



# Updated report of the Climate Action Plan 2022



February 2023

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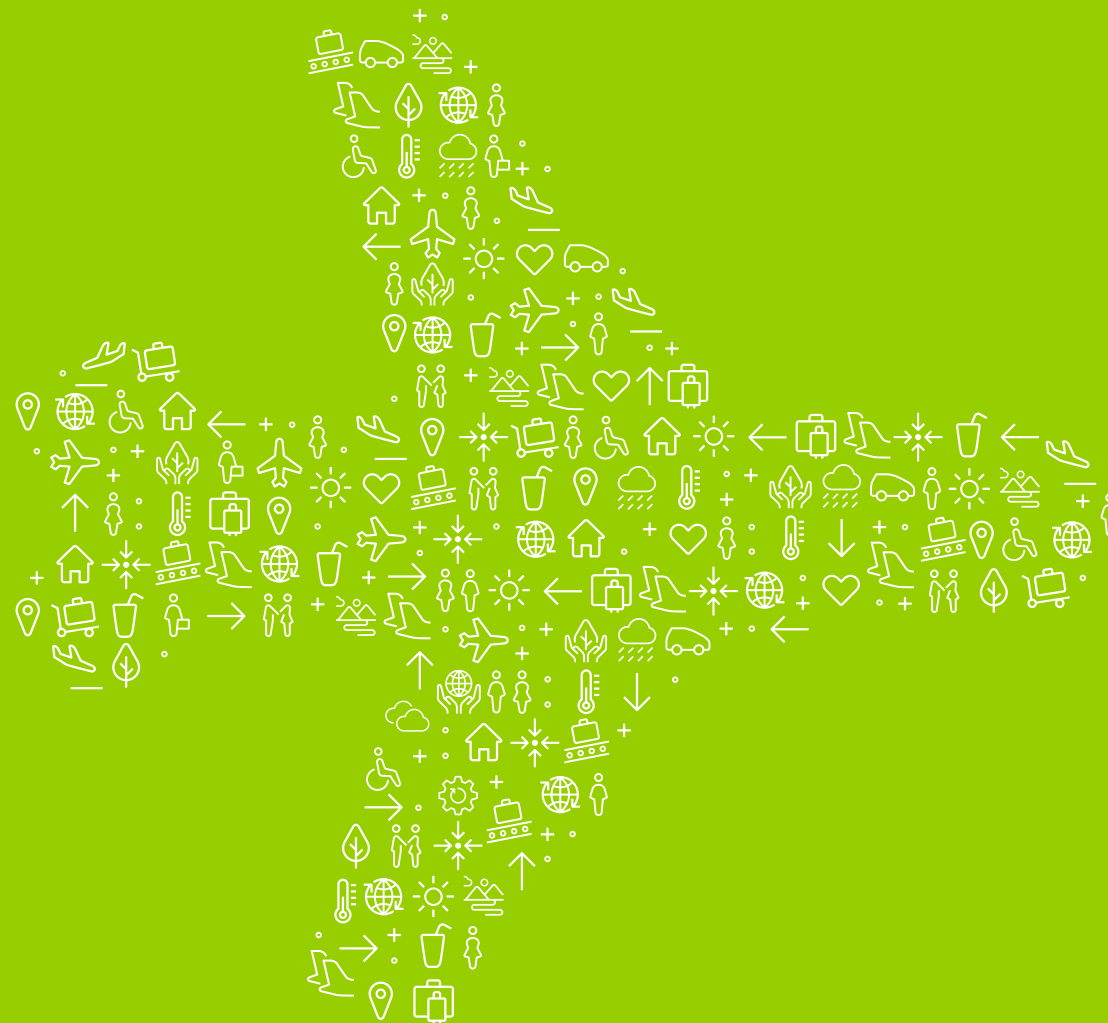
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# 1

## Context

Aena's promise to combat climate change is in line with the main European and national objectives for a low-carbon economy



# The time for action

**The air transport sector is beginning to take strong steps towards the objective of decarbonisation in order to address the need for the immediate, rapid, large-scale and sustainable reduction of greenhouse gases (GHG).**

COP27 took place this year, which made clear that the gap between where we should be and where we are, with regard to greenhouse gas emissions, human rights and geopolitical balance, is wider than ever. On top of this, there are complex situations with regard to war, geopolitics, energy, inflation and food. But in the face of so much uncertainty, there is one certainty: every increase in temperature that we fail to prevent, no matter how small, significantly affects our, and the planet's, subsistence.

Additionally, decarbonisation and energy management is now, and will be increasingly, a legal imperative, which is manifested by the European climate guidelines; and it is a geopolitical, economic and social imperative, in order to meet the objective of giving more energy independence to the continent.

But we must remember that the sustainability agenda entails investments which the public sector alone cannot provide. Corporate involvement is essential in order to act quickly, but certain conditions are necessary: an incentivising tax system and a clear, stable and secure legal framework for investment.

Additionally, guidelines related to due diligence in sustainability, which are currently being set, will mean that more companies, both inside and outside the EU, will start their path towards sustainability.

In this context, the financial sector represents a key driving agent for ecological transition, given the necessary investment needed to implement the necessary preventative and adaptive climate change measures.



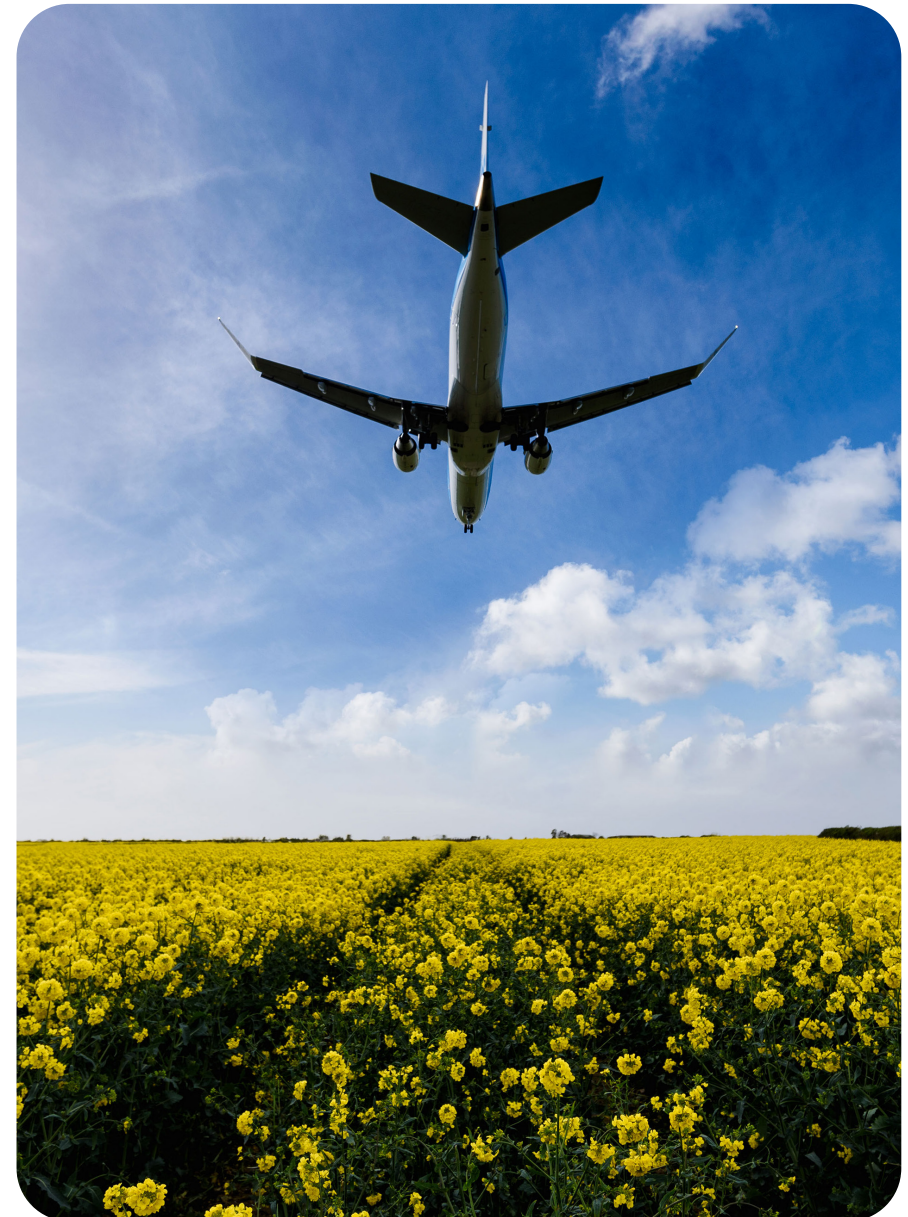


# A great challenge for the aviation sector

**The aviation sector, which is currently close to reaching pre-pandemic levels of traffic, has set the objective of reaching net zero carbon emissions by 2050. To achieve this objective, an increase in the following will be necessary: innovative aircraft technology, efficiency of flight operations and production and use of sustainable aviation fuel (SAF).**

Long-term adoption of this new objective by the States to achieve decarbonisation in the aviation sector, in addition to similar commitments made by industrial groups, will require the application of innovative technology solutions to be accelerated over the coming decades to ultimately facilitate zero-emission flights and airport infrastructure that can accommodate the new types of aircraft.

The great challenge of decarbonisation therefore requires conjoined efforts of all branches of the aviation sector ecosystem; aircraft manufacturers, airlines, airports, air traffic control... even energy providers and fuel producers. Aena will drive and facilitate this conjoined effort in order to realise the reduced emission commitments of the aviation sector.



# Europe as world leader in climate action

**The European Commission will provide industrial and societal support in transitioning to sustainability by promoting investment into new technologies, providing funding where possible and necessary, and reinforcing the corresponding legislature.**

The EC's **Fit for 55** Package aims to reduce net greenhouse gas emissions, compared to 1990 levels, by at least **55%** by 2030 and to reach carbon neutrality by 2050. For the transport sector in particular, the objective is to reduce greenhouse gas emissions by 90%.

This package includes proposals related to the European air transportation framework, such as the **ReFuelEU** aviation initiative which is expected to be approved over the course of 2023. The objective of this proposal is to increase both supply and demand of sustainable aviation fuels, including those of a synthetic nature, while also guaranteeing conditions for equitable competition in the air transport market across the EU. It is a far-reaching proposal aiming to integrate air transport into the EU's climate objectives for 2030 and 2050, given that sustainable aviation fuels are one of the main instruments that will facilitate decarbonisation in the short and medium term.

Another regulatory proposal is the so-called **Alternative Fuels Infrastructure Regulation (AFIR)**, which is expected to be approved over the course of 2023. Its objective, among others, is to guarantee an airport infrastructure that is conducive to recharging or refuelling with alternative fuels.

**Energy taxation** regulations are also being looked at, with changes for fuels that could mean the elimination of tax exemption in the aviation sector (for kerosene fuel).





In this framework of measures, in December 2022 a political agreement was reached on changes to the **EU Emissions Trading System (EU ETS)** rules on aviation. This agreement included, among other aspects, progressive elimination of free emission allowances for the aviation sector by 2026, evaluation of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) established by the International Civil Aviation Organization (ICAO) in order to ascertain whether the objectives of the Paris Agreement have been sufficiently met, and forecasting of a new aid system aimed at accelerating use of sustainable aviation fuels, which will be financed by an estimated € 1,600 millions in investments from the EU ETS.

