCO_2e



Aena and its commitment to reducing emissions

Airport Carbon Accreditation in 2018

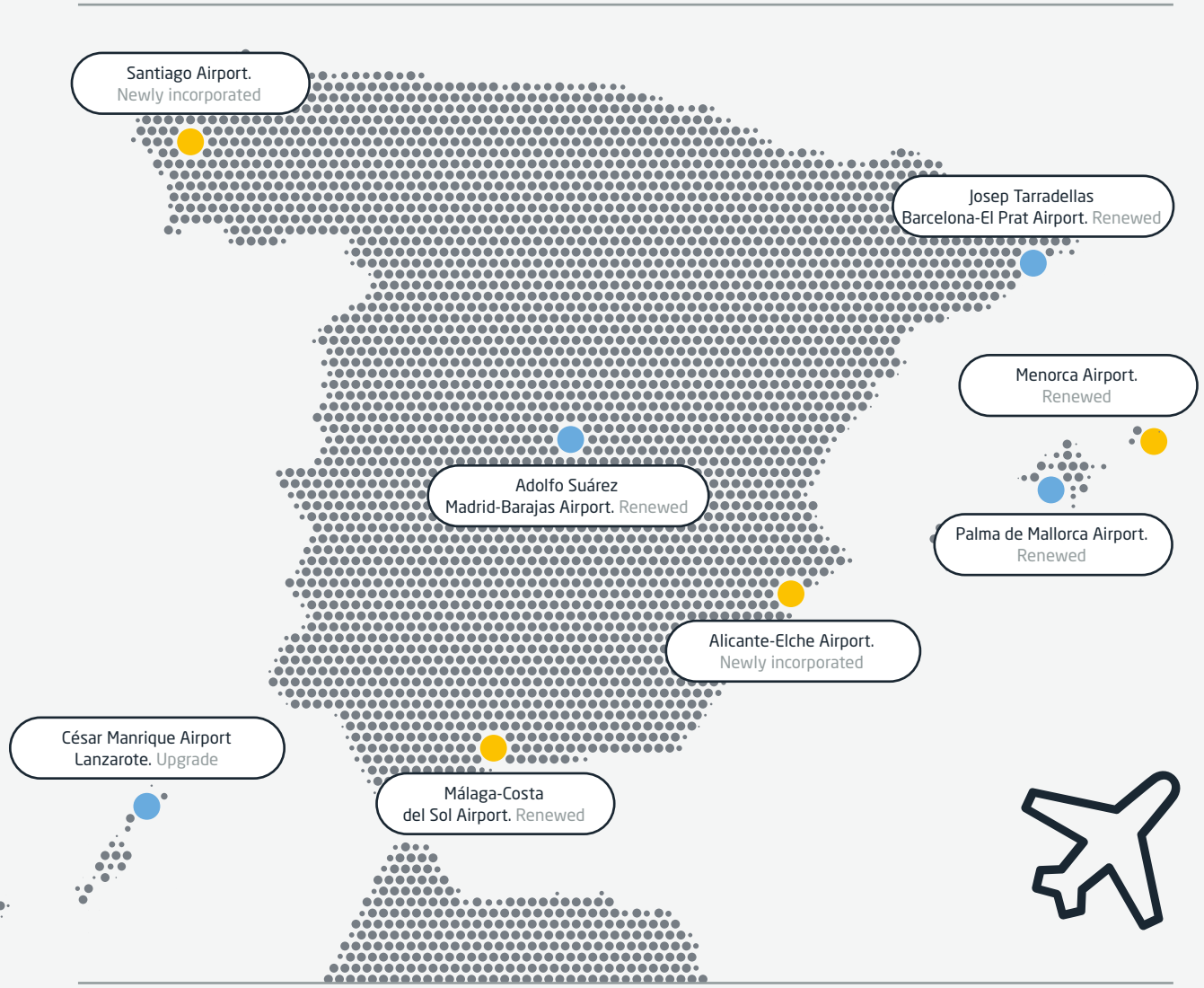
The **Airport Carbon Accreditation** (ACA) program of ACI (Airports Council International) is the only specific certification of airports in relation to the carbon footprint, supporting the reduction of CO_2 emissions and establishing a framework incorporation for the calculation of the carbon footprint.

The airports that have ACA certifications are the following:

- **AT LEVEL 2, REDUCTION**
- **AT LEVEL 1, INVENTORY**

Our goal to 2030: Reach **"carbon neutrality"** in Adolfo Suárez Madrid-Barajas and Josep Tarradellas Barcelona-El Prat Airports. Corresponds to Level 3+ of the Airport Carbon Accreditation and involves offsetting the residual emissions from Scopes 1 and 2 of these airports, which represent almost half the emissions of our entire network.

airport carbon accreditation
MAPPING | REDUCTION | OPTIMISATION | NEUTRALITY



5.2%

of the reduction of energy intensity
in the period of 2017-2018.

Energy efficiency and renewable energy

The first step to reduce our energy consumption, and therefore, the resulting emissions, consisting in the carrying out of an energy consumption analysis of our facilities, since it's key to identifying the resulting achievements and the areas where it is necessary to increase efforts.

However, the measures we apply are subject to various factors such as the case of the increase of passengers. In 2018, more than of 263.7 million passengers have passed through our airports, equivalent to the number of inhabitants of Indonesia, the country with the second-highest population in the world. This very year, our energy consumption has been the same as some 370,000 homes in one year, which is equivalent to the consumption inhabitants of a city like A Coruña in the in the same period.

In addition to the increase of experienced traffic, the **increase of electricity consumption by air traffic unit** (ATU) at our facilities has gradually diminished in the last years.

Energy intensity of our consumption in 2018*
kWh/ATU

*Includes the consumption of fuel, electrical energy, heating and cooling.

Internal energy consumption and total consumption broken down

		2016	2017	2018
Fuel consumption (GJ)	**Diesel**	149,845	154,070	197,767
	Gasoline	1,604	1,995	2,279
	Natural gas	140,264	152,552	153,331
	Propane	1,201	1,153	999
	Kerosene	1,398	1,439	2,049
	Subtotal	**294,313**	**311,762**	**356,460**
Energy consumption (GJ)	**Electricity**	3,333,244	3,395,244	3,386,704
	Heating	231,134	210,011	213,872
	Refrigeration	383,585	425,017	402,666
	Subtotal	**3,947,963**	**4,030,273**	**4,003,242**
Total energy consumption (GJ)		**4,242,276**	**4,342,035**	**4,359,702**

Energy efficiency

At our airports we launch a great range of measures targeted at **optimizing our energy consumption,** among which are the following:

- **Better technologies** for lighting and HVAC.
- **Adequacy of energy consumption** to the real operation of the airport.
- **Improvement in control of** electricity and fossil fuel **consumption**.
- **Awareness and sensitization** of our personnel.

Among the actions carried out in 2018, it is worth highlighting the project that will contribute to Adolfo Suárez Madrid-Barajas Airport a **platform for energy management.** This project will increase energy efficiency. and will make it possible to reduce greenhouse gas emissions, as it will set up an energy basis calculated based on measurements of that is more significant for Terminals T1, T2, T3, T4 and T4S.

Likewise, at the airports of Menorca and Ibiza we have closed part of their facilities during the winter months to **adapt them to the needs of the smaller traffic of passengers** the islands receive during this period. The application of this measure permits us to gather the passengers in common spaces to better take advantage of available resources, thus reducing the energy demands in regard to HVAC and lighting while maintaining the maximum quality of our services.

The energy management of the Airport Alicante-Elche

The terminal building of the Alicante Airport is used with sustainability criteria. To this end, **bioclimatic solutions** have been applied that permit the control of temperature and taking advantage of natural lighting.

Among these measures, with which we have in turn achieved **savings of 22.000 kWh** launching the facilities in 2011, highlight the application of process of natural ventilation and the automating and adjustment of HVAC and lighting.

Even so, we continue applying new measures to **reduce energy consumption,** facing the important increase in traffic at this airport.

Renewable energy

The aviation sector is essential for **reducing dependence on fossil fuels,** which contribute to climate change, since aviation and airports require a large quantity of energy to function. To this end, Aena is exploring the use of renewable energy resources, which allow us to reduce greenhouse gases.

Renewable energy facilities at our airports

Solar panels at Barcelona-El Prat Airport.

Geothermal energy plant in Reus Airport.

Wind turbines of La Palma Airport.

Photovoltaic modules at the airports of Menorca, Ibiza, Alicante-Elche, AS Madrid-Barajas, Madrid Cuatro-Vientos, La Palma, Valencia and Vigo.

In 2018 we have continued to promote the implementation of renewable energy and investing in new technologies, with which **we have avoided the emission of 901 equivalent tons of CO_2,** thanks to which 10,972 gigajoules in renewable energy have been generated at our airports. 85.5% of this energy was generated by wind sources, to which was added photovoltaic, thermal solar, and geothermal energy to a smaller degree.

Our new 2018 renewable energy projects

Prototype for mini wind turbine hybridized with a photovoltaic one in Valencia.

Analysis of technical **viability photovoltaic facilities** in the airports of Tenerife Norte, El Hierro, La Gomera, Zaragoza, Gerona and Reus.

Development of photovoltaic projects in self-consumption 9 MW power in AS-Madrid Barajas Airport and 3 MW at Barcelona-El Prat.

Project for the installation for mini wind turbines at Galician airports (Santiago, Vigo and A Coruña).

Aena's Photovoltaic Plan

We are convinced that investing in renewable energies is investing in a more sustainable future. To this end, we have launched the **Photovoltaic Plan of Aena,** by which we intend to reach up **70% of energy** self-consumption through solar energy at the airports in the network, equivalent to the consumption of **190,000 homes** throughout the year and will mean avoiding an emission of 167,000 tons of CO_2 to the atmosphere.

This Plan will situate us at the **production leaders of renewable energy in self-consumption among the airports,** reaching 650 GWh/year. The investment will be gradual and for 2026, will reach 230 million euros.

Renewable energy from our own facilities

		2016	2017	2018
Energy **generated** from renewable resources (GJ)	Wind	9,579	8,071	9,278
	Photovoltaic	1,379	1,600	1,509
	Solar thermal	286	424	29
	Geothermal	95	140	156
	SUBTOTAL	11,340	10,235	10,972
Consumed energy from renewable resources (GJ)	Wind	8,319	7,497	8,324
	Photovoltaic	1,277	1,479	1,416
	Solar thermal	286	424	29
	Geothermal	95	140	156
	SUBTOTAL	9,978	9,540	9,925
Sold energy from renewable resources (GJ)	Wind	1,261	574	954
	Photovoltaic	102	121	93
	Solar thermal	0	0	0
	Geothermal	0	0	0
	SUBTOTAL	1,362	695	1,047

Renewable energy generation and avoided emissions*

SCOPE 1	2016		2017		2018	
FACILITY*	KWh generated	tCO_2e avoided	KWh generated	tCO_2e avoided	KWh generated	tCO_2e avoided
Cogeneration plant of **Bilbao Airport**	485,464	104	806,932	208	1,067,935	234
Solar panels of the **Barcelona-El Prat Airport**	79,450	17	117,700	30	8,180	2
Energy plant of **Reus Airport**	26,500	6	38,914	10	43,257	9
TOTAL	591,414	127	963,546	249	1,119,373	245

SCOPE 2	2016		2017		2018	
FACILITY*	KWh generated	tCO_2e avoided	KWh generated	tCO_2e avoided	KWh generated	tCO_2e avoided
Wind turbines **of La Palma Airport**	2,660,905	569	2,241,916	578	2,577,197	564
Photovoltaic thermal modules of **Menorca Airport**	54,824	12	69,983	18	70,320	15
Photovoltaic geothermal modules of **Ibiza Airport**	31,985	7	53,574	14	81,977	18
Photovoltaic modules of **Alicante-Elche Airport**	54,279	12	53,006	14	46,413	10
Photovoltaic modules of **Madrid-Barajas Airport**	113,000	24	96,670	25	88,622	19
Photovoltaic modules of **Madrid Cuatro-Vientos Airport**	0	0	20,000	5	18,561	4
Photovoltaic modules of **La Palma Airport**	96,489	21	65,373	17	60,291	13
Photovoltaic modules of **Valencia Airport**	15,473	3	29,285	8	32,316	7
Photovoltaic modules of **Vigo Airport**	17,015	4	56,546	15	20,650	5
TOTAL	3,043,970	651	2,686,353	693	2,996,347	656

In addition, **40%** of the electricity that we have acquired this same year account with the **certification of guarantee of origin of renewable sources.**

Our goal is to increase this percentage each year until reaching **the 100% purchasing of energy from renewable resource in 2020.**

131,864 tCO_2eq

Emissions avoided thanks to **renewable energy production** in our own facilities (901 tCO_2eq) purchase of 40% of the **electrical energy from renewable sources** (130,963 tCO_2eq)

*The calculation of CO_2 is obtained from the relationship established between the electrical energy generated by the indicated facilities and the CO_2 emission factor considered. Source of electricity factor: REE.