Beyond this regulation package, there is another key initiative in the form of the 2020 **EU Sustainable Finance Taxonomy** which establishes a new classification of economic activities and is linked to the objective of incentivising the financial sector for capital to flow towards crucial investment that meets the needs of the European Green Deal.

The taxonomy is a classification system whose objective is to determine whether investments and economic activities are sustainable by their **eligibility**<sup>1</sup> or **alignment**<sup>2</sup> in relation to six environmental objectives:

- Mitigating climate change
- Adaptation to climate change
- Sustainable use and conservation of oceans, seas and marine resources
- Transitioning to a circular economy
- Prevention and control of contamination
- Protection and restoration of ecosystem biodiversity

To date, delegated acts relating to the mitigation of and adaptation to climate change have been published, for which Aena's 2022 Non-Financial Data includes economic indicators for the eligibility and alignment of its activities in relation to these two objectives.

### Main regulatory measure of the Fit for 55 EU package for aviation



#### Refuel AviationUE



#### Alternative Infrastructure for Aviation



#### Review of the EU Emissions Trading System



#### Review to the Regulations for Energy Taxation

<sup>1</sup> For an economic activity to be eligible for the Taxonomy it must be described in a Delegated Act, notwithstanding its compliance with one or several of the technical selection criteria.

<sup>2</sup> Alignment with the taxonomy refers to an eligible economic activity that: makes a substantial contribution to at least one of the climate and environmental objectives while also not significantly detracting from the other objectives; and complies with fundamental human rights and labour legislation



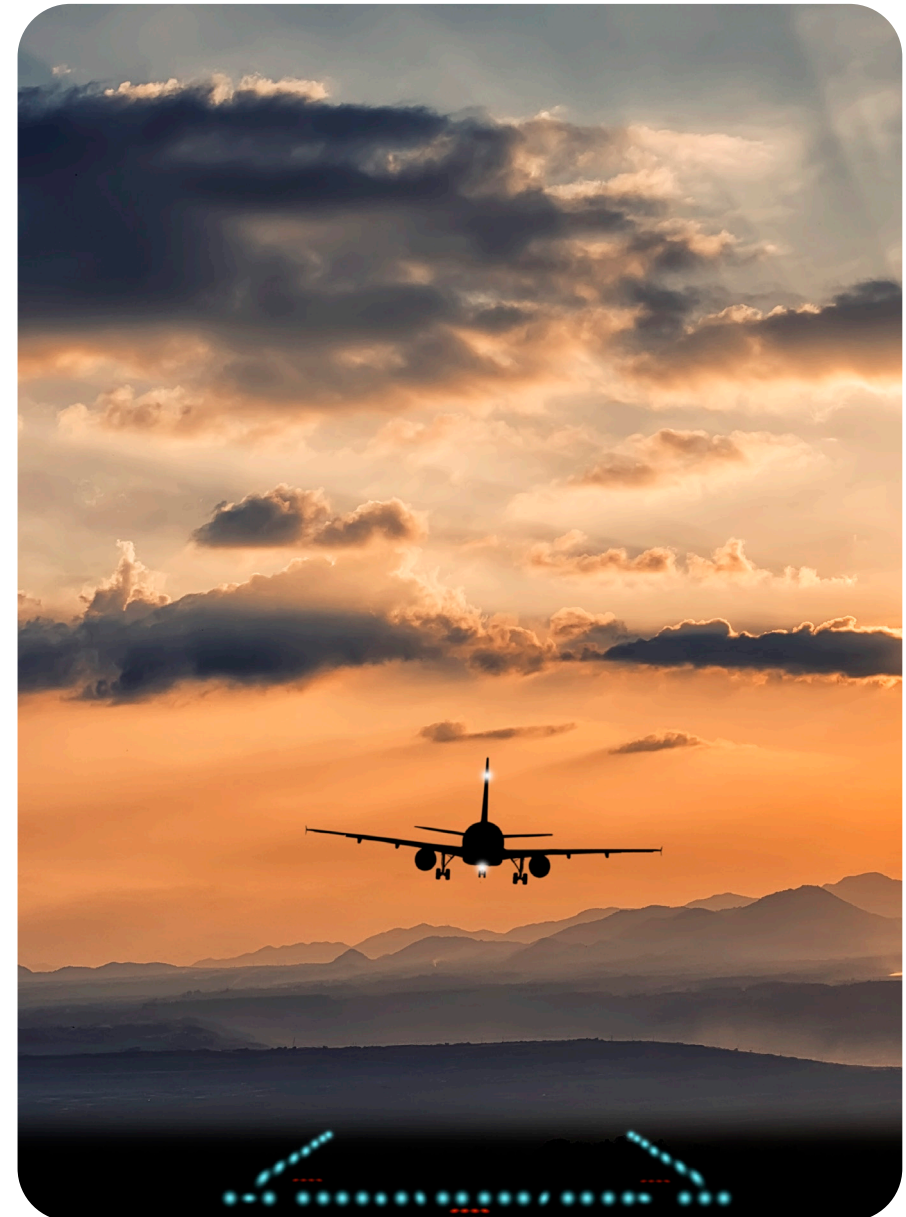
# Sustainable changes to aviation

A progressive return to normality in international mobility in the wake of COVID-19 entails recovery of the aviation sector and the economic and social benefits that air transportation and connectivity bring to people all over the world.

Among the benefits that come with air transport, encouraging tourism is one of the most economically relevant. According to the ATAG (Air Transport Action Group), prior to the coronavirus crisis the aviation sector created 44.8 million jobs and generated 1 billion dollars in global tourism. In Spain, tourism is one of the main sources of revenue, such that in 2022, **61% of economic growth in the Spanish economy was equal to 12% of the nation's GDP** in 2019. It must therefore be emphasised just how important the commercial role of air transport is, representing 35% of overall trade.

In this respect, the aviation sector will strive to guarantee that future generations can keep enjoying the air travel that connects us, broadens our horizons, opens up new cultures, and lets us be together and share experiences; but at the same time, it recognises that a future for air travel will only be possible if built sustainably.

This is why the aviation sector is undergoing a sustainable revolution, establishing specific objectives and driving action in key areas like innovation and new technologies to reduce CO<sub>2</sub> emissions. In this respect, Aena is aware that we have definitively entered a new era in aviation where sustainable fuels, electric aircraft and other developments will transform the way we fly; and it wishes to drive this revolution through collaboration with all relevant actors in order to keep bringing new unforgettable experiences to its passengers in a sustainable and emission-free way.



# Compliance with the main guidelines relating to climate change

This report includes information relating to governance, strategy, management of risks and opportunities, objectives, metrics and developments in relation to climate change, following the guidelines of the **Task Force on Climate-related Financial Disclosures (TCFD)**. In this respect, Aena supports the TCFD in joining this initiative together with the other company leaders committed to take action against climate change.

In this way, the regulations of the report on climate-related information from the **European Commission Directive 2014/95/UE of the European Parliament and Council** have been taken into account, which describes the political implications and risks of environmental issues.

On the other hand, in accordance with Aena's commitment to the **Science-Based Targets Initiative (SBTi)** for establishing science-based emission-reducing measures, the various measures and procedures collected in this report in relation to decarbonisation of airport activity and combatting climate change are in compliance with the requirements established by the SBTi. In this vein, in 2022 Aena has begun to define emission reduction objectives that comply with SBTi requirements, with the aim of submitting them for approval by the initiative in 2023.





# 2022 Highlights



**67% reduction** of Aena's scope 1 and 2 emissions compared with 2019, 7% higher than the target.



**Supply of 100% renewable electricity** with guarantee of origin for the 3<sup>rd</sup> consecutive year.



Level 3 (Optimisation) certification in the **ACI EU Airport Carbon Accreditation** programme for the three main airports in the network: AS Madrid Barajas, JT Barcelona-El Prat and Palma de Mallorca.



Verification of Aena's **carbon footprint** for 2021 (Scopes 1, 2 and 3)



Attainment of level A in the climate change survey of the  
**CDP (Climate Disclosure Project)**



Eligibility and compliance report on procedures  
classifying Aena's economic activities on the basis  
of the **EU Taxonomy** (60.8% eligibility and 36.6%  
alignment in revenues)



Bidding in **contest for best global baggage handling**, with a  
duration of seven years, which includes environmental criteria  
**in line with the CAP** in its specifications  
with a significant role in judging.



Approval of the update of the **Integrated  
Management Policy on Quality, Environment,  
Energy Efficiency and Work Health and Safety  
for Aena, S.M.E., S.A.** by the Board Of Directors.





# Partnerships, Alliances and Recognitions

## Adhesions and alliances

Aena plays an active role in the collaborations and accessions with third parties, and is involved in the following important national and international alliances which promote sustainable development and contribute to the fight against climate change. Among the main alliances:



### ACI's Net Zero 2050

ACI Europe's NetZero2050 initiative is an agreement between over 200 European airports which represents a milestone in the fight against climate change. Aena is part of this agreement, and has brought forward ACI's target of 2050 to 2040.



### Science Based Targets initiative

The Science-Based Targets initiative (SBTi) drives important climate change action in the private sector to guarantee that companies establish emission reduction objectives that are based on science. Aena has been committed to this objective since November 2021.



### Climate Ambition Accelerator

A programme driven by the UN Global Compact designed to give companies the necessary resources to establish emission reduction objectives based on science that comply with the 1.5°C scenario, in accordance with SBTi requirements, and to reach net zero by 2050. Aena has participated in the second edition of the programme together with 945 companies from 69 different countries.



### Clean Skies for Tomorrow Coalition

From the world economic forum, The Clean Skies for Tomorrow Coalition proposes a global mechanism that is crucial for the compliance of public leaders and executives, in the aviation sector and beyond, with a transition to sustainable aviation fuels as part of a significant and proactive effort to reach carbon neutrality in the aviation industry. Aena has been part of this coalition since mid-2021.





### Declaración de Toulouse

The first public-private initiative supporting European aviation's objective to reach net zero CO<sub>2</sub> emissions by 2050. This is also the world's first combined initiative of its type, bringing together all the relevant EU actors to decarbonise and transform the European aviation sector. Signed by 27 EU Member States plus 10 European Civil Aviation Conference Member States and around 150 companies and institutions (aircraft manufacturers, airlines, federations, unions, etc.) in the aviation and energy sectors, Aena among them, this declaration establishes a long-term plan for the sector with the objective of reaching net zero CO<sub>2</sub> emissions by 2050, in accordance with the EU's long-term climate objectives and with the Paris Agreement.



### European Clean Hydrogen Alliance

Driven by the European Commission, this initiative aims to contribute to the creation of a European sector for clean hydrogen that is robust, innovative and competitive, and which is fully capable of sustaining and implementing the energy policies outlined by the EU in its "A Clean Planet for all" publication. It combines technological knowledge and resources with funding from public and private sources. Aena has been part of this alliance since the beginning of 2021 with the objective of contributing to the development of green hydrogen in airports.



### Alliance For Zero Emission Aviation

An EU initiative to prepare the rollout of electric aircraft driven by hydrogen, in order to guarantee that air transport can contribute to the objective of carbon neutrality by 2050. Aena is represented by ACI Europe (leader in the Airport task force number 3) and participates directly in the task force number 4 for Regulation, Certification and Normalisation of Aviation.