We installed recharge points for vehicles

In 2018 **we expanded the network of recharge points for electric vehicles** or plug-in hybrids Barcelona-El Prat Airport are added to those already available from 2017 at the airports of Madrid and Palma de Mallorca.

Additionally, there has been a request for an installation project of **152 recharge points for electric vehicles** in the parking lots of 31 of our airports, both to expand their number since they count on this service, as for new installation in those who do not yet have the same. By 2020, it is expected that they will be All new points of recharge, with the long-term goal of having a recharging point for every forty parking spaces.

Reduction of emissions by fuel

Airports with sustainable fleet

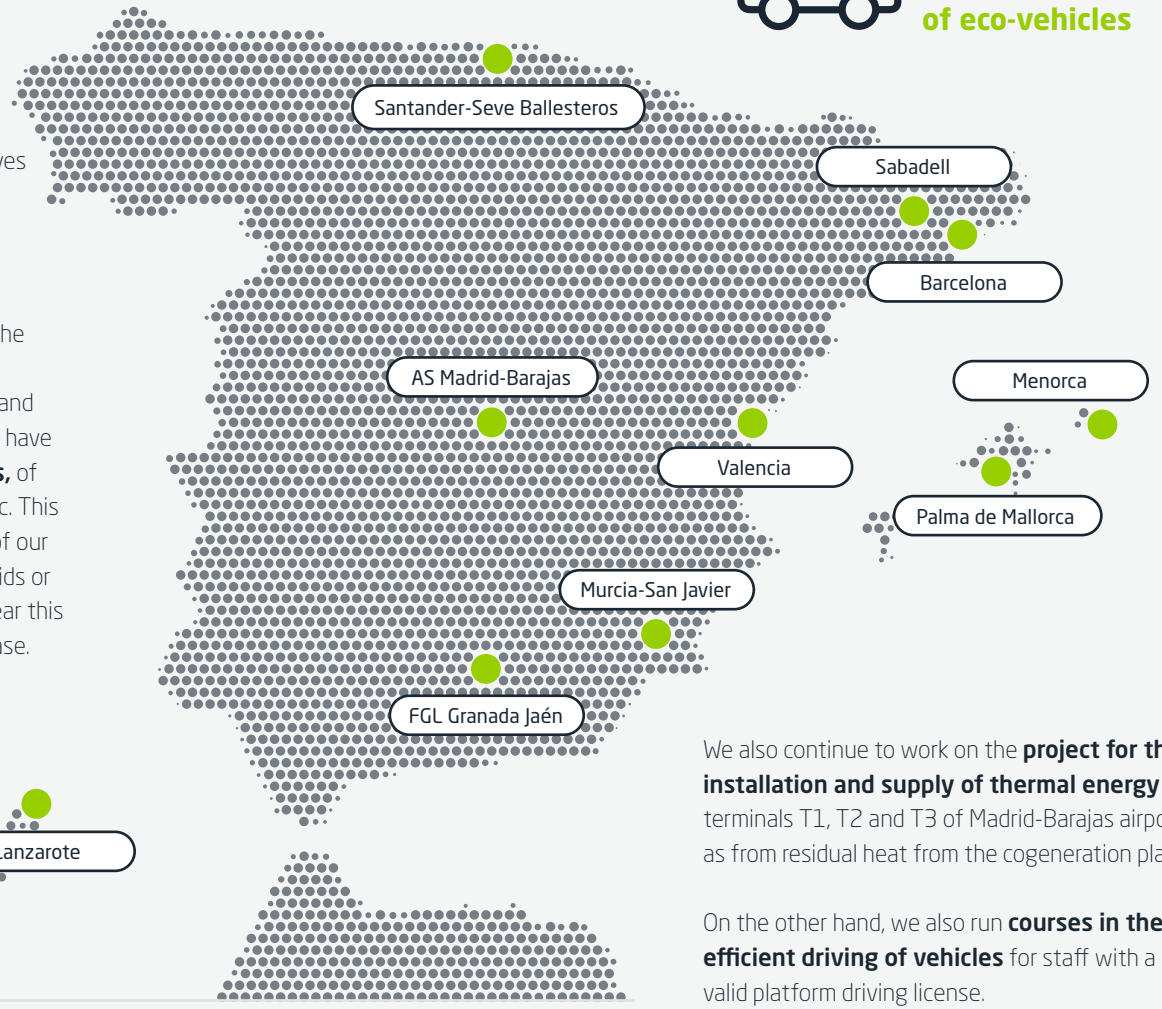
Other action lines of our Strategy HVAC focused on the **reduction of our emissions** by fuel, where we are carrying out initiatives and developing projects related to the use of the cleanest energies.

One of these initiatives is the substitution of our fleet of travels by vehicles cleaner and more efficient. In 2018, we have a fleet of **42 eco-vehicles,** of which 27 are totally electric. This supposes that the 20.5% of our fleet is of vehicles are hybrids or totally electric, and each year this number continues to increase.

Our goal to 2025:

100%

of eco-vehicles



We also continue to work on the **project for the installation and supply of thermal energy** to terminals T1, T2 and T3 of Madrid-Barajas airport as from residual heat from the cogeneration plant.

On the other hand, we also run **courses in the efficient driving of vehicles** for staff with a valid platform driving license.

We install bicycles to charge mobile phones

At Alicante -Elche Airport he we have installed **four bicycles for the charging of electronic devices** in the boarding area. These bike - are equipped with a charger wireless, two USB sockets and a universal plug.

The aim of this initiative is to expand the charging possibilities that already exist in the terminal in a way more fun and environmentally friendly, as **the energy is generated by the user** through pedalling.

Collaboration with third parties to reduce their emissions

At Aena, we are directly responsible for the emissions of Scope 1 and 2, but also we act to **promote the reduction of emissions corresponding to scope 3** by the agents involved in their generation, such as airlines or Handling managers, among others, helping to minimizing its energy consumption.

The following are some of the measures that we carry out to contribute to the reduction of emissions from third parties.

1 | MEASURES TO REDUCE CONSUMPTION ENERGY IN LTO AND APU CYCLE.

- **Implementation of A-CDM or CDM.** The objective of the A-CDM or CDM concept (Airport Collaborative Decision Making or Collaborative Decision Making) consists of **improving the overall efficiency of airport operations.** To this end, it facilitates the sharing of information updated of an operational nature, which results in an optimization of time... and therefore, minor fuel consumption and the decreasing of generated emissions.
- **Plan for the implementation of physical systems 400 Hz power supply system for aircraft.** Currently, it is the replacement and implementation of new intakes in the airport network to a total of 470 points of supply in 2030.

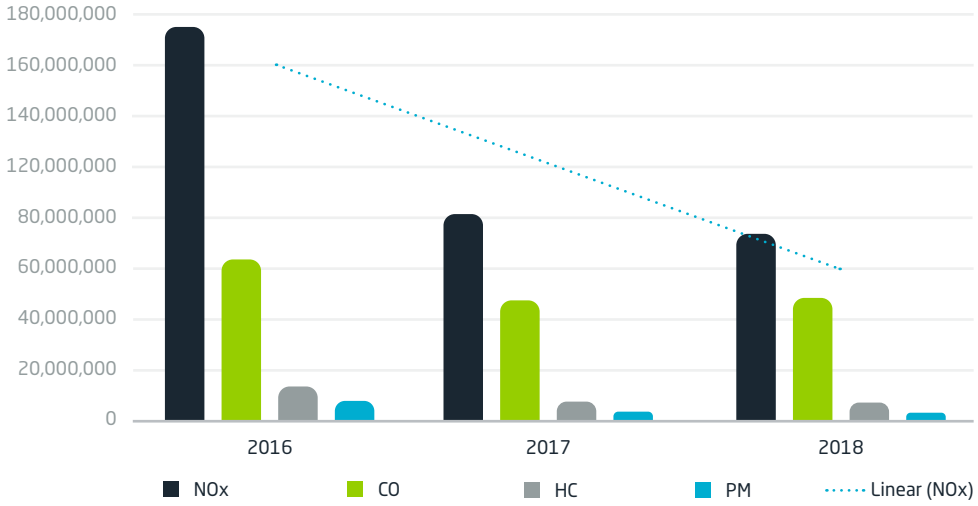
2 | MEASURES TO REDUCE THE CONSUMPTION IN HANDLING VEHICLES.

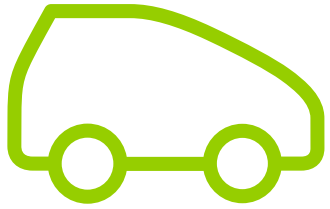
For our part, we have incorporated r**equirements to progressively reduce consumption,** and therefore emissions, in the specifications for the granting of Handling activity licenses.

On the other hand, the handling agents have prepared a **CO_2 emission reduction plan with a target of 20%** by 2020.

Evolution of Handling emissions

Sums of GSE+GVA Resulting emissions (in g)





Boosting the use of other sustainable fuels

In relation to the operations of aircraft, we are aware of the importance of **sustainable fuel use for aviation** (SAF) and we believe that from the airports we must boost consumption and even production. In this regard, it is worth noting that biofuels are the potential key for a future with cleaner flights.

For our part, we are collaborating with the entity AlgaEnergy promoting the investigation of a project on **biofuel production from microalgae,** in order to study their efficiency and profitability for the aviation sector.

Promotion of sustainable mobility

Access to the airports by users and staff working in our facilities is also a factor in which we can indirectly influence the reduction of energy consumption and therefore the emissions generated.

Thus, the **promotion of alternatives more sustainable transport and intramodality** can mean savings, as well as reduction of travel times. So, we collaborate with other administrations and institutions to maintain a system of competitive transport, trying to integrate our infrastructures with other modes of transport, improving accesses, the combination with the railway network and urban planning in airport environment.

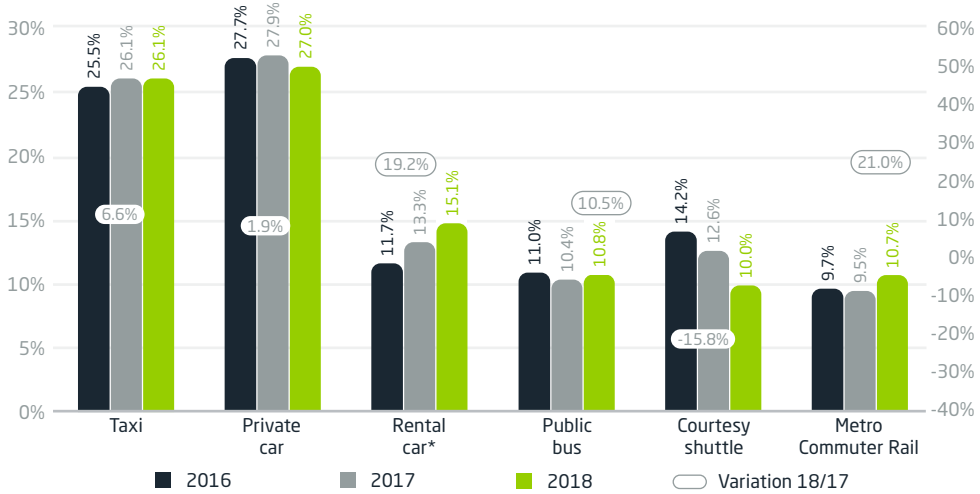
In this regard, in relation to the **promotion of public and collective transport,** we have registered a decrease in users with access to private cars, which has gone from 30.5% in 2010 to 27.7% in 2018. However, there has been an increase in the number of users who have entered with a rental car, increasing by 15% in the last year.