### Renewable & Low Carbon Fuels Industrial Alliance

An EU initiative to drive the production and distribution of renewable low-carbon fuels in the aviation and maritime sectors. It is a key measure to drive the regulations of FuelEU Maritime and RefuelEU Aviation. Aena is a member of the alliance and gives expert participation in the alliance's task force number 2, Methods of production and supply in the aviation sector.



### Alliance for the use of H<sub>2</sub> in Spanish Aviation

An alliance, promoted by the National Institute for Aerospace Technology, which has the objective of promoting the use of hydrogen and compliance with the objectives of the hydrogen roadmap, with PERTE and with the EU's European Green Deal. Aena actively participates in the alliance and heads the Airport task force.



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forética

**Forética**

The organisation for sustainability and corporate responsibility in Spain. Its mission is to integrate social, environmental and good governance aspects in the strategy and management of companies and organisations. It is currently formed by more than 200 members.

**Recognitions and ratings**

Our commitment to sustainability is recognised and valued by various institutions and indices:

**CDP Climate Change (Climate Disclosure Project)**

A not-for-profit international organisation that assigns an environmental evaluation to companies that have a strategic plan for climate change. Aena obtained the maximum classification in 2019, 2020 and 2022 (A), which was above the average of its sector, which validates our strategy against climate change and our activities pursuant to it.

**Dow Jones Sustainability Index**

In the Sustainability Year Book annual publication, this index classifies companies that are most responsible for society and the planet, evaluating the ESG performance of the biggest companies of the world. To be listed in the Sustainability Yearbook a score of 15% or higher must be reached regarding sustainability performance in the relevant sector, as well as results at the same level as 30% of companies with best performance in the relevant industry. Aena has been included in the Sustainability Year Book both in 2022 and 2023. In last year's edition, there were only 708 companies, selected from among 7,800 companies from around the world.



FTSE4Good

**FTSE**

The FTSE Russell index evaluates Aena's annual sustainability, for which it obtained 4.9 out of 5 in 2022 thanks to its ESG performance.



## Certifications

Our commitment to sustainability is recognised and valued by various institutions and indices:



### EMAS Regulations

The Community Eco-Management and Audit Scheme (EMAS) facilitates the evaluation and improvement of the company's environmental performance and favours transparency.



### ISO 9001: Quality management System

It is based on customer satisfaction and the capacity to provide products and services that comply with the company's internal and external demands.



### EFQM model of Excellence and Quality in Company Management

A self-evaluation tool for establishing continued improvement in company performance.



### ISO 14064: Calculation of Carbon Footprint

Allows for verification and validation of greenhouse gas emissions of a company.



### ISO 14001 Environmental Management System

Allows the control and minimisation of impact on the environment that could be caused by our activities.



### Seal of carbon footprint reduction

Administered by the Spanish Ministry for Ecological Change (MITECO) to the Adolfo Suárez Madrid-Barajas Airport in relation to the registration of its carbon footprint calculation, as well as its carbon dioxide emissions (CO<sub>2</sub>), that it was able to reduce thanks to measures implemented by the company.



### Airport Carbon Accreditation

The carbon footprint certification programme of the Airport Council International (ACI), which calculates the carbon footprint of airports and the developments of their commitments to CO<sub>2</sub> emissions. Approximately 91% of emissions in the network are certified by this programme within the scope of the following levels in 9 airports.

#### 2022:

- Level 3 (Optimisation): AS Madrid-Barajas, JT Barcelona-El Prat and Palma de Mallorca.
- Level 2 (Reduction): Málaga-Costa del Sol, Lanzarote, Alicante-Elche, Menorca and Ibiza
- Level 1 (Inventory): Santiago

In 2022, the commitment to this level of certification attainment will be maintained for 2026.

#### 2026:

- Level 4+ (Transition) in AS Madrid-Barajas and JT Barcelona-El Prat airports
- Nivel 3+ (Neutral) in Alicante-Elche, Málaga-Costa del Sol, Ibiza, Menorca and Palma de Mallorca airports



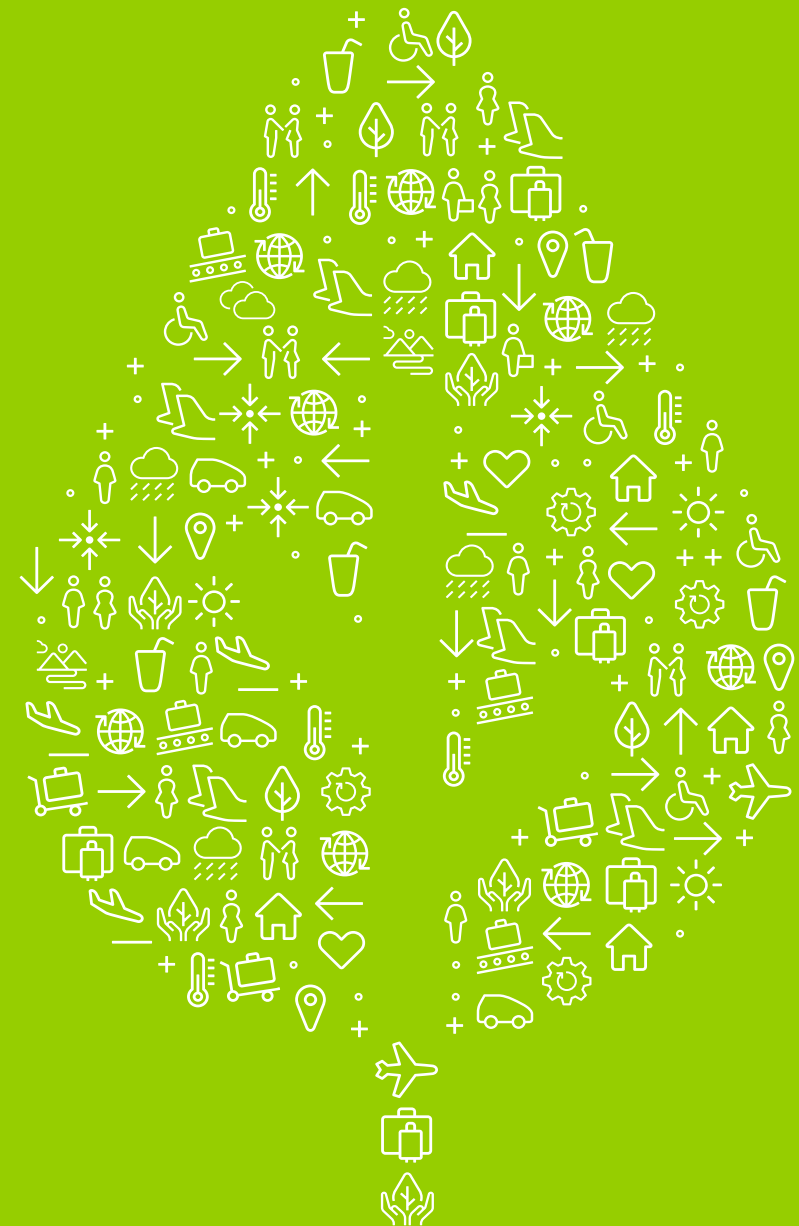
### Verification of corporate carbon footprint

In 2022, Aena's carbon footprint was verified in relation to 2021 according to the UNE-EN ISO 14064-3:2019 Regulation and in line with all the criteria of the GHG Protocol with a limited level of assurance

# 2

## Governance

The committment of Aena to the fight against climate change has been reflected in the implementing of executive measures and decision-making to ensure compliance with strategical objectives for decarbonisation





# Governance

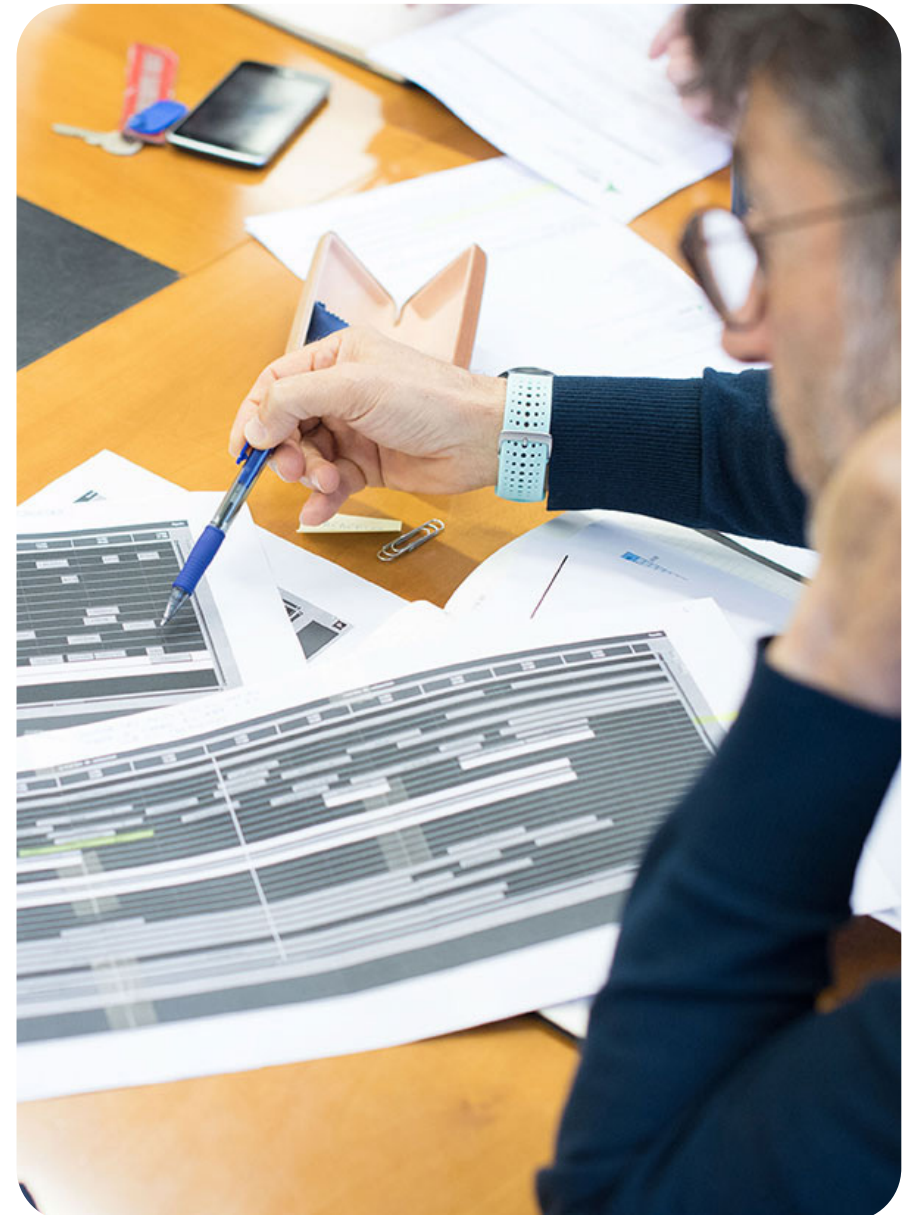
**The commitment of the Board of Directors to sustainability is formalised with Aena's Sustainability Policy. On this basis, the Board of Directors' measures include the promotion and enforcement of this internal regulatory framework, incorporating management in decision-making and ensuring the long-term commitment by the entire organisation.**

To guarantee the correct process and implementation of the Sustainability Strategy, the Sustainability and Climate Action Commission includes in its functions: recognising, driving, directing and supervising the objectives, plans of actions, practices and policies relating to society and the environment.

In this way, the company has an internal task force specifically created to unilaterally enforce the Strategy and support its implementation by promoting the active and direct involvement of all departments and employees.

The Climate Action Plan is integrated into the company strategy and counts on the support of our shareholders. As such, in 2022, the updated 2021 Climate Action Plan Report was approved, in consultation with the corresponding Shareholder Meeting, with 94.4% votes in favour.

In this way, Aena counts on the involvement of the Chief Green Officer (CGO), a role created by the Director of Innovation, Sustainability and Customer Experience of Aena with the main objective of incorporating the sustainability of all areas of business in the company and communicating, both to the Council and to employees, any update or development in relation to company sustainability via the established channels of communication.





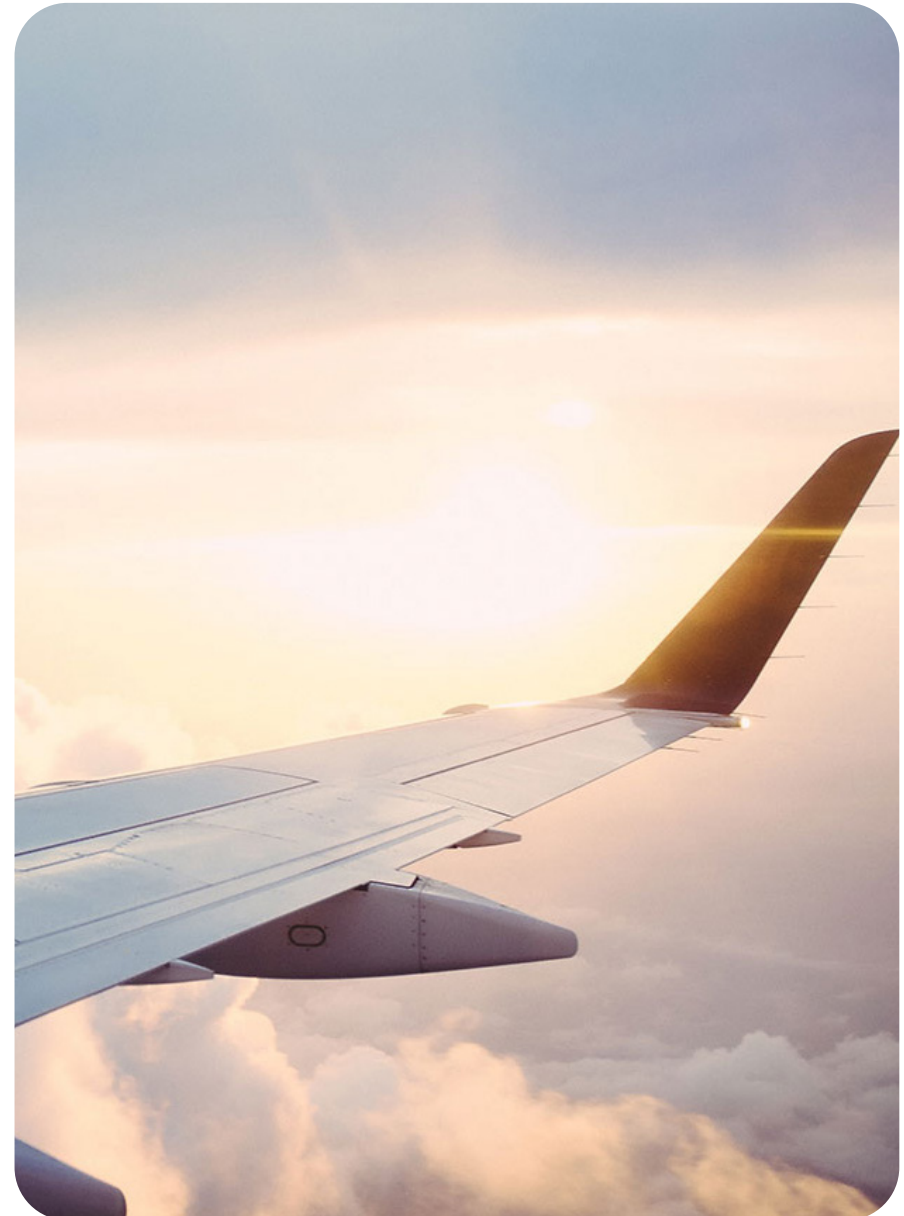
## Governance of the Climate Action Plan

The Sustainability and Climate Action Commission is responsible for quarterly revision of the correct development of initiatives laid out in Aena's Climate Action Plan. Furthermore, the Audit Commission participates in the revision of the environmental risk system, while the Commission for nominations and remunerations is responsible for establishing a retributive system which supports the enforcement of CAP. Finally, the results will be presented annually to the Board of Directors and will be subject to consultative vote by the General Shareholder Meeting.

Progressive compliance with the Climate Action Plan influences remuneration for all sectors of Aena in Spain, including the President, members of the Executive Committee and other Executives, in accordance with the performance management system.

In this respect, variable Bonuses of the CEO and the Managing Director of airports (maximum of 60% of base salary) depend on compliance with company objectives, among which are sustainability objectives (elaborated and proposed by the Climate Action Plan), which for the CEO will be weighted at 25% above 100% of company objectives (20% above 100% in 2021), and for the Managing Director of the Airport, at 25% above 50% of the company objectives (10% above 50% in 2021).

Additionally, regarding remuneration for Senior Management, variable bonuses will depend on compliance with company objectives, among which objectives related to the Climate Action Plan, which will be weighted at 25% above between 50% and 40% of weighted company objectives for Senior Management.





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## Function

## Frequency

## General shareholder meeting

Consultative voting and monitoring of Climate Action Plan

Annual

## Boards of Directors

Approval of CAP and annual and periodic supervision.

Directing and controlling the strategy, policies, objectives, risks and results of matters related to climate action.

Commission for Nominations,  
Remunerations and Governance  
Corp.

Audit Commission

Sustainability and Climate Action  
Commission

Annual

Annual

Quarterly

## Executive Committee

Monitoring of Climate Action Plan



Chief Green Officer

Making sustainability a fundamental factor in Company decision-making and communication both to the Board and the employees any updates or developments related to company sustainability via the established communication channels.

Bi-monthly

## Sustainability Committee

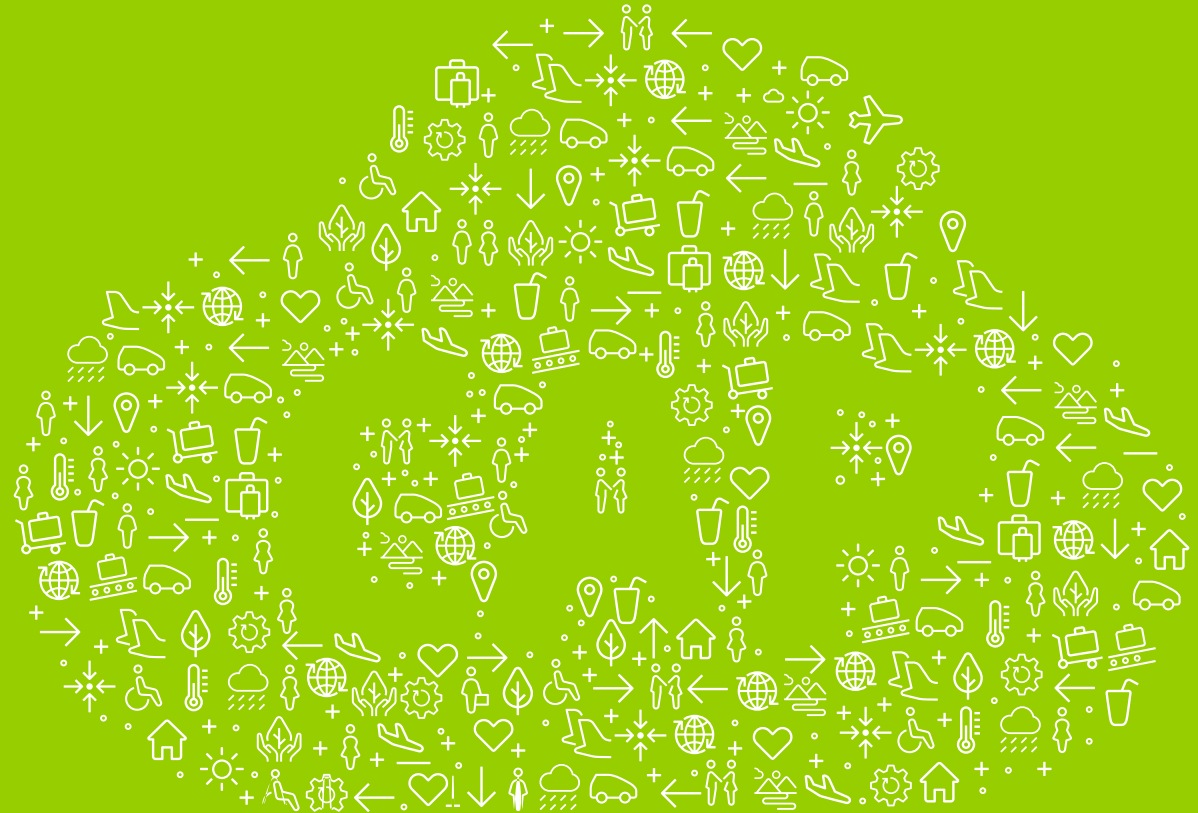
Elaboration and co-ordination of Climate Action Plan



# 3

## Strategy

Aena strives for the sustainable recovery of the sector through efficiency, innovative solutions and collaboration with third parties.





# Aena: a sustainable company

After overcoming the difficulties presented by the COVID-19 pandemic, the airport network has emerged stronger than ever, demonstrating its resilience and capacity to keep offering its services at **the highest levels of security, quality and sustainability**.

In the framework of recovery for the aviation sector, the pillar of sustainability has been prioritised, making use of technological resources and **adopting good practices**.

However, other important challenges persist and emerge, such as recovery of air-traffic control, the geopolitical climate and the energy crisis, all of which have implications for **the environment**.

As such, Aena's 2022-2026 Strategic Plan incorporates sustainability as a fundamental factor in the Company roadmap, prioritising it with regard to the environment, in line with what has already been seen in the DORA 2022-2026, the 2022-2030 Sustainability Strategy and its Climate Action Plan.

So, at Aena we take on the commitment to **drive change in combatting climate change**, lowering consumption of natural resources, reducing atmospheric contamination, protecting biodiversity, etc., reinforcing our action strategy in caring for our environment, managing capital flow and minimising the environmental impact of our activities.

In this sense, we strive to reinforce sustainability as the key strategy, creating conditions for sustainable development in Aena's airport network and establishing the necessary environmental standards to bring about a green recovery for the sector. This commitment is fundamental to our **2021-2030 Sustainability Strategy, in which**

## Aena's Action Plan will be integrated.

The Strategy, with investments of around **750 millions euros**, reinforces our commitment to respond to the ESG (Environmental, Social and Governance) challenges and megatrends, focusing on the management of risks and opportunities related to climate change.