By bike to Lanzarote Airport

The Cabildo of Lanzarote started in 2018 the implementation work of a **bike path** that will connect Playa Honda with the airport. The development of this work is aimed at increasing the safety and accessibility of airport facilities in a more sustainable manner.

In this way, we intend to **encourage sustainable mobility** between the airport users and our own employees, who will be able to reach the airport every day by bike from the urban centres of the coastline.

Modes of land access to airports
(% of outgoing land access passengers)



*'Rental car' includes passengers who have used VTC to access the airport.

An increased use of public transport has been detected mainly train and metro use, as well as the public bus.

Finally, we also work on the **development of Studies and Mobility Plans** specific to the different airports. These plans integrate the infrastructures of access and transportation in cities and the airport itself, providing the best combinations to access the airports.

The **Airport of Barcelona-El Prat** is one of those with a Mobility Plan, which includes measures such as the connection of the proximity to the T1 terminal, the creation of a Working Group with the Metropolitan Area - Barcelona (AMB), the development of an Action plan to promote mobility among our employees, airport connection with the municipality of Prat de Llobregat by means of a bicycle lane and the installation of bicibox, a sheltered parking network for bikes.

Management of acoustic impact

Did you know that soundproofing performances carried out by Aena are not finalised until our neighbour agrees to the works executed, and that all necessary actions are assumed by Aena, the neighbour not having to make or advance any payment?

Make airport activity compatible with the development of the communities in which we operate is the ongoing goal by Aena

Lines of action to reduce airport noise impact

Minimizing noise to reconcile day-to-day operations with the development of local communities.

Two-way communication with our agents of interest, providing special attention to people living closest to our facilities.

Measurement, performance and monitoring

At Aena we are aware of the noise levels generated by the aircraft operating in our facilities and the inconvenience that they can cause to the surrounding communities. Therefore, we work every day to address the important challenge of minimizing the noise impact in the environment of our airports.

The noise generated by the aircraft that operate in our airports is the main concern of people living in areas close to our facilities. Therefore, at Aena we prioritise a large part of our work and resources for **measurement, control and minimization of noise.**

We measure noise

The first task we carried out at Aena is **measuring the acoustic condition** generated by aircraft. To specify the noise that is produced around us we apply three basic tools that will we enumerate below.

1 Strategic Noise Maps (SNM)

The instrument that allows us to **diagnose overall** year-round **noise exposure** in the vicinity of 11 of our airports, those with over 50,000 operations per year. Currently, the Airports with SNM (Phase III) and Action Plans approved are those of Alicante-Elche, Adolfo Suárez Madrid-Barajas, Barcelona-El Prat, Gran Canaria, Ibiza, Lanzarote Malaga-Costa del Sol, Palma de Mallorca, Tenerife North, Tenerife South and Valencia.

The SNM and their corresponding Action Plans are reviewed every five years according to the regulations and their values are comparable throughout the European Union.

2 Acoustic easements

The main tool to **evaluate the current noise impact** generated in our airports and foresee how it will evolve. The main objective of this delimitation is the definition of the **degree of noise incidence** in the territory. Like this, we can take the necessary measures to enable us to compatibilitize the operation of our facilities with the different uses of the ground, activities and buildings.

Each easement has an action plan that establishes specific **improvement actions** to minimize noise. During 2018, the following easements have been approved and its associated action plans for the airports of Bilbao, Ibiza, Seville, Valencia and Alicante-Elche, added to those already existing for Adolfo Suarez Madrid-Barajas, Barcelona-El Prat and Palma de Mallorca.

3 Action plans

Both the SNMs and the easements were required that the adoption of action plans that include **measures to make the operation compatible** in terms of the development of airport infrastructure with the consolidated activities in the territory.

These measures are aimed at **preventing and reducing noise** in the environment, as well as evaluating it over time through **control and surveillance programs.**

Population exposed to noise

SNM PHASE I 2007

NIVELES DE RUIDO	Gran Canaria	Lanzarote Arrecife	Tenerife Sur	Tenerife Norte	Alicante Elche	Bilbao	Barcelona	Ibiza	Madrid	Málaga	Palma de Mallorca	Valencia	Sevilla
Lday 65 dB(A)	191	-	0	1,049	84	24	11	-	2,058	299	90	10	-
Levening 65 dB (A)	66	-	0	825	90	23	19	-	1,957	314	98	8	-
Lnight 55 dB(A)	614	-	120	0	172	23	24	-	708	605	336	52	-

SNM PHASE II 2012

NIVELES DE RUIDO	Gran Canaria	Lanzarote Arrecife	Tenerife Sur	Tenerife Norte	Alicante Elche	Bilbao	Barcelona	Ibiza	Madrid	Málaga	Palma de Mallorca	Valencia	Sevilla
Lday 65 dB(A)	57	-	0	475	61	29	23	9	1,824	232	110	3	0
Levening 65 dB (A)	0	-	0	198	60	506	18	9	149	240	110	3	0
Lnight 55 dB(A)	42	-	45	0	112	0	26	637	38	348	152	19	0

SNM PHASE III 2017

NIVELES DE RUIDO	Gran Canaria	Lanzarote Arrecife	Tenerife Sur	Tenerife Norte	Alicante Elche	Bilbao	Barcelona	Ibiza	Madrid	Málaga	Palma de Mallorca	Valencia	Sevilla
Lday 65 dB(A)	282	304	20	252	86	-	13	14	1,751	319	177	1	-
Levening 65 dB (A)	0	294	0	13	62	-	14	14	1,497	255	187	1	-
Lnight 55 dB(A)	308	0	90	0	201	-	13	591	1,754	1,520	515	91	-

Green landings

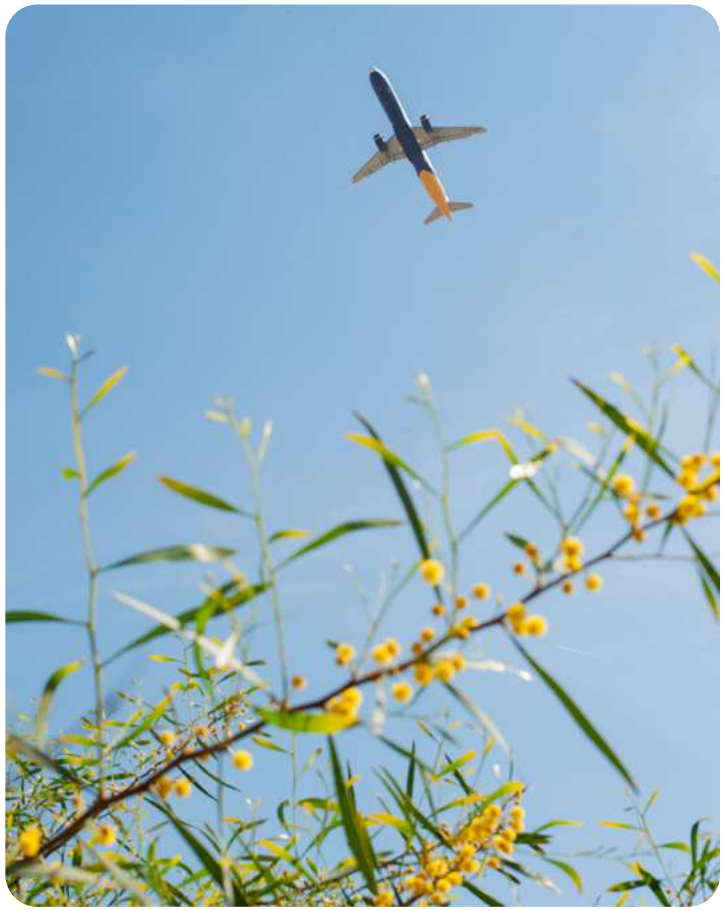
To continue to improve our commitment to noise minimization, during 2018 we collaborated with Enaire and alongside the main airlines to work and establish synergies on Continuous Descent Approach (CDA), also called **green landings.**

These types of landings are manoeuvres of approach and descent of aircraft that **reduce noise pollution** and fuel consumption and therefore CO_2 emissions.

This model of environmental management tails conceived by Eurocontrol, within the framework of the Environmental Collaborative Management (CEM), seeks to achieve common solutions to environmental challenges that meet the needs of all stakeholders.

We act to reduce

Once the acoustic impact has been identified, we can define specific measures specifics to minimize it. In this sense, in addition to **working to reduce noise** by our own means, at Aena we collaborate with the rest of the participants involved in various actions:



Noise reduction at the source: Adoption of international treaties to limit aircraft noise levels.

Direct noise reduction measures:

- Use of **preferential runway settings,** identifying those in which the acoustic effect on the environment is lessened.
- **Threshold shift,** increasing the height of the overflight in more populated areas.
- **Design and optimization of trajectories,** incorporating more accurate navigation systems to reduce dispersions.
- **Operational procedures for noise abatement in landing,** which entails the application of measures that reduce the acoustic impact.
- **Limitations on the use of reverse thrust,** system used during landing on short runways consisting of reversing the aircraft reactor exhaust gas discharge to stop it.
- **Continuous descent manoeuvres (CDA),** consisting of a landing system that allows the plane to descend in a less noisy aerodynamic setting.
- **Noise abatement operational procedures on land** such as the limitation of engine testing at more sensitive times or locations.

Introduction of specific aircraft restrictions (AMC).

Noise rate systems.

Support for air traffic control and discipline.

Pioneers in the accreditation of the noise measurement system

The airports of Adolfo Suárez Madrid-Barajas and Barcelona-El Prat have become the first to the world in providing **data on noise accredited in accordance with the ISO 20906 standard** (Unattended monitoring of aircraft sound in the vicinity of airports), specific to the monitoring of the acoustic condition through the Monitoring Systems for Noise and Flight Paths of the airports.

Obtaining this accreditation is a further step to **ensuring the quality** of the noise data that Aena offers publicly, by being recorded through use of procedures, tools and techniques that follow the ISO 20906 Standard. All this is guaranteed by an accreditation entity like ENAC, recognized in over 90 countries.

We control and monitor

At Aena we monitor air routes and noise levels attained in the different airport environments through **Noise Monitoring Systems** (NMS). These systems are made up of a set of microphones installed strategically around our eight main airports for detecting, measuring and associate the noise produced by each aircraft that flies over the Noise Monitoring Terminals (microphones). The reliable and permanent information of each sound event crosses with the flight plans and radar paths to link to the responsible aircraft.

In addition, we measure the noise generated by aircraft located on the ground, especially at night, the most sensitive time for those who reside in the vicinity of our airports.

Dissemination and transparency

Once we know our acoustic impact, the information we collect is made available to the various stakeholders.

Once we know our acoustic impact, the information we collect is made available to the various stakeholders. The main means by which this communication is carried out are **Interactive Noise Maps (WebTrak),** a tool that allows us to provide reliable information to people living in the surrounding areas of our airports.