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## Other reference frameworks

**Sustainability Policy:** defines and establishes the principles, commitments, objectives and strategy to follow for the Company in conducting its activities, optimising contributions to sustainable development, creating long-term value, maximising positive impact, and minimising negative impacts on society and the environment throughout its activities, through ethical and transparent conduct. Among the main general strategic principles are: integration of sustainability in all areas of business and administrative branches of the Company, transmitting this culture to employees, customers, providers, supply chains, partners, are other interested parties for sustainable management and compliance with social and environmental sustainability objectives by all companies involved in the Aena's activities. It also refers to minimising the environmental impact in transitioning to a circular economy that includes all activities.

**Integrated Management Policy for Quality, Environment, Energy Efficiency and Work Health and Safety (updated in 2022):** lays out the principles that serve as a guide and framework for the Company's environment-related activity, integrated with quality and work health and safety. Among them: ensuring the conservation of the environment and prevention of contamination, integrating criteria for sustainable development that contribute to reducing the impact of activities, promoting the sustainable use of resources and action against climate change in line with the objectives laid out in the current Sustainability Strategy. This Policy was updated in 2022 to incorporate new principles established by the main ESG analysts/providers such as DJSi and FTSE as well as the extension of its scope to other branches of the Aena group.

### Commitment to the SDGs

6 CLEAN WATER  
AND SANITATION7 AFFORDABLE AND  
CLEAN ENERGY9 INDUSTRY, INNOVATION  
AND INFRASTRUCTURE11 SUSTAINABLE CITIES  
AND COMMUNITIES12 RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION13 CLIMATE  
ACTION15 LIFE  
ON LAND16 PEACE, JUSTICE  
AND STRONG  
INSTITUTIONS17 PARTNERSHIPS  
FOR THE GOALS

### 2021 - 2030 Period

750 M€

Total investments  
in Sustainability  
Strategy

550 M€

Investments  
in Climate Action  
Plan



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## Structure of Aena's Sustainability Strategy

### Programmes

### Lines of action



#### Carbon neutrality

Renewable  
energyEnergy  
efficiencySustainable  
own fleetCarbon  
offsetting

#### Sustainable aviation

Clean aircraft  
propulsionEfficient  
flight operationsSustainable ground  
handling fleet

#### Responsible use of resources

Efficient water  
footprintCircular  
economy

#### Community and sustainable value chain

Sustainable  
mobilityCo-operation  
and awarenessAir  
qualityNoise  
managementBiodiversity  
preservation

#### Social commitment

Relationship with  
the communityPeople  
management

## Communication and transparency



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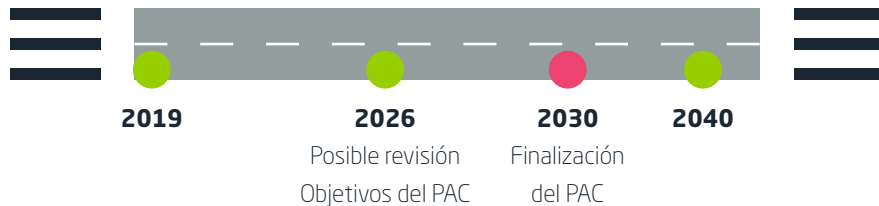
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# Roadmap for the Climate Action Plan

**The Climate Action Plan for 2021-2030\*:** The road to zero emissions reflects Aena's commitment to environmental conservation, decarbonisation and the climate emergency as key areas for management, and includes as objectives Net Zero Carbon by 2040 and reaching carbon neutrality by 2026, in line with the national and international regulatory framework (Paris Agreement, objectives and commitments outlined by the Spanish Government in response to the climate and environmental crisis, National Integrated Energy and Climate Plan 2021-2030, SDG and TCFD recommendations).

Base  
yearCarbon neutral  
airports by  
2026Net Zero  
Carbon  
2040

**The Plan is structured into three strategic programmes:** Carbon neutrality, sustainable aviation and sustainable community and supply chain, for which a range of processes and measure will be rolled out focusing on energy efficiency, use of renewable energy, sustainable mobility, reduction of third-party emissions and decarbonisation of processes and activities.

In fact, we wish to drive the transformation of other actors in the sector, such as aircraft manufacturers, airlines, air travel providers, fuel producers, baggage handling companies, etc., working with a task force created for the execution of projects with an integrative approach and common objective of decarbonisation of the sector to keep enriching it, keep connecting people, and all this while respecting the planet.

## Aena's Climate Action Plan: Strategic Programmes

**CARBON  
NEUTRALITY**  
Scopes 1 and 2



Becoming an airport operator that is carbon-neutral (2026) and paving the way towards Net Zero Carbon (2040)  
Total emissions of Scope 1 and 2

**SUSTAINABLE  
AVIATION**  
Scope 3



Driving other actors in the aviation sector to accelerate their decarbonisation  
LTO emissions and ground handling emissions

**SUSTAINABLE  
COMMUNITY AND  
SUPPLY CHAIN**  
Scope 3



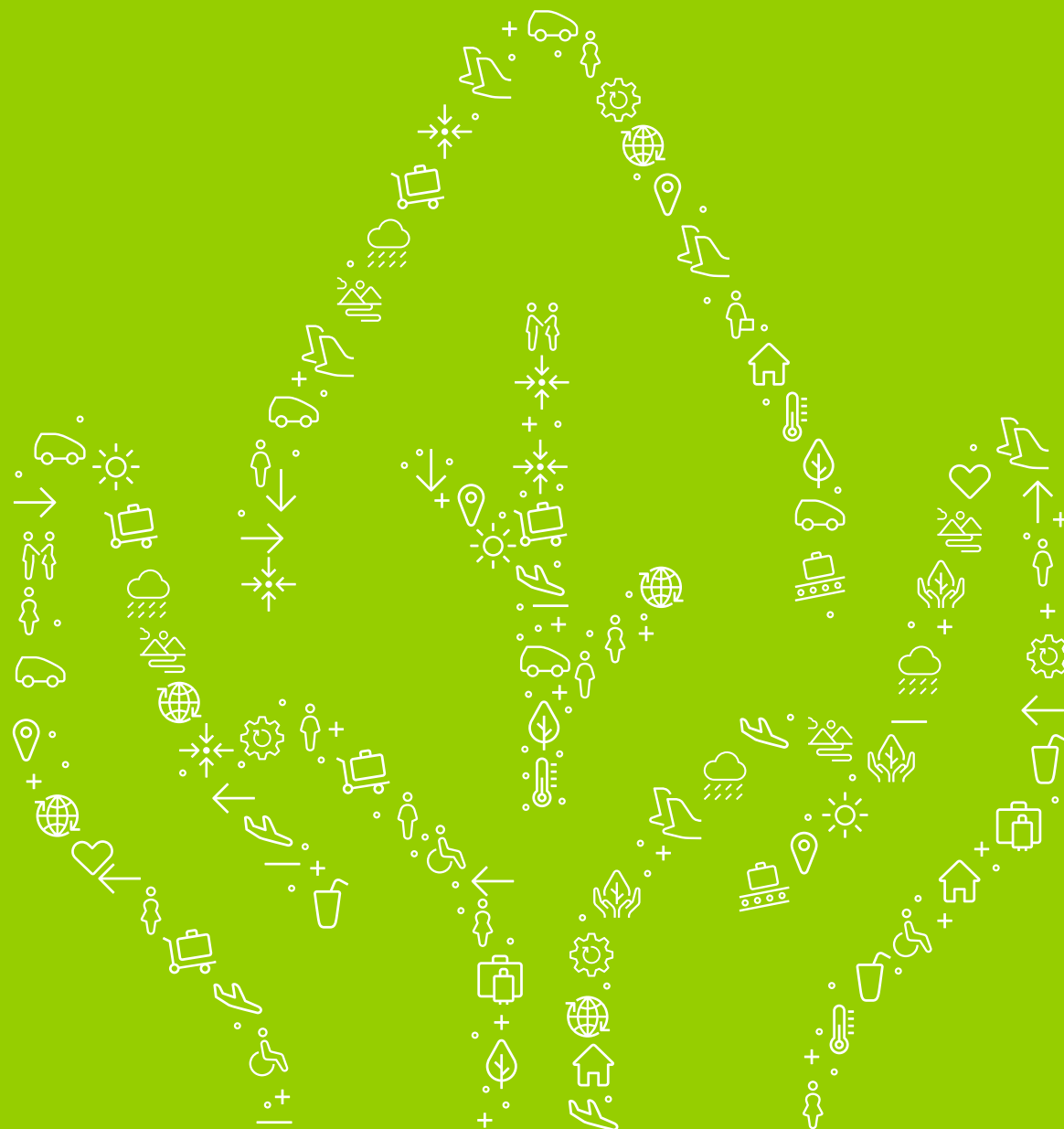
Improving the sustainability of our ecosystem by collaborating with suppliers, tenants, transport agents and the community  
Transport emissions to/from airport

\* Aena's Climate Action Plan includes airports in the Spanish network except Murcia International Airport (AIRM)

# 4

## Risks and opportunities linked to climate change

Analysis and management of risks associated with climate change at Aena follows the TCFD guidelines to facilitate better understanding of the impact of risks and opportunities on our business





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# Risk Management

**The Risk Control and Management Policy assures the implementation of a specific framework for the management of risks inherent to activity in the sector in which we operate, as a fundamental pillar of our strategy.**

We consider the management of risks in a wide sense which means all corporate branches, as well as different governance bodies, participate in the process of identification, analysis, evaluation, evaluation and control of risks

In line with the corporate commitments and objectives for the environment already established, integration of risk analysis in risk management is key for identifying, preventing and mitigating the various strategic impacts of the above in the fight against climate change, as well as identifying new opportunities.

## Risk management organizational structure



### Board of Directors

Defines, realises and approves the Risk Control and Management Policy



### Audit Commission

Supervises the internal control and risk management systems, ensuring that they are identified, manages and maintains projected levels.



### Corporate management

Identify and evaluate the risks under its area of responsibility, proposing and executing plans of action for mitigation and information on the efficiency of said plans.



### Internal Audit Management

Supervises the correct functioning of the Risk Management System, homogenises and consolidates the information relative to the identification and evaluation of risks (and to the corresponding follow-up actions) and reports to the Management Committee and the Audit Committee





# Physical and transition risks and opportunities

Following the recommendations by the **Task Force on Climate-Related Financial Disclosures (TCFD)**, we analyse the climate risks, differentiating between physical and transition risks and opportunities, considering the following climate scenarios.

- **Scenario RCP 8.5 (Business as Usual scenario):** Corresponds to a trajectory by which emissions keep increasing at the same rate as now, causing global warming that will probably not rise above 4°C.
- **Scenario RCP 4.5 (scenario of strong mitigation):** Corresponds to a trajectory by which emission will have reduced in half by 2080 and it is very likely that global warming will not rise above 2°C.

To analyse the potential risks for air traffic, we used climate scenarios of the International Energy Agency that show information, data, and projections relative to air traffic in various timelines. The study has been centred on the following climate scenarios:

- **Scenario B2DS (Beyond 2 Degrees Scenario):** A scenario whereby in 2100 the difference in global temperatures will be around 1.75°C with respect to preindustrial levels.
- **Scenario 2DS (2 Degrees Scenario):** A scenario that forecasts an increase in temperature limited to 2°C.





- **RTS Scenario (Reference Technology Scenario):** A less restrictive scenario, with environmental policies and agreements at the level of the current ones (Paris Agreement, Green Deal, etc.), but that have not been in a mass technological rollout that would occur in the previous scenarios.

These environmental risks are identified in the Company map of risks. As such, risk management will take place through the corresponding mechanisms, which include proper supervision, monitoring and control through specific indicators and measures related to CAP compliance.

In 2022, we began to update and amplify study of climate risks and opportunities in the Spanish network, previously realised, by quantifying potential economic, operational and reputational impacts:

- **Physical risks:** infrastructures or management of transport services can be affected in the medium/long term by an increase in temperatures, most frequent heatwaves, extreme precipitation, and rising sea levels and river or coastal flood risks. In this case, implementation will entail, among others, an increase in operating costs (climatisation costs, for example), or the need to incur investments for extending runways in some airports that avoid operative restrictions, protection of structures from extreme precipitation or rising sea levels, etc.

In this respect, the Company has specific means for mitigation of and adaptation to climate change that will be complemented by those derived from updating of risk and opportunity assessment for climate change that are being developed: this consists in concrete measures with the aim of reducing environmental impacts that are negative resulting from airport activity and developing public transport that respects the environment, which will also promote collaboration of airlines with other interested parties.

Adaptation measures: specific measures for airport adaptation to forecast developments in the climate, possible impacts of climate change and possible effects on infrastructure and airport operations, evaluated during the strategic environmental evaluation of

Management Plans. This analysis relates to interim timelines pursuant to forecast development.

In this way, there are procedures to minimise the impact of emergency situations, for example, meteorological and geological events that affect aircraft and/or operation structures. So, each airport has Plans of Action to respond to adverse meteorological situations, like the Winter Plan, which established procedures to follow to maintain operative security and minimise the impacts caused by ice and snow on air traffic. For the winter campaign started on 1 November 2022, the Plan is assigned approximately 2.2 millions euros.

Regarding geological events, in the case of airports near areas at risk of volcanic eruptions, there are procedures for mitigating the effects of ash.

- **Transition risks**, that can affect the Company in the short, medium and long term:

- **Regulatory risks:**

- Extension of scope and reinforcement of EU ETS.
- Normative package of EU's Fit for 55.
- Flight prohibition with AVE alternative.

- **Technological risks:**

- Substitution of aircraft with new technology.
- Participation in the SAF production project.
- Reduction of emissions in airport operations.
- Green airport infrastructure.

- **Market risks:**

- Economic recession due to energy crisis.
- Reputational risks.
- Stigmatisation of the sector.
- ESG investment.
- Non-compliance with Net Zero commitments.



• **Opportunities:**

- Implementation and generation of renewable energy with low emissions to establish a new consumption model that reduces energy dependence.
- Driving a market of sustainable aviation fuels by SAF production.
- Promoting industrial alliances and agreements that are public-private, as well as local communities for the development of low-emission projects.
- Expansion of new markets for alternative transport.
- Development of services adapted to changes in preferences for the consumer.
- Improvement of position of capital in markets, participating in sustainability indexes and climate certification



## Analysis of risks and opportunities related to climate in Spain



### Physical risks

- Increase in temperature.
- Heatwaves.
- Extreme precipitation.
- Rising sea levels.



### Transition risks

#### Regulations and legislation

- Extension of cover and reinforcement of EU ETS.
- Normative package of EU's Fit for 55.
- Flight prohibition with AVE alternative.

#### Market

- Economic recession due to energy crisis.

#### Reputation

- Stigmatisation of the sector.
- ESG investment.
- Non-compliance with Net Zero commitments.



### Opportunities

- Implementation and generation of renewable energy with low emissions to establish a new consumption model that reduces energy dependence.
- Driving a market of sustainable aviation fuels by SAF production.
- Driving industrial alliances and public-private agreements, as well as local communities for the development of low-emission projects.
- Expansion of new markets for alternative transport.
- Development of services adapted to changes in consumer preferences.
- Improvement of position of capital in markets, participating in sustainability indexes and climate certifications.





# Metrics, objectives and development

Aena calculates its carbon footprint each year to evaluate the impact of its activity on climate change, monitoring the evolution of its environmental performance in relation to climate change and evaluating the effectiveness of adopted measures in the fight against climate change.

For the calculation of 2022 emissions, we have used current emission parameters, which are calculated each year. Aena's emission accreditation comes from the annual programme of **Airport Carbon Accreditation** for the main airports, in relation to approximately **91%** of emissions in the network since 2020.

In addition to this accreditation, in 2022 it obtained accreditation of the network carbon footprint of Spanish airports in 2021 in relation to CO<sub>2</sub> emissions (scopes 1, 2 and 3) based on the UNE-EN ISO 14064-3:2019 Regulation and the GHG Protocol criteria.

The method of calculation is based on the GHG Protocol. The calculation of Scope 2 emissions is made according to market-based criteria, which takes into account residual electrical mix for non-renewable energy and the conversion factor for previous electricity from renewable sources with certified origin energy is zero.

## Emission of greenhouse gases (Scope 1, 2 y 3) (tCO<sub>2</sub>e).

	2019	2020	2021	2022	Reduction 2022 vs 2019
Scope 1 emissions	22,769.6	17,112.5	14,313.6	17,603.9	-22.69%
Scope 2 emissions	113,860.9	26,199.3	31,870.9	26,974.2	-76.31%
Scope 3 emissions	3,866,448.1	1,870,884.6	2,242,058	3,326.005	-14%



## Scopes 1 and 2

### Description of Scope 1 and 2 categories of the carbon footprint of Aena:

The categories of Scope 1 and 2 included below are based on those established in the ACI EU Airport Carbon Accreditation Programme.



**Scope 1 emissions:** Direct emissions coming from sources of processes and activities controlled by Aena in its premises, such as emissions from heating systems, fire extinguishing services or from fleet vehicles.



**Scope 2 emissions:** Indirect emissions produced by the generation of electricity or thermal energy in airports

### Aena's energy consumption

Emissions of greenhouse gases are calculated based on consumption of fuels and energy by the company.

**Note:** Emissions of greenhouse gases are calculated based on consumption of fuels and energy by the company.

### Aena energy consumption (GJ)

	2019	2020	2021	2022
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### Fuels (Scope 1)

Gasoil/ Diesel	175,238	128,154	109,872	129,780
Gasoline	2,297	1,907	2,044	1,947
Natural Gas	164,590	132,092	105,999	138,313
Propane	851	551	558	554
Kerosene	2,661	1,501	2,054	1,542
<b>Subtotal</b>	<b>345,637</b>	<b>264,205</b>	<b>220,526</b>	<b>272,136</b>

### Energy (Scope 2)

Electricity	3,447,151	2,591,629	2,907,297	3,362,980
Heating/ Cooling	623,144	522,762	605,816	624,396
<b>Subtotal</b>	<b>4,070,295</b>	<b>3,513,095</b>	<b>3,513,095</b>	<b>3,987,376</b>

<b>Total</b>	<b>4,415,932</b>	<b>3,378,596</b>	<b>3,733,621</b>	<b>4,259,512</b>
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## Scope 3

At Aena, we are aware that airports are responsible for a small part of sector emissions, which is why we are driving the transformation of the entire sector, promoting collaboration and implementing innovative solutions for all key actors, such as airlines and handling companies, as well as employees and passengers at our airports. So, our road towards decarbonisation of the sector also involves reducing Scope 3 emissions related to third parties.

The categories applicable to Scope 3 are established based on sections from the CDP (Carbon Disclosure Project) survey on climate change, as follows:

### Description of Scope 3 categories of Aena's carbon footprint:

**Use of goods and services:** Includes all "upstream" emissions from the production of all goods and services bought or acquired by Aena. This includes goods (tangible products) and services (intangible products)

**Capital Goods:** Includes all "upstream" emissions from the production of all the capital goods bought or acquired by Aena. Capital goods are those end products that have a useful long life and are used by Aena to fabricate a product, provide a service, and store or deliver goods. In accounting capital goods are those treated as fixed or implanted assets, property and equipment. For example: computer equipment, machinery, buildings and vehicles

**Investments:** In this category are included emissions associated with investments made in international airports in 2021.

**Activities related to energy production:** Includes emissions related to the production of energy of fuels acquired and consumed in the period of the report that were not included in the footprint of Scopes 1 and 2 (emissions derived from the use of fuels and consumption of electricity). Scope 1 includes use of fuels by controlled or owned sources. Scope 2 includes emissions derived from use of fuels to generate electricity, vapour and urban heating, that have been acquired or consumed.

**Residues generated during operation:** Including deposit emissions and treatment of residues generated in our operations in the annual report. This category includes both solid and liquid residues.

**Work trips:** Including deposit emissions derived from travel by employees for work and business activities in vehicles owned by Aena or operated by third parties such as airplanes, trains, buses, etc

**Employees travelling to and from work:** Including emissions due to employee transport to and from work. Can be due to:

- Travel by car
- Travel by bus
- Travel by train
- Travel by underground train
- Others (e.g., bicycle, walking, tram).



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**Assets leased to the company:** Includes emissions from the operation of assets that are leased to Aena, which for the most part are treated as owned and are included in Scopes 1 and 2. Those not included are included in this category.

**"Downstream" transport and distribution:** Includes all emissions of "downstream" transport. In our case, this includes passenger travel to and from airports, as well as distribution of goods to the closest depot

**Use of services provided by the company:** Includes emissions caused by the user or consumption of goods or services sold.  
As our customers we consider: airlines, handling operators and passengers. The use of services by passengers is included in emissions of Scope 1 and 2, since it corresponds to the use of services of installations (lights, air conditioning, water, etc) that were already included in the inventory for Scopes 1 and 2 or in other categories of Scope 3.  
In the case of airlines and handling operators, included in this category are emissions caused by take off and landing of airplanes\* (LTO cycle), auxiliary power units (APU) and emissions caused by activities of handling operators in Scope 3.

**Calculation of Scope 3 emissions** is made according to the **Corporate Value Chain (Scope 3) Accounting and Reporting Standard** published by **GHG Protocol Initiative**.

### Evolución de emisiones Alcance 3 (tCO<sub>2</sub>e)

	2019	2020	2021	2022
Acquisition of goods and services	364,289	211,438	242,184	325,26
Capital goods	388,463	416,448	356,485	254,361
Activities related to the production of energy (not included in scope 1 o 2)	38,730	5,298	8,653	12,228
Residues generated during operation	15,717	7,298	3,625	4,922
Work trips	3,949	2,661	1,760	1,540
Travel to and from work by employees	3,367	1,275	2,523	2,036
Assets leased to the company	37	Non material	38	87.79
Downstream transport and distribution	611,323	143,885	130,749	638,907
Use of services provided by the company				
LTO Cycle	2,327,368	1,019,117	1,431,664	1,859,373
APU	58,490	22,577	31,438	51,371
Handling	30,754	18,288	19,485	32,164
Investments	23,960	22,600	13,453	97,908
<b>Total</b>	<b>3,866,448</b>	<b>1,870,884</b>	<b>2,242,058</b>	<b>3,326,005</b>

**Note:** From the latest information published in the national inventory of emissions of MITECO.





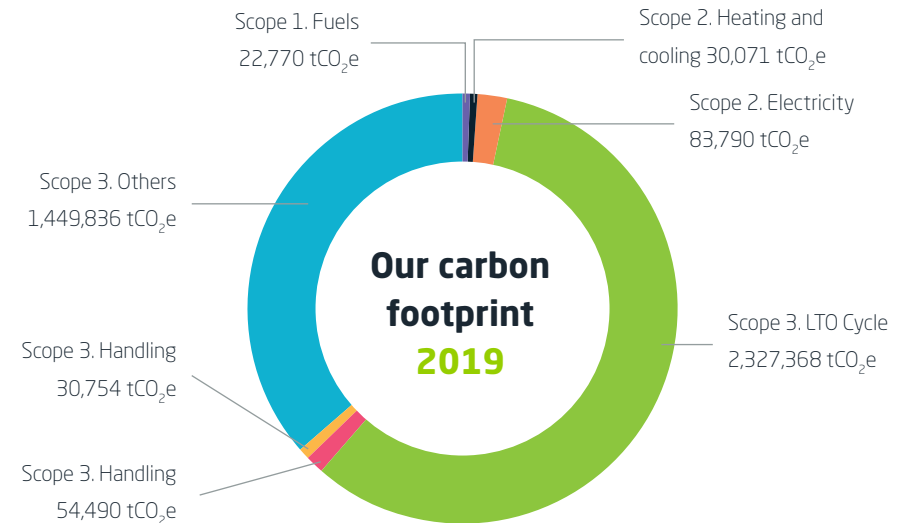
Reductions in Scope 1 relative to 2019 reached 23%, thanks to the implementation of mitigation and efficiency measures that allowed for the reduction in energy consumption in our premises.