In WebTrak, we practically show in real time (with only a 30-minute delay to ensure safety) all operations and data on the flight number, type of flight and the aircraft, altitude, trajectory and noise levels associated with each flight. Currently eight of our airports have implemented this interactive system, whose maps can be consulted on **Aena's website,** like the following example from Barcelona Airport:

We publish Monthly Acoustic Reports

From all the sound measurements we carry out in our terminals, we also prepare **Monthly Acoustic Reports** that provide information on the evaluation of noise data recorded in the Monitoring Terminals, as well as the analyses of the dispersion of trajectories in the municipalities of the airport environment. Also includes the monthly development of the different settings.

These reports are available for your consultation for each airport accessible on the **Aena company website.**

Noise Insulation Plans

In our commitment to society and our efforts to make our airport activity compatible with the development and welfare of the population living in the vicinity of our facilities, we execute Noise Insulation Plans (NIP) associated with the airports.

This measure was initiated more than 20 years ago on the expansion of the Adolfo Suarez Madrid-Barajas airport and is currently **located in 19 airports** in the network.

The main purpose of the soundproofing action is that the interior of the buildings included in each of the Plans **will meet the objectives of acoustic quality,** set by Royal Decree 1367/2007.

Conditions so your home is included in Noise Insulation Plan

1. **Within the acoustic footprint of the airport** boundary according to the scope of the Soundproofing Plan.
2. **Housing** or **building of sanitary, educational or cultural use.**
3. The construction of the building has a **works approval prior to the publication of the environmental resolution** or acoustic easement, as applicable.

Our actions meet **applicable quality targets for acoustics.**

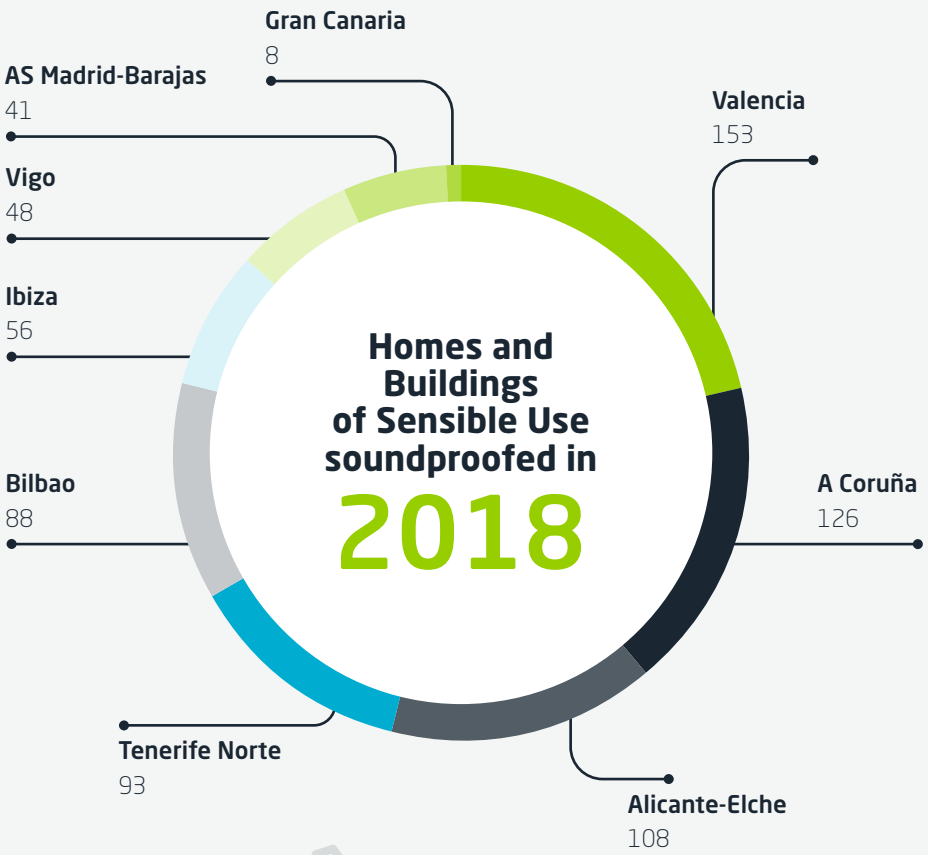
We carry out sound measurements in inside homes to know the specific needs for improvement.

During 2018, Aena carried out **new soundproofing actions and expanded the number of airports with NIP.**

Once a building meets the requirements of to be included in a Soundproofing, a series of acoustic measurements are taken to be able to determine the needs of sound insulation, which depend on the noise level to which it is subjected and its constructive qualities. Subsequently, the **soundproofing performance** is carried in accordance with the scope and provisions of the execution.

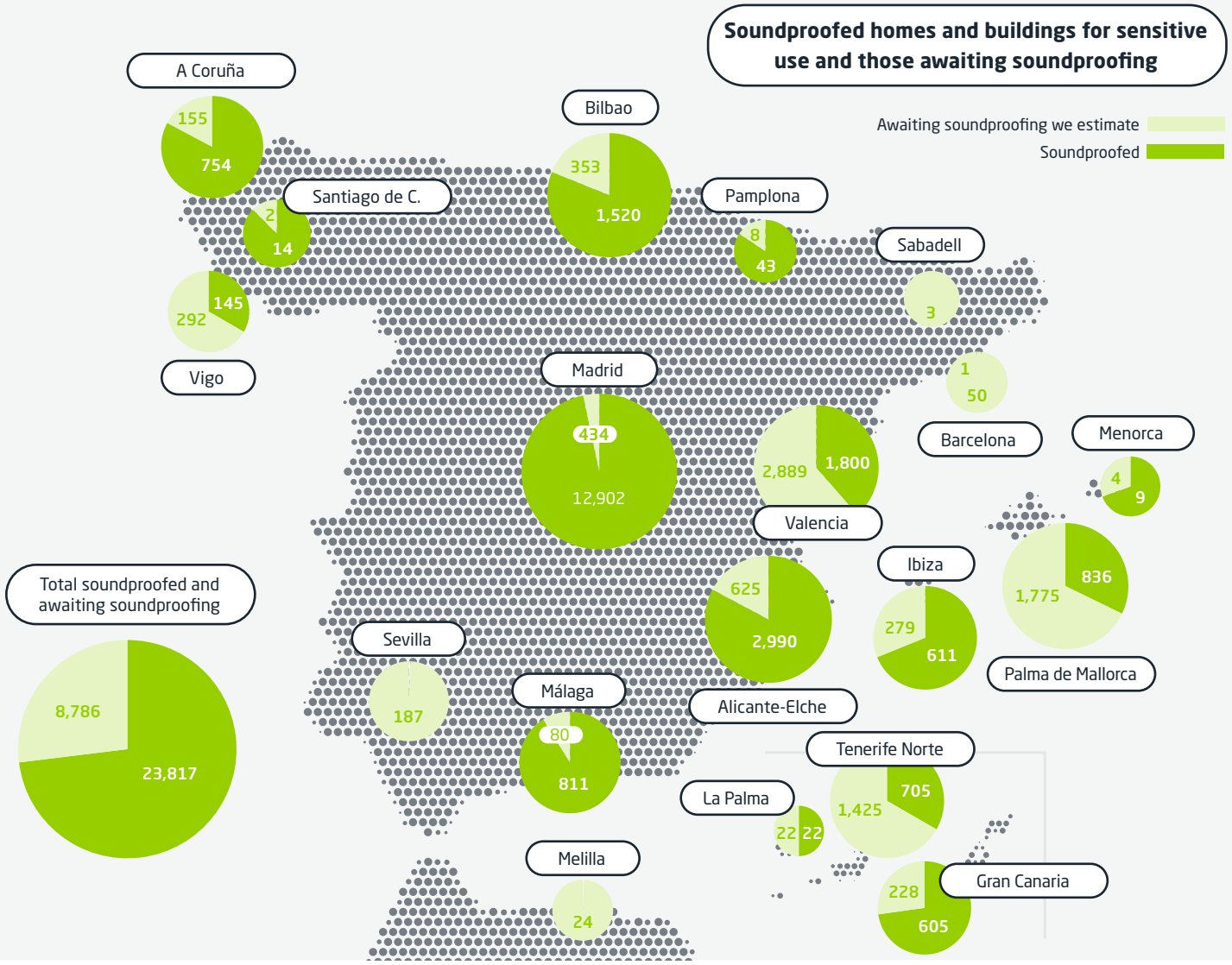
721 properties

In 2018, we executed **soundproofing actions** in 718 homes and 3 singular actions corresponding to a residence and a school in Culleredo (A Coruña) and a health centre in Derio (Biscay).



In 2018, the **Commission on Airport Environmental Monitoring of Seville** was established, thus initiating the actions of its Noise Insulation Plan.

In addition, this year as well, the **terms corresponding to the Noise Insulation Plan of the airport in the Region of Murcia** have been defined, whose application is foreseen as soon as properties that meet the conditions are detected.



Relevant data from the NIP in the period 2000-2018

23,817 homes

Soundproofed homes and buildings for sensitive use.

323.2 millions of euros

Implemented **investment**.

From Aena **we report any action** in this area to the monitoring and management committees of the Noise Insulation Plans, as well as to the respective Joint Committees that establish the easements and their associated action plans.

Where can you find out if your home is included in a Soundproofing Plan?

We put at the disposal of our neighbours, the **Noise Insulation Plans Management Office** to solve any of your doubts in this regard.

Thus, through the phone number or emails they can contact the Noise Insulation Plan Management Office to find out if they are included in the Soundproofing Plan. They should provide the exact address of the property including the cadastral reference.

If you want to know more about carrying out Noise Insulation Plans you can also do it through **Aena's website.**

915 903 170

oficina.paa@ineco.com

Aena.es

Neighbours have a **Soundproofing Plan Management Office** to which they can make any inquiries about this activity and reminds those who would not have asked for the implementation of these proceedings of their right to request them.

The **carpentry and glass installed** as a replacement are of very high quality..

All the actions that need to be executed are **100% assumed by Aena,** neighbours not having to make any payments.

After the actions carried out, **noise level reductions** are obtained that in most cases exceed 5 db.

In addition to the obvious improvement in sound insulation, there is greater **thermal insulation** and, therefore, **saving of energy consumption.**

The **soundproofing actions** are not finalized until the neighbour agrees to the executed works.

Our commitment is to perform these actions in all homes and buildings necessary under the circumstances.

Our commitment is to continue pushing such measures to ensure that the **acoustic impact is reduced** inside the homes located near our airports.

This fact translates into the will of Aena to provide for the human resources and material resources that allow and facilitate their execution in all those buildings, so that the potentially affected persons may request soundproofing improvements even till the closure of the respective plans.

One footprint for each target

As aforementioned, at Aena we carry out three types of noise footprints to find out the sound level in the airport surroundings.
Here is a reminder of the aims:

1. Strategic Noise Map (SNM)

What is it?

The noise footprint of the SNM was corresponding to the acoustic situation of a given year, providing information on sound levels and the population exposed to them.

What is the aim?

EVALUATE uniformly and with comparable criteria the noise of the various means of transport by allowing the authorities to jointly assess all noise sources affecting urban areas

2. Acoustic Easement

What is it?

The main tool to assess the acoustic impact in the current and future situation of the airports, and leads to an action that establishes an improvement plan, including the Soundproofing Plan.

What is the aim?

COMPATIBILIZING the activity of the airports with the different uses of the territory's soil, activities and buildings.