Reduction in Scope 2 emissions achieved in 2022 relative to 2019 is 76%, mainly thanks to 100% acquisition of electricity with guaranteed renewable origin and less consumption of natural gas by the trigeneration plant concessioned to SAMPOL in Madrid airport.

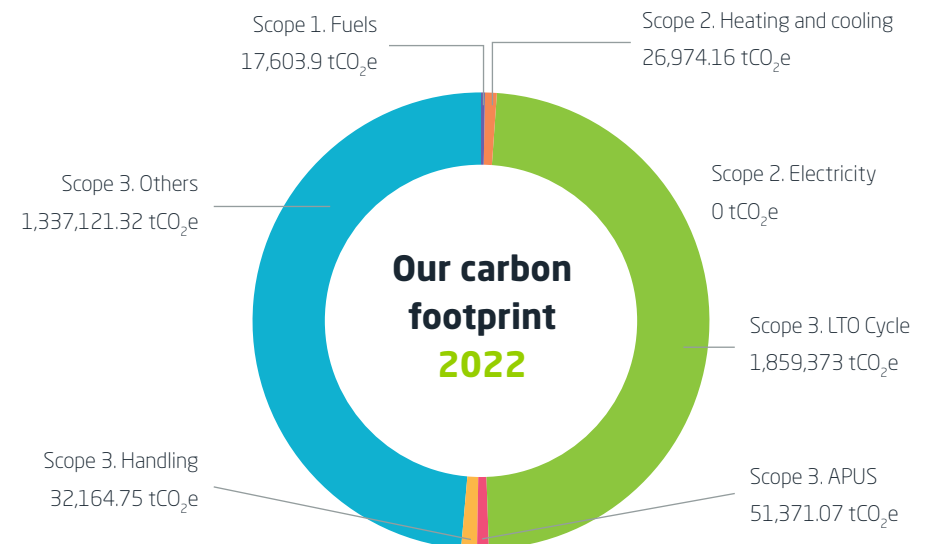
The reduction in Scope 3 carbon footprint in 2022 relative to 2019 was 14%, mainly thanks to the reduction in traffic, as well as collaborative initiatives with third parties implemented in 2022.



### Total emissions for 2019 (tCO<sub>2</sub>e)



### Contribución de emisiones año 2022 (tCO<sub>2</sub>e)





# Objectives and measures in 2022 reduction in emissions of Scope 1 and 2: Carbon Neutral Programme

## 2022 objectives

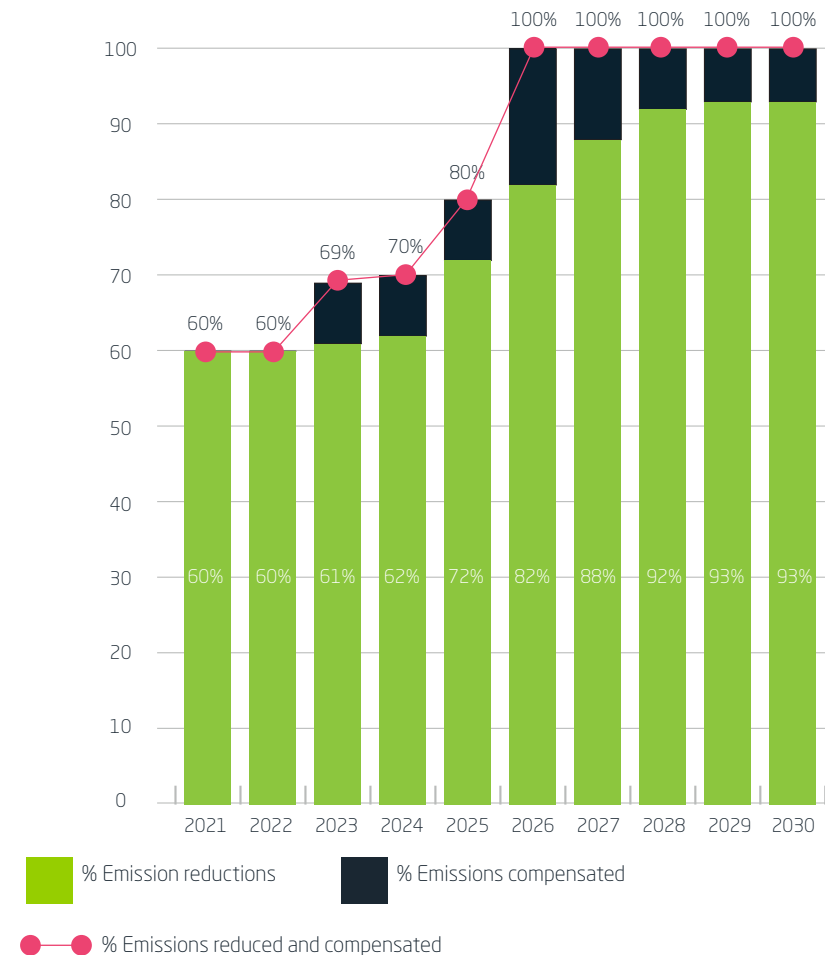
In 2022, measures begun in 2021 were continued under Carbon Neutral Programme 1, exceeding emission reduction objectives established for that year by over 7% (total reduction of 67.3%).

During that year, all electricity had 100% guarantee of renewable origin. In this way, 0.9% of renewable electrical energy was self-produced by wind generators and solar panels that were already installed, and thanks to the execution and rollout of new solar panel in various airports in the network.

## Reducción de emisiones

### CAP CAP Objective

% Reduction in emissions (Scopes 1 and 2)





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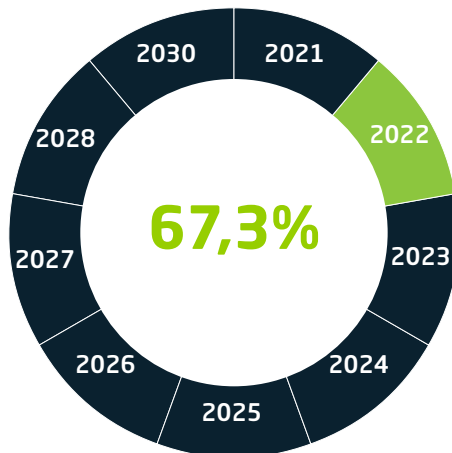
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## Emission reduction

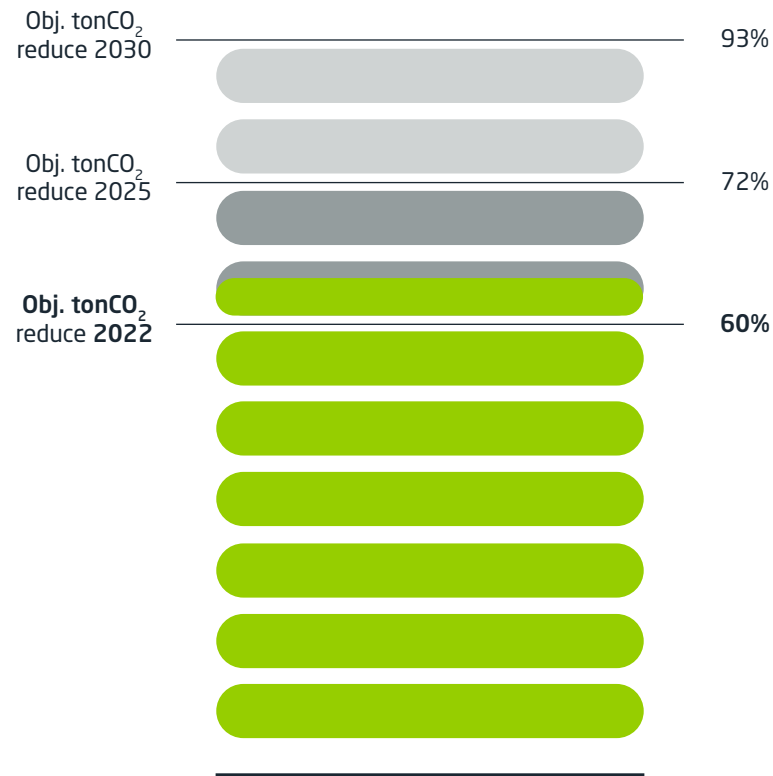


### Status and monitoring

#### Monitoring of annual indicators



#### Monitoring of indicators for the period (2021-2030)



#### Global results of monitoring of objective



**In 2022, CO<sub>2</sub> emissions  
(Scope 1 and 2)  
were reduced  
by more than the  
objective:  
67,3%**



## Measures taken in 2022



The project of supplying 2.5 MW fuel cells to JT Tarradellas-Barcelona airport, with the aim of substituting a range of emergency diesel-generating ones, was in the final phase of development. The importance of this initiative is based on the technological validation of use of hydrogen for airport energy, taking into account the importance of this vector for future energy models in air transport and in decarbonisation of the European economy in general.

In this way, viability studies were made for the implementation of geothermal energy in AS Madrid-Barajas, JT Barcelona-El Prat and Palma de Mallorca airports. The first results of the studies show good results for the implementation of geothermal energy in Madrid and Palma de Mallorca airports, with preliminary estimations of covering up to 100% of heating needs and between 30% and 15% of cooling needs.

For JT Barcelona-El Prat, which is located on the aquifers of the Delta del Llobregat, initial geothermal evaluation is being completed along with alternatives that will permit increased effectiveness of the measures.

In 2022 viability studies were also started for the construction of a biogas plant using airport residues in the AS Madrid Barajas airport.

With respect to the acquisition of electrical energy, since 2020 we acquired 100% of electrical energy with guarantee of renewable origin. **This green energy is supplied to all parties through Aena's own distribution network, for all companies that work in our airports.**

In relation to acquisition of sustainable fuels, in 2022 the first steps were taken towards biopropane certified by the **ISCC+** scheme in FGL Granada-Jaén and Madrid-Cuatro Vientos airports. In this way, conditions were realised necessary for 2023 rollout of biomethane and hydrobiodiesel (HVO), substituting natural gas for fossil-origin diesel which were consumed in boilers and vehicles, the Aena airport network.