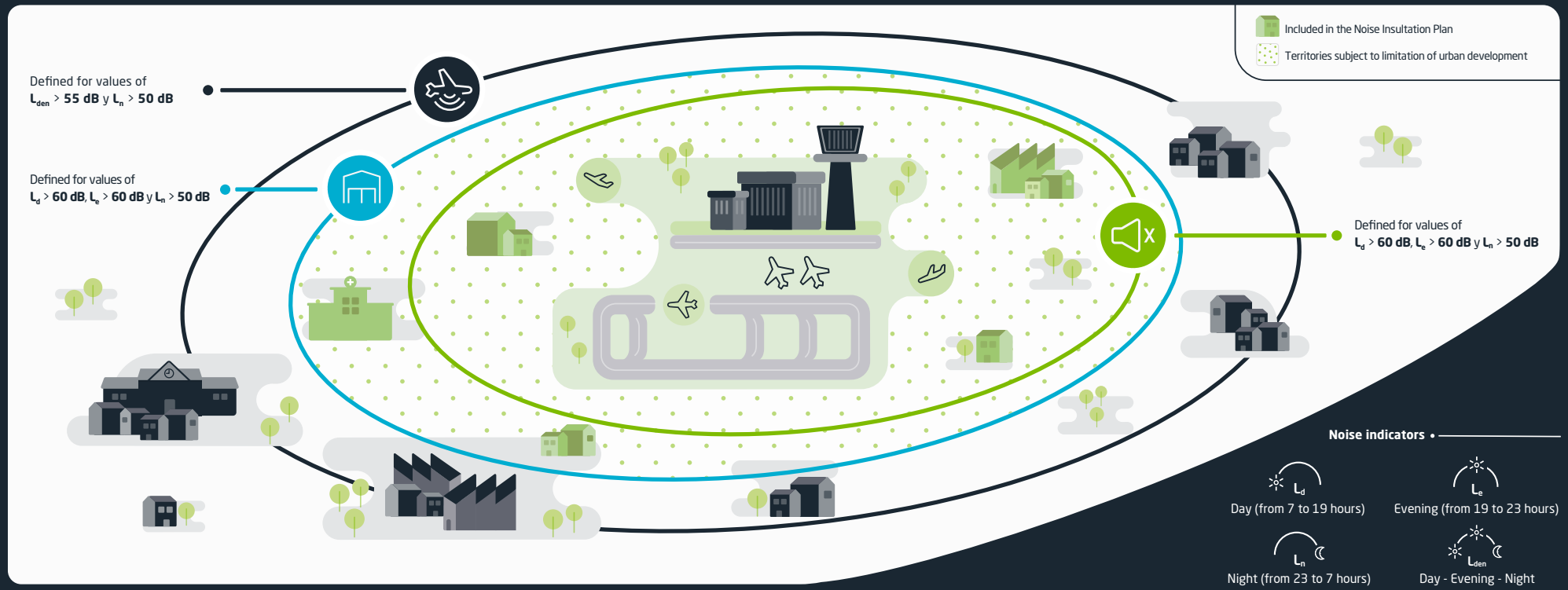
3. Noise Insulation Plan (NIP)

What is it?

Noise footprint is associated with the Declarations of Environmental Impact (EIS) and/or acoustic easements.

What is the aim?

To MINIMIZE the inconvenience caused by the aircraft through soundproofing actions that allows to meet the acoustic quality objectives inside homes and buildings of sensible use.



Dialogue and participation

For Aena it is essential to have opinions, suggestions and demands of our stakeholders to me-to improve our noise management.

In this way, we deal with the increasing social problems arising from the noise disturbance caused by an increase in air traffic and growth of the towns and buildings around the airports.

Thus, in 2018 we continued to ensure the **maintenance of constant and bidirectionally fluid communication** with the administration-public bodies in charge of the activity airport and associations. In addition, we have strengthened our relationship with these stakeholders through the creation of interest groups for specific work about moving forward jointly towards continuous improvement.

INSTITUTIONAL MEETINGS

We collaborate with administrations and interest groups to extend the benefits of noise reduction measures to new airport environments.

- **Environmental monitoring committees.** During 2018, there have been 24 meetings for the monitoring of soundproofing plans.
- **Joint Commissions.**
- **Participants:** Aena, ENAIRE, Town Councils, Ministry of Development, Ministry of the Environment and Autonomous Communities.

WITH NEIGHBOURHOOD ASSOCIATIONS

Meetings with the residents of the airports of Barcelona-El Prat, Adolfo Suárez Madrid-Barajas and Palma de Mallorca.

- **Environmental Coordination Commission** at the Airport of Barcelona-El Prat.
- **Participants:** Aena, ENAIRE, Neighbourhood Associations and town halls.

TECHNICAL MEETINGS

Collection and analysis of proposals for noise minimization of municipalities and neighbourhood associations.

- **Noise technical work group.** In 2018 eight meetings have been held.
- **Participants:** Aena, ENAIRE, City Councils, Promotion and Ministry of the Environment and communities autonomous.

Environmental protection

Did you know that the peregrine falcon is one of raptors commonly used to control the fauna of our airports and holds the record of being the fastest bird in the world?

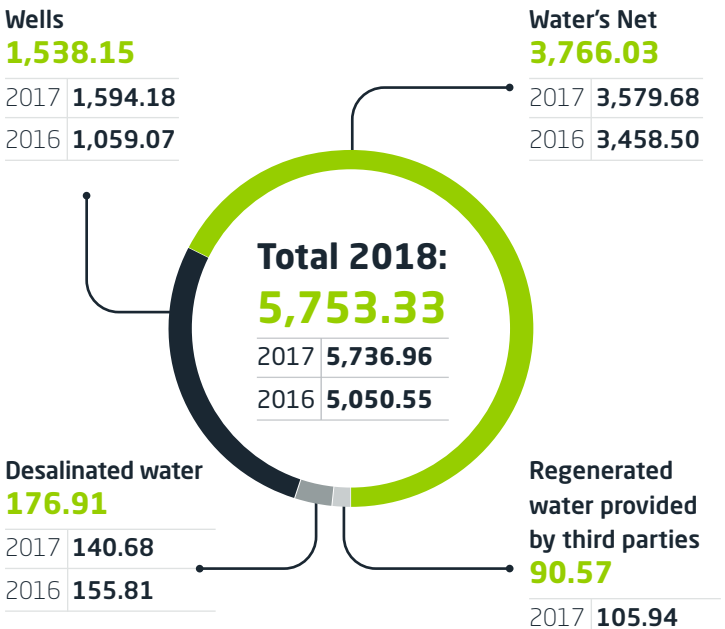
Responsible use of water

181,673.40 m³

Water reused for other purposes, mainly in **watering green areas.**

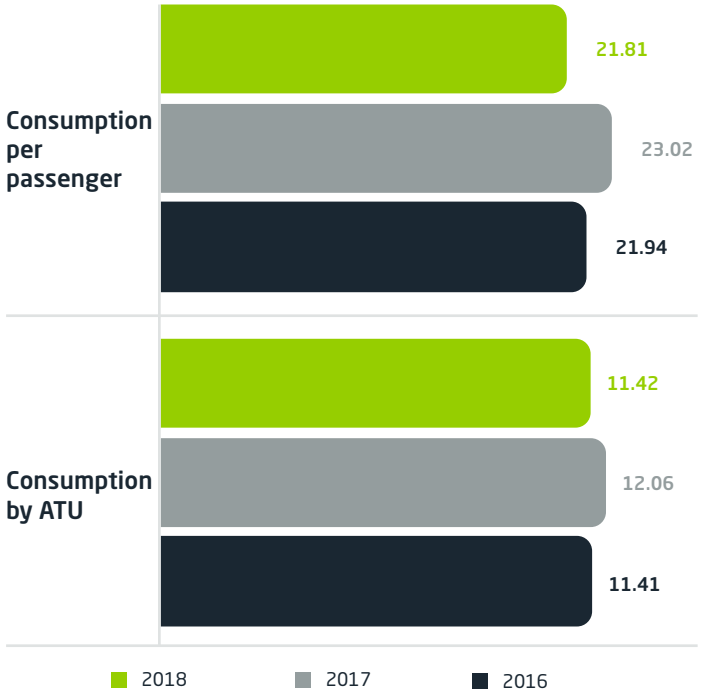
Spain is a country with a water deficit in a large part of its territory, which is aggravated during periods of drought that lead to increased water stress. Many of our airports are in these territories, so we are aware of these limitations and the importance of optimizing their consumption.

Overall water consumption by source of supply*
(thousands de m³)



*Data recalculated from previous years due to improved data recording.

Overall water consumption per passenger and per ATU
(in litres)



Water is used by thousands of people who pass through our facilities every day, whether they are employees, passengers or any other user. For this reason, we **control the use of water** for human consumption, watering green areas, cleaning, fire-fighting services or carrying out works in order to ensure the supply in the most efficient way.

We are also **implementing innovative initiatives** from our airports to reduce water consumption. These include the implementation of automated systems to detect leaks, maintain networks and monitor or improve consumption control systems, which enable us to ration water.

The fact that the number of passengers travelling through our airports is increasing every year implies a greater use of water. Therefore, in 2018 we experienced a slight increase in consumption with respect to the previous year, reaffirming the growing trend of recent years. However, it should be noted that if we take into account relative data on consumption per passenger, there is a slight decrease.

We use water from sea as a resource

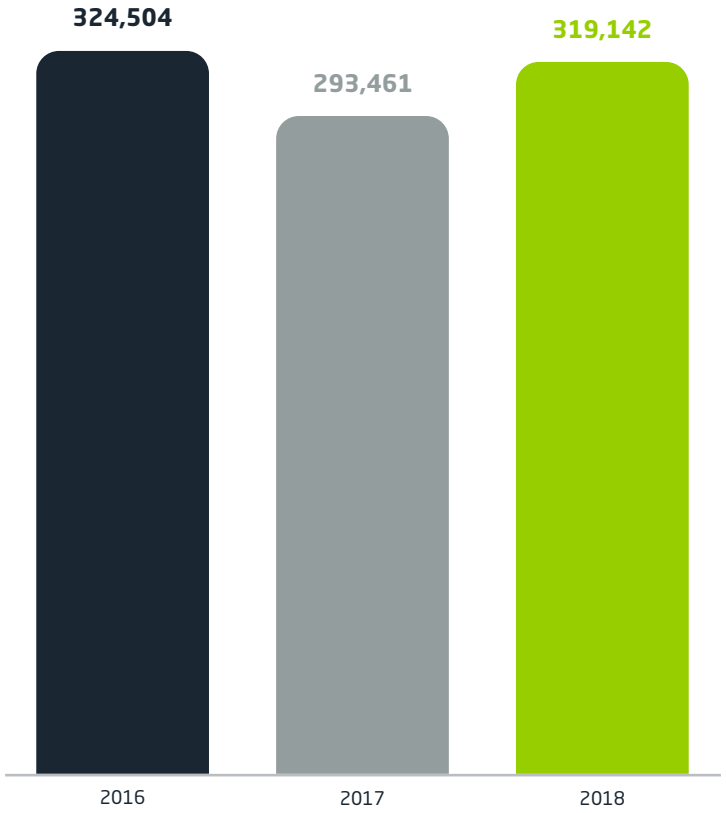
At island airports, such as on Fuerteventura, Ibiza and Lanzarote, **we use water from the sea.**

Considering its success an agreement with the Island Council of Waters of Tenerife for implementing the same system is also used in the Tenerife South airport. Thus, **desalinated water from the sea** provided by the desalination plant in Granadilla will arrive to its facilities.

Aena's commitment to reducing this valuable resource has led to the development of a **specific strategic plan for water management at airports,** which will allow us to diagnose and establish a concrete framework for action in line with the objectives of minimising and controlling water consumption included in the Aena Strategic Plan 2018-2021.

Another initiative already implemented in the airports located in territories with greater water stress, such as the islands, consists the **reuse of treated wastewater,** with which we water our green areas. Thus, we avoid the extra consumption of water from the network and intended for this purpose.

Consumption of treated and reused water at airports
(m^3)



Furthermore, considering that part of the water consumption is due to human consumption, we consider it of great importance to **raise the awareness of the users of our facilities.** In this sense, we have installed signage specific to services, urging passengers and our own employees to make responsible use of this resource.

We have also joined in the dissemination of the campaign **"Water Gives Us Life. Let's Care for It"** of the former Ministry of Agriculture, Fishing, Food and Environment. This initiative aims to raise awareness of the citizens on the need to save water based on simple and practical tips on responsible consumption.

Air Quality Monitoring

Thanks to the measuring stations of air quality located in several of our airports, we can carry out a control of the emission levels generated in the airport environment, which allows us to verify the compliance with the established ranges.

In this sense, **we measure the concentration levels of the main substances,** such as sulphur dioxide (SO_2), nitrogen oxides (NO_x) and particulate in suspension (PM). In this way, it is possible perform a continuous and automatic control of air quality in the area of influence of several airports.

These stations, some of which are integrated in the quality monitoring networks of the air in the Autonomous Communities, are located at the airports of Adolfo Suarez-Madrid Barajas, Josep Tarradellas Barcelona-El Prat, Palma de Mallorca, Alicante-Elche and Málaga Costa del Sol.

You can consult information about the air quality at Adolfo Airport Suárez-Madrid Barajas in **this link** and that of Josep Tarradellas Barcelona-El Prat Airport **here.**

Aviator Project

At Aena, we are committed to the development of innovative solutions to know and control air quality. An example of this is AVIATOR, a **project to find out the emissions of aircraft,** which we carry out in collaboration with the National Institute of Aerospace Technology (NIAT) It is a solution that will allow us to expand the knowledge on the dispersion of NOX, SOX and particles derived from the operation of aircraft. This project is implemented under the Framework Programme for the European Union Horizon 2020.

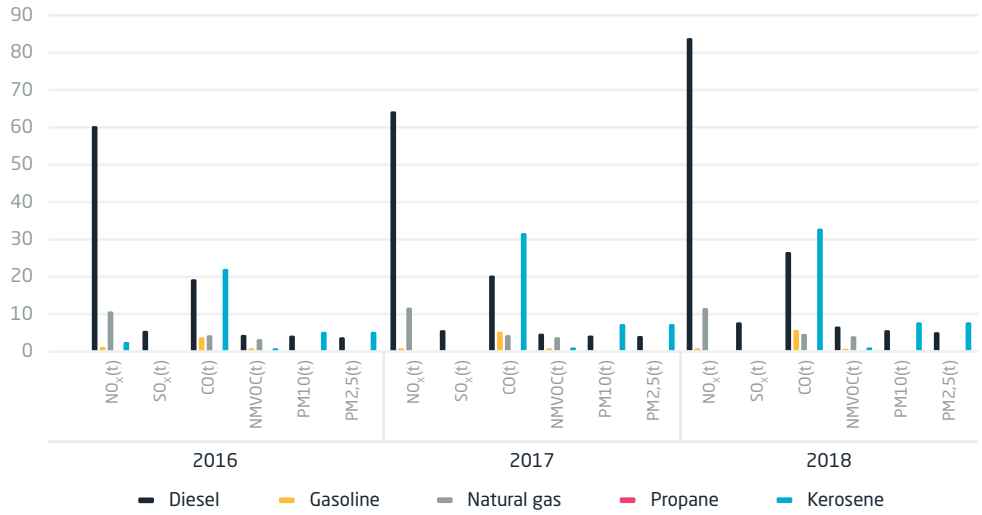
The aim of this project is to **improve air quality assessment of the environment,** so that the results obtained in the tests that we carry out in different scenarios serve to improve integration of the air sector in the environment.

Other emissions to the atmosphere

In addition to monitoring air quality (or emission levels) through the stations mentioned above, we calculate the emissions derived from Aena's activity from the consumption of different fuels.

The following graph shows **the evolution of the various NO_x, SO_2 emissions** particles, CO, and volatile organic compounds non-volatiles (NMVOC) by fuel type.

Evolución de las emisiones a la atmósfera



Protection of biodiversity

14% of the surface

14% of the total surface area of our airport facilities is part of some **protected natural space.**

The Spanish territory possesses a great diversity and heterogeneity of ecosystems- more and protected natural areas that are home to over 85,000 different species. This biological richness makes it one of the most biodiverse countries from all over the planet and the first in Europe.

This fact implies that our vast airport network has more than **23 Km² of surface that hosts part some protected natural area in its interior.** In total, there are 24 airports that share space with zones protected and preserved by specific actions to make our activity compatible with the conservation of natural heritage.

Specifically, with each extension planned in these airports, we carry out **Environmental Impact Assessment studies** based on to Law 21/2013, which allows us to prevent any impact on these natural environments. The resolutions obtained in relation to these studies can be consulted in the environment section of **our website.**

On the other hand, the management of wildlife and, principally birds, are a key factor to be considered, allowing to make compatible the protection of the natural heritage with the maintenance of safety standards and quality in aeronautical operation. In this respect, we regularly carry out **studies on the fauna of the environment of our airports** and their habitats in collaboration with local and autonomous bodies, together with the State Agency for Air Safety.

This is how we identify those species that are attracted by the habitats close to our facilities and we define the degree of danger that may be involved in aircraft manoeuvres. With this information, we developed the **wildlife control strategies** that are best suited in each case.

The control of birds in the airports

At Aena we carry out **controls and monitoring of the birds** that enter to the airports.

We also carry out another **type of bird control techniques,** such as bloodless capture, scientific ringing and release from the facilities (translocation) of raptors, which we carry out at the Bilbao and Madrid airports.

Likewise, the scientific ringing of captured individuals allows to **analyse the behaviour of the birds after their translocation,** checking on future captures if such birds return to the territory occupied by the airport.

Biological control of fauna through the falconry

The natural and ecological method to control the intrusion of wild birds in the most extended airport in all our airports is the biological **control of birds by means of falconry,** a technique that we have been applying for more than fifty years, since it was introduced in the airport of Torrejón de Ardoz in 1968 by Félix Rodríguez de la Fuente.

Currently, the wildlife control service is operational in 32 airports.

The flight of trained birds of prey discourages other birds and animals, avoiding their invading the operation areas of the airports.

Most common birds at airports

The Peregrine Falcon *(Falco peregrinus)*

The harris eagle *(Parabuteo unicinctus)*

The Saker Falcon *(Falco cherrug)*

Gerbil falcon *(Falco rusticolus)*

aena
Aeropuerto de La Gomera

SEO BirdLife
www.seo.org

Frequent birds at La Gomera Airport and its surroundings

Moorish partridge *(Alectoris barbara)*

North African partridge that occurs in Spain occasionally in Gibraltar, Ceuta and Melilla, as well as in the Canary Islands, where it is common. Except for the African populations of the autonomous cities, the others come from historical releases for hunting purposes. Typical of arid environments, it occupies all types of steppes, rocky areas and scrub and basal floor formations. It is endemic to North Africa, where it is widely distributed from Morocco to Libya. It has been introduced in all the islands of the Canary archipelago. It is common on La Gomera, and particularly around the airport.

Yellowlegged Gull *(Larus michahellis)*

One of the most abundant seabirds in Europe, the Middle East and North Africa, as well as in the Azores, Madeira and the Canary Islands. In these islands the endemic subspecies *L m. atlantis* is present. It breeds on all the islands and islets of the Canary archipelago and in recent decades its numbers have increased. Along the southern cliffs of La Gomera it is abundant and nests in different colonies, being common around the airport.

Common Raven *(Corvus corax)*

Widely distributed throughout the northern hemisphere, it is in much of North America, Eurasia and North Africa, with the Canarian populations being the most southern. Several subspecies are recognized and the endemic subspecies canaríensis is in the Canary Islands. The most striking feature of the raven is undoubtedly its colossal size, which makes it the largest representative of the order of passerines.

Moorish sparrow (Passer hispaniolensis)

Species linked to the anthropic environments that is distributed by the north of Africa, south of Europe and western sector of Asia, as well as in the islands of Madeira, Canary Islands and Cape Verde. It colonized the Canary Islands archipelago from the beginning of the 19th century and although in recent years its presence has been minor, it is still frequent in cities and towns. It is common in La Gomera, and in particular in the gardens and around the airport.

Images courtesy of the spanish ornithological society (SEO/BirdLife): photos by Aurelio Martín and illustration by Juan Varela.

The birds of La Gomera Airport

The Spanish Ornithological Society, SEO BirdLife, ha supported Aena in the development of a **communication campaign at La Gomera to familiarize the public with the birds** usually found in its vicinity. Among these birds, the most frequent are the Moorish partridge, the Yellowlegged Gull, the big raven and the Moorish sparrow, as well as the passerines and most common raptors.

The identification of these species allows the airport's falconry **system to develop the most depending on the type of species that it wants to chase away.** In addition, the campaign is useful to highlight the avian diversity of this airport and how its presence results as compatible with our activity.

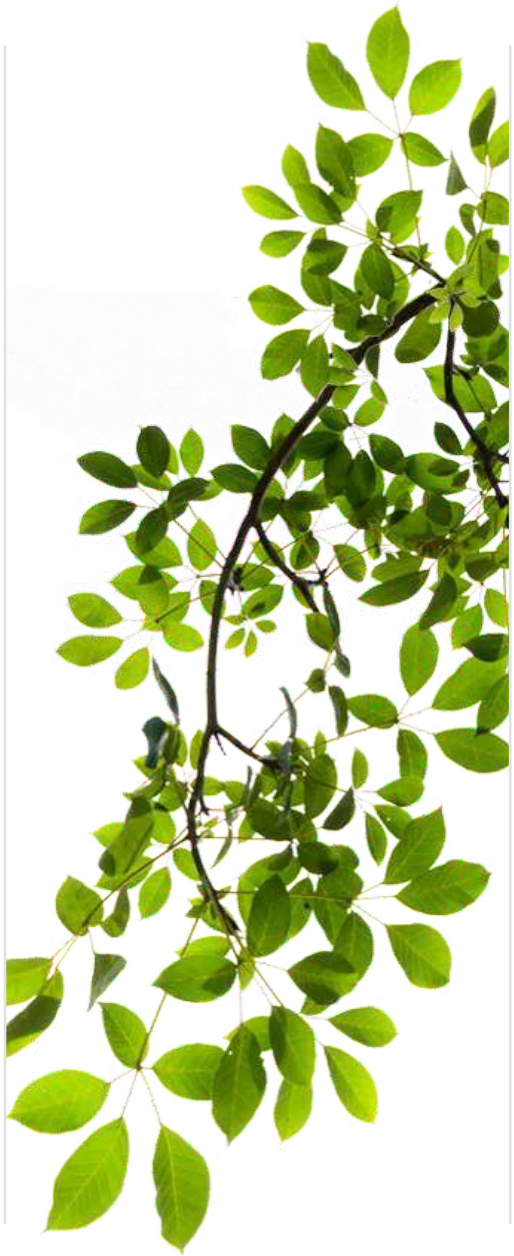
Control of vegetation in the airport environment

Not only can wildlife affect aeronautic operations, but also **vegetation control is needed to ensure the safety of the manoeuvres.** The measures we are carried out by mowing and cleaning bushes in the areas near the flight areas.

In addition, in some of our airports we have established agreements with farmers, enterprises and cooperatives to **promote the farming of their land.** Through these agreements we generate a mutual benefit, ensuring the maintenance of the vegetation to ensure operational safety while generating activity in the agricultural sector that represents a business opportunity for farmers and local businesses.

Therefore, through this initiative **we make our activity compatible with the development of nearby communities** surrounding our airports and the conservation of the environment.

We select culling characterized by plants of scarce height and that they do not represent a focus of wildlife attraction.

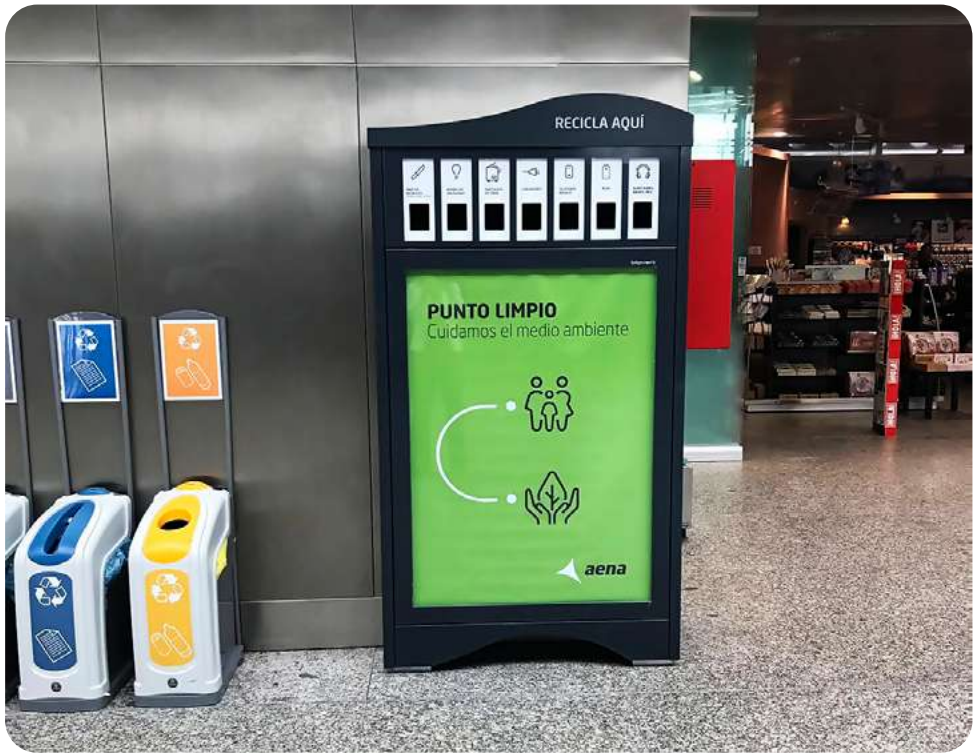


We collaborate in the conservation and animal recovery of marine wildlife

In Aena we have a **collaboration agreement with the Foundation for the Conservation and Recovery of Marine Animals (CRMA),** whose facilities are located on the land of Josep Tarradellas Barcelona-El Prat Airport. By means of this collaboration we seek to offer economic support to the Foundation in the carrying out of activities related to the conservation and preservation of marine wildlife, the education and awareness of the population, and the development of research projects.

This initiative is part of our Corporate Volunteering, by which **our employees participate and become directly involved** in the actions proposed by the CRMA Foundation. Thus, one of the activities in which the Aena staff has been able to participate has been the release of several sea turtles recovered so that they can return to their natural habitat.

Waste management



The daily activity of the airport generates, after one year, many tonnes of waste to be managed to preserve natural resources, reduce pollution derived from its accumulation and see to it that it is properly recycled.

Several of them can be assimilated to urban ones, but it also produces a lot of dangerous waste, the most representative being used mineral oils, batteries and cells, fluorescents, absorbers contaminated by the collection of hydrocarbons and empty contaminated containers, among others.

Therefore, at Aena we work to **ensure proper waste management** by setting the following priorities:

- **Reduce the waste generated by our activity.**
- **Decrease the generation of basic waste (remainder) in the facilities of airports, especially related to commercial activity.**
- **Control and monitoring of the different types of waste generated in all activities of the airport (control of contractors and dealers) to ensure correct separation, collection and management of external waste.**

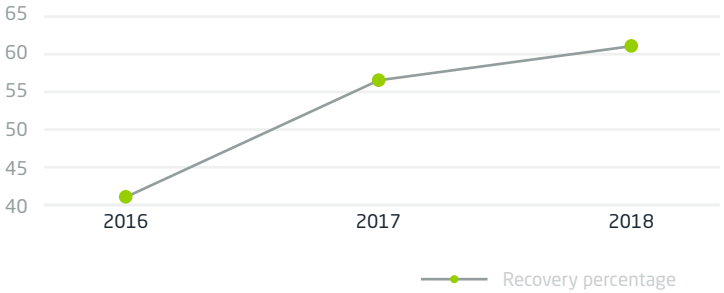
Several airports have the **transfer of non-hazardous waste plant**, allowing to concentrate and improve the conditions of their temporary storage, especially of the unsegregated fraction of waste, like domestic. Generally speaking, there are points for the **temporary deposit of hazardous waste,** all of which are pollution prevention measures according to their nature. In these areas, the waste is selectively deposited in containers until they are removed by authorized managers.

The environmental departments of the airports carry out an exhaustive **control of all waste generated** from its origin and storage until removal and transfer by an authorized manager for external treatment. Verification of the correct management of waste generated by Aena is carried out through the periodic monitoring of Operational Control from our activities. In the case of waste generated by contractors and dealers, the verification is carried out through regular monitoring of the Environmental monitoring of these companies.

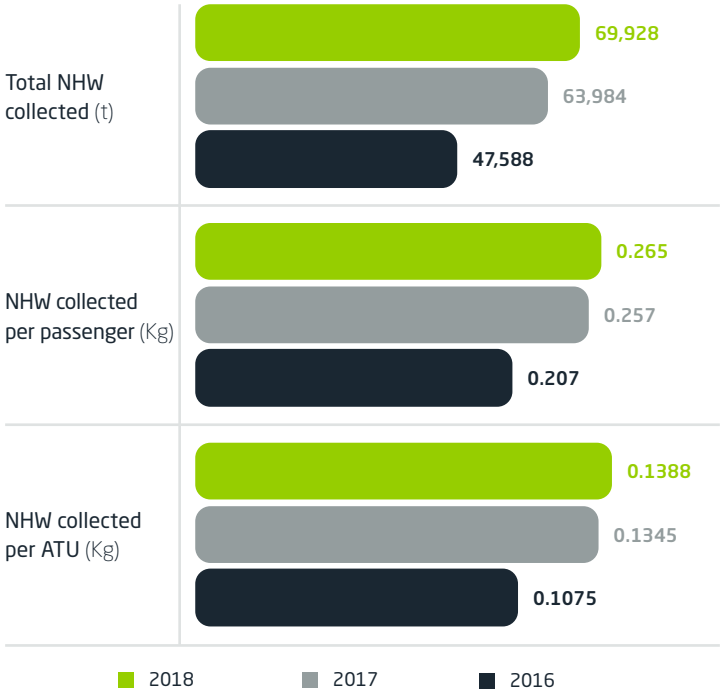
At Aena **we are committed to the recovery against the depositing of waste in landfills,** which corresponds to the trend increase in the percentage of waste recovered in recent years.

In addition, many airports reuse certain waste by giving it a second use with actions such as **the reusage of sewage sludge** as a fertilizer in garden areas or the **generation of compost,** in the case of Bilbao airport.

Recovery of non-hazardous waste



Non-hazardous waste (NHW) generated



60% recovery of NHW

We recover 60% of non-hazardous waste and 52% of hazardous waste that we generate for reuse as raw material or energy.

In 2018, **the recovery percentage of NHW in our airports increased by 2%** compared to 2017, reaching 60% of the total.

As for **hazardous waste (HW)** generated at our airport facilities, 650t were managed, an increase of almost 63% over 2017. This increase in the volume generated is largely due to the fact that the generation of certain waste is not constant every year. Batteries managed till the end of their shelf life as a result of the maintenance operations of UPS (Uninterrupted Power Systems) are an example of this annual variability. However, it is worth noting that the recovery percentage also has increased over the last year, to 52%.

A plastic-free planet

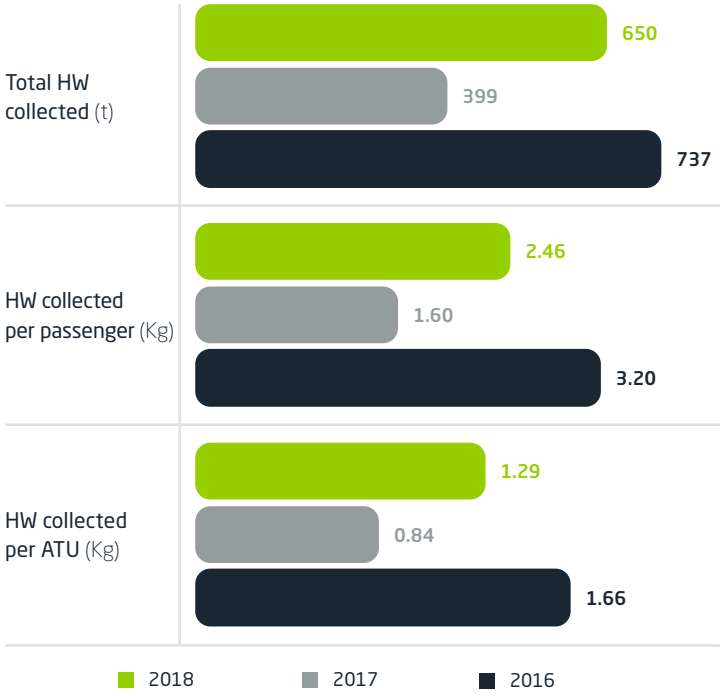
During 2018, the awareness of the problem of pollution by plastics garnered awareness. Adding to this concern, we have strengthened our commitment to the idea of achieving a planet free of plastics, developing initiatives related to the removal and management of this type of waste.

- **At the Adolfo Suárez-Madrid Airport.** The collection of plastic in its droveway coincided with World Environment Day under the hashtag "A planet #uncontaminated by plastic."
- **At Ibiza Airport.** Its employees have participated as volunteers in the cleaning of the beach area as part of the World Cleanup Day initiative. On this day, more than two tons of garbage were collected.

Likewise, the new renovation contracts progressively include a specific clause with the aim of reducing the volume of plastic waste generated, avoiding the use of single-use plastics and promoting the use of disposable products (made of biodegradable or recyclable materials).

Recovery of hazardous waste

Hazardous waste (HW) generated



Collaboration agreements

Waste management requires **collaboration with authorized** entities that implement specific management systems according to the type of waste. These entities are responsible for the subsequent collection and treatment of each fraction.

Therefore, at Aena, we have established **collaboration agreements with Ecoembes, Ecovidrio and ERP** to guarantee that our waste is managed appropriately. Another of the entities with which we collaborate is the Trinijove Foundation, which carries out the collection and segregation of recoverable waste at the Barcelona-El Prat airport.

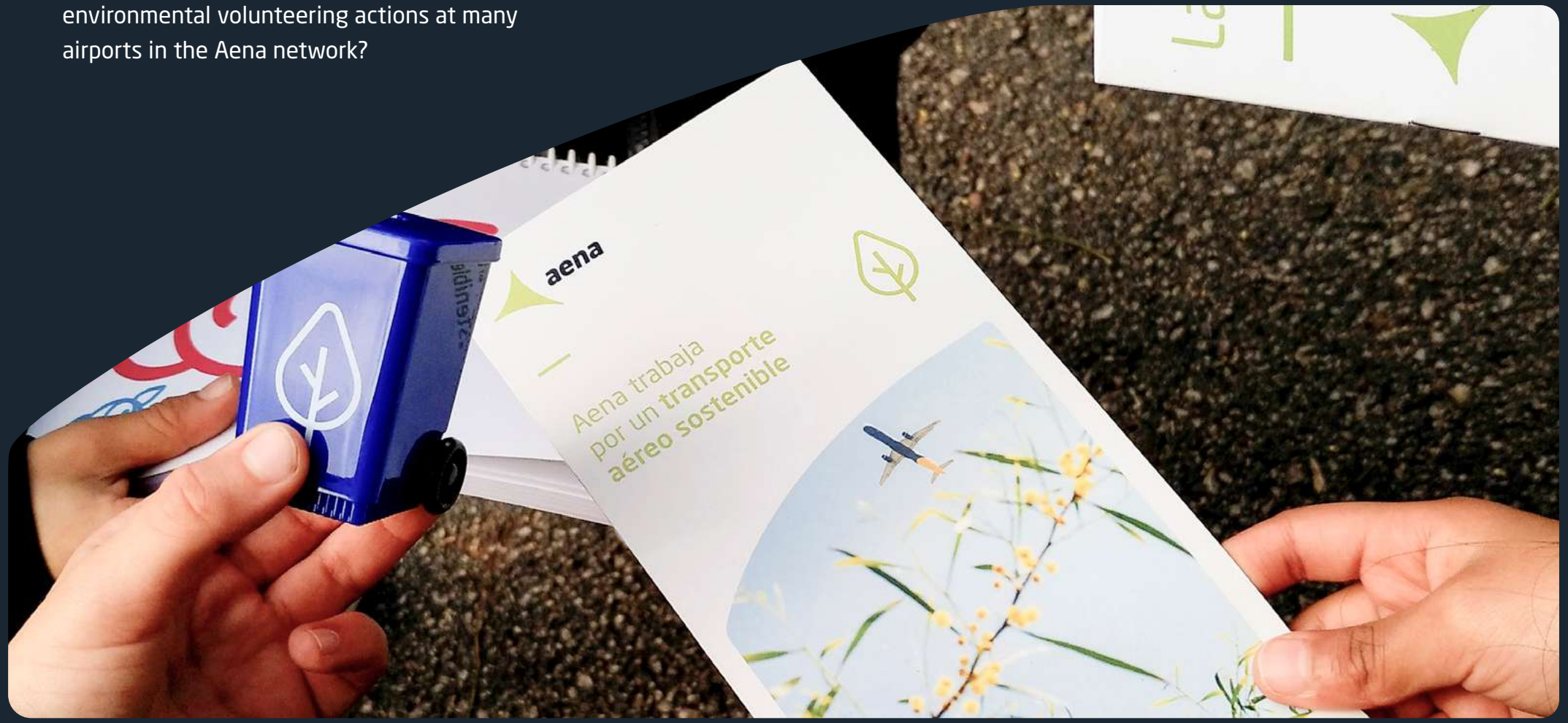
The collection system of Alicante-Elche Airport

This airport has a **waste transfer plant** in which the traditional waste collection and pneumatic collection systems converge. This plant allows for the storage of waste, avoiding contamination by applying preventive measures, depending on the type of waste in each case, until it is removed and transported to the authorised management points.

The pneumatic waste collection system with tubes over one kilometer in length, **automatically transfers the waste** similar to household waste that is produced in the terminal to the transfer plant.

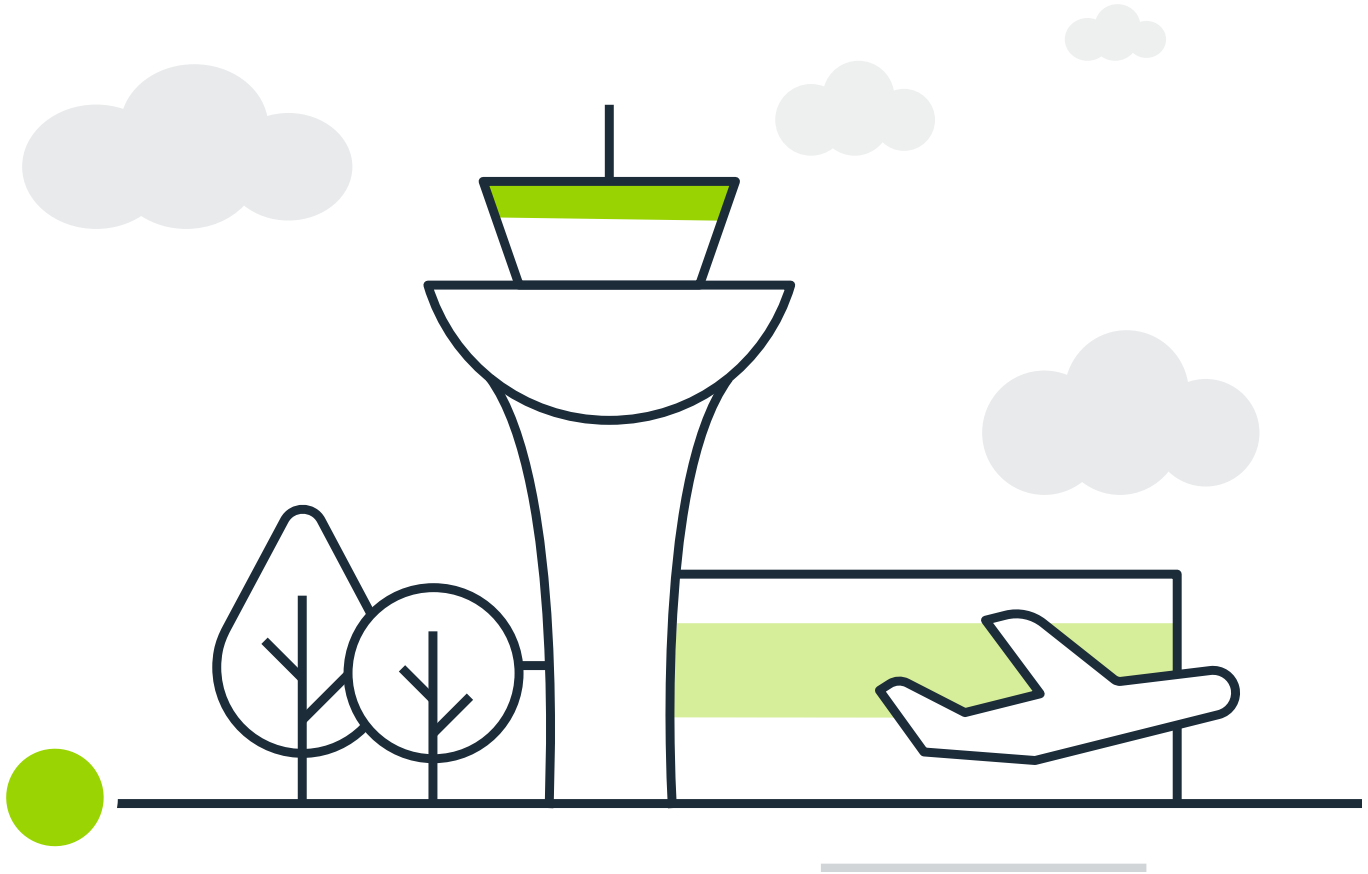
Communication with the environment

Did you know that June 5 is the day declared by the UN as World Environment Day and on this day, there are talks, exhibitions, contests and environmental volunteering actions at many airports in the Aena network?



Environmental tours

At Aena, we want to share with you how we carry out environmental management at our airport facilities by carrying out various initiatives. In addition, we make our commitment to the natural environment known to visitors, reinforcing their interest and concern for the environment.



For years we have been conducting **programs of guided visits to our airport facilities** for groups ranging from school groups to university students or retirees, among others.

This initiative is very useful **to raise awareness among airport users,** offering them the opportunity to discover how the airport works from the inside and the importance of the environmental management we carry out in our facilities as well as promoting care and respect for our environment. This makes our visitors understand and recognize the need to respect the environment, the measures that we carry out at Aena to achieve this and what is their role as users of the facilities to contribute to its conservation and good management.

The visits we receive have a great acceptance among the public, increasing in demand each year. Among the figures that confirm this fact, being the **9,257 people who participated in environmental visits** conducted in different airports of the network in the last year, dealing with performance issues explaining the mechanisms used to segregate and recycle waste and the wildlife control services we count on, among other environmental actions.

Outstanding environmental outreach activities

Exhibition of a **photographic exhibition about caving** at A Coruña Airport.

Production of a **video on falconry** at Alicante-Elche Airport.

Demonstrations with falconers during visits by schoolchildren in the facilities of the Badajoz and Vigo airports.

Exhibition on the rivers of the Basque Country at Bilbao Airport.

Installation of the **floral display "Temps de Flors"** in the arrivals area of the Girona-Costa Brava Airport terminal.

Monographic meeting about the Yellowlegged Gull at the Ibiza Airport.

Exhibition of the **photographic exhibition "Nature at a Click"** at the Adolfo Suárez Madrid-Barajas Airport.

Access to the transfer plant, with emphasis on the importance of recycling, in the visits to the Airport of Palma de Mallorca.

Conducting of a **workshop for the assembly of an airplane with recycled material** at Reus Airport.

We celebrate World Environmental Education Day at Lanzarote Airport

To celebrate this event, which takes place every year on January 26, we installed a **sustainable space at Lanzarote Airport** in collaboration with the Biosphere Reserve and Geoparks observatory.

Through this space, the **sustainable campaigns promoted from this airport** have been made known to the public. We also took the opportunity to inform about the environmental actions we carry out in its management, such as the reduction of greenhouse gas emissions, the use of alternative energies, respect for the environment in a protected area, waste management as well as the responsible use of natural resources.

Environmental awareness

In order to raise awareness among users, we distribute posters with messages on the efficient use of resources and protection of the environment, which we place in strategic locations at our airports.

Among the messages we seek to convey, we address issues related to saving water and energy, air quality prevention and waste management, among others.

Awareness Campaign against the plundering of rocks in Lanzarote

In relation to our concern for the environment, **we also collaborate in initiatives to preserve natural areas** near our facilities, as in the case of Lanzarote Airport, located on an island with an unparalleled natural heritage.

In Aena, we are committed to the protection of this exceptional environment and have collaborated with the Cabildo since 2016 in the **awareness campaign about the importance of conserving the geological heritage of Lanzarote,** mainly Timanfaya National Park, where tourists usually take rocks as a souvenir of their trip, which affects the conservation of this unique space.

Thus, all rocks requisitioned at the airport from tourists and those forgotten in rental cars are returned to the Cabildo or reused in educational centres on the island.

See more **in this campaign video.**

We participated at the XIII CONAMA

Last November 2018, the 13th edition of the National Environmental Congress was held, in which we participated in the dynamic forum **"The response in a sustainable manner to transport and infrastructure demands".** This forum made it possible to compare the actions and initiatives being carried out in the sector in terms of sustainability and the environment.

For our part, we referred to the **challenges and opportunities of sustainable tourism,** focusing on the measures we have taken to minimize environmental impacts, especially in relation to reducing noise impact and reducing greenhouse gas emissions.

FUNDACIÓN CONAMA

Dialogue and transparency

1,376 requests for environmental information

During 2018 **we addressed 1,376 applications in this area.**

3,555 received complaints

In 2018, of which **97.6% were regarding noise.**

Of the 3,470 complaints received related to noise, 83% referred to Adolfo Suárez Madrid-Barajas Airport and Barcelona-El Prat Airport, with a high percentage of these coming from the same claimant.

For this reason, we focus much of our activity on the management and minimization of acoustic impact, trying to improve and expand the measurement, control and minimization programs to reduce noise level in the airport environment.

At Aena, we are completely open to the opinions of the users of our facilities. In addition, we transform your complaints and claims into useful information to improve our services and meet your needs.

Specifically, we facilitate access to effective communication with the company by making the necessary **environmental care channels** available to users, from where we centralize and respond quickly and efficiently to requests for information, complaints and suggestions related to the environment.

In addition, we provide a direct **online channel** to facilitate a two-way communication, that anyone can use to ask a question quickly and easily through our corporate website.

Our environmental care channels

At Aena, we have channels that help to improve communication in the environmental issue:

WebTrak

Website link

Noise Insulation Plan Management Office (exclusively for consultations regarding soundproofing of homes)

915 903 170
oficina.paa@ineco.com
Website link

Aena's Environmental Care Office

Website link

OFIMA (Environmental Office of Adolfo Suárez-Madrid Barajas Airport)

913 936 710
OFIMA@aena.es
Website link

SAIM (Oficina Ambiental del Aeropuerto de Barcelona-El Prat)

932 971 203
saimbcn@aena.es
Website link