On the other hand, we are promoting the acquisition of new sustainable technologies with the aim of promoting a more efficient, agile, and transparent supply chain for the company, which will in turn allow for gradual incorporation of more respectful criteria for the environment. In 2022, we owned a total of 50 electric vehicles and 60 electric vans.

In this way, reductions in energy demand and consumption can be reached in the airports of the network, through the identification and continuous implementation of measures to improve energy efficiency with the aim of reducing energy consumption per passenger. In this sense, to date a series of measures directed at conservation and control of energy consumption have been rolled out for airport operations and improved lighting and air conditioning (motion sensors, LEDs, refurbished air conditioning units and automatic





lighting, etc.).

It is also worth noting the rollout in 2022 by AS Madrid-Barajas Airport of connecting the trigeneration plan of the airport to Terminals 1, 2 and 3, with the aim of using excess thermal energy produced by the plant to climatise T123, which until now were climatised by gas boilers.

On the other hand, to implement adequate energy management, Aena has smart meters in some of its premises. In this vein, AS Madrid-Barajas Airport counts on a Energy Management Framework for Terminals that allows for systematic consumption, allowing to establish measure to increase energy efficiency of the terminal facilities based on results obtained. During 2022 some energy saving measures recommended by the site were implemented, and management has begun to create an energy management framework for JT Barcelona-El Prat Airport. In this case, the objectives of Madrid's airport will be implemented in an AI model to facilitate the functionality of the system.





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## Aena's Photovoltaic Plan

Over 2022, work has continued towards the Photovoltaic Plan with measures linked to completion of projects, application for permits and deposit of the necessary guarantees, with the situation at the end of 2022 ongoing.



### Airports with access and connection

Madrid 1\*: 142,42 MwP (**allocated on April 22 for 99 millions €**)  
 Barcelona\*: 12,48 MwP (**allocated on June 22 for 10 millions €**)  
 Son Bonet: 19,39 MwP  
 Tenerife Sur: 17,50 MwP  
 Reus\*: 15,00 MwP  
 Zaragoza 1: 5,95 MwP  
 Málaga \*\*: 6,71 MwP  
 Valencia: 28,00 MwP  
 Logroño: 27,50 MwP  
 La Gomera 1: 0,58 MwP  
 La Gomera 2: 0,58 MwP  
 Madrid 45: 50,40 MwP

**327 MwP**  
**57,8%**

\* Positive Environmental Resolution obtained | \*\* Previous Administrative Authorisation obtained

### Airport with access and connection requested

Jerez 1: 56,77 MwP

**56,77 MwP**  
**10,1%**

### Capacity evaluation on progress

Sevilla 3: 101,76 MwP  
 Jerez 2: 48,20 MwP  
 Sevilla RDL: 8,24 MwP  
 Jerez RDL: 5,03 MwP  
 Granada: 9,33 MwP  
 Córdoba: 9 MwP

**181,56 MwP**  
**32,1 %**

**14** airports, 950 GWh/year.

**10** airports with access and connection requested, 57,8% over total production

**154 MwP** 27% over total production already contracted and underway





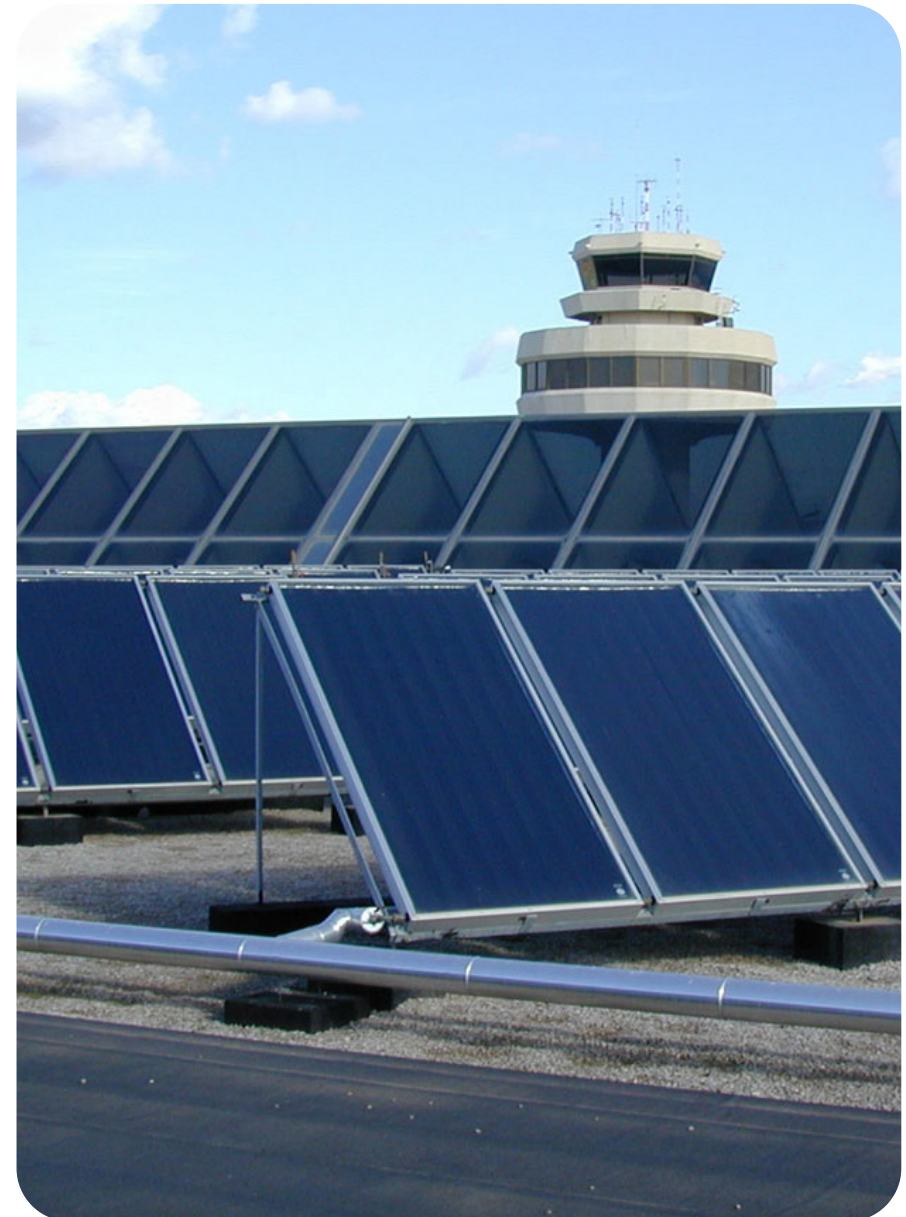
The electrical energy market situation in 2022 presents an unprecedented challenge for various reasons; first, the energy crisis caused, in part, by the Ukraine conflict, and the changes in renewable energy generation models. In Spain, higher energy prices and the legal framework to mitigate the effects of this have reinforced the idea that the main route of decreasing energy dependence, consumption of natural gas and reaching decarbonisation is through driving electrical energy with renewable origin.

**The administrative complexity pursuant to completing development projects and the coordination of administrative procedures of access and connection with the extension of the distribution and transport network have manifested this year the risk that the projects involved in the Photovoltaic Plan will not be fully completed and/or rolled out after the target date of 2026.**

With currently available information, it is forecast that over 2025 Aena will have completed the Photovoltaic Plan by 26%, and the rest, up to 100%, will be completed according to network capacity and advances in administrative procedures

To mitigate this risk and advance the measures that will allow a better level of compliance with sustainability commitments, Aena is developing the following measures:

- **Design and implementation of a PPA (Power Purchase Agreement),** an agreement between a renewable energy producer and a consumer for the purchase of energy.
- Incorporation of energy contracts with the necessary requisites to **maintain 100% guaranteed renewable origin of energy**, and also to keep incorporating **additional solutions for these purposes.**





# Objectives and measures in 2022 related to the reduction of Scope 3 emissions: Community and Supply Chain and Sustainable Aviation Programmes

In relation to the meeting of targets relating to the **sustainable handling fleet**, in 2022 **electrification of 23%** of this fleet was achieved. Furthermore, there are **1,063 electrical recharge points in the airport network, exceeding the established objective of 463 points**.

Additionally, in the context of collaboration with **ENAIRE**, the airport network with **A-CDM** has been extended, Alicante-Elche being the latest addition to the list after passing its operating tests.

<sup>3</sup>The additional time for TAXI-OUT is a commonly accepted measure of inefficiency in the phase of taxiing out of an airport. It is measured in minutes for IFR exit (minutes/exit).

<sup>4</sup> The additional time for ASMA is an approximate time spent in the queue of arriving traffic, during periods of airport congestion. It is the difference between real time of ASMA of a flight and time of ASMA without obstacles, determined statistically based on ASMA times in periods of low traffic. It is measured in minutes for IFR arrival (minutes/arrival).

In total, the Aena network has **A-CDM and advanced towers in 5 and 10 airports**, respectively.

In this way, the additional average time for **Taxi-out<sup>3</sup>** in the five biggest Spanish airports (**AS Madrid-Barajas, JT Barcelona-El Prat, Gran Canaria, Palma de Mallorca and Malaga-Costa del Sol**), have stayed under the average of the five biggest European airports.

Regarding additional ASMA average times<sup>4</sup>, the biggest airports of JT Barcelona- El Prat, Gran Canaria, AS Madrid-Barajas y Málaga-Costa del Sol stayed under the five biggest European airports in 2021.





## Measures taken in 2022

The main measures aimed at **reducing Scope 3** emissions are laid out in programmes 2 (Sustainable Aviation) and 3 (Community and Supply Chain) of our CAP, focused on positioning Aena as a driver for other actors in the aviation sector to accelerate its decarbonisation, as well as promoting sustainable mobility to and from the airport, and proactive collaboration with the supply chain and community.

### Sustainable Ground Handling Fleet

One of Aena's key measures in decarbonisation is the transition to sustainable fleets of vehicles and equipment for ground aircraft crew.

In this context, we are rolling out the necessary initiatives to guarantee that this transition is possible and completed for all ground crew airport services.

For this, during 2022 the new public contest for ground crew third party services was published, in the category of ramp handling, in which an ambitious transition plan from the current fleet to a sustainable fleet was forecast, with the objective of reaching 78% of Handling vehicles and equipment.

In this sense, during 2022 key measures were taken to guarantee the progress and evolution of fleets. Among these measures:

- Tenders were published for the supply and installation of airside recharge points with the aim of having them installed in the last trimester of 2023 in conjunction with developments in fleets of our providers based on sustainability requirements established in the third party ground crew tender in the ramp handling category.
- In the handling tender were included the obligation to install telemetry in ground crew vehicles, which will let us explore new avenues of better efficiency in Handling activities.

- Pilot trial of Handling vehicles: During 2022, the first network trial of pooling of handling equipment in Palma de Mallorca airport happened, showing very promising results both at the level of efficiency and of economy and environment, which will set the way for shared use of Handling vehicles across the Aena network.







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## Sustainable aviation fuels

During 2022, the European Commission drove the approval of all measures included in the Fit for 55 package, with special mention of the Refuel EU regulation, whose objective is to set obligatory, minimum and growth values for use of sustainable aviation fuels.

This new regulatory system is supported in biokerosenes, the only alternative that is currently technologically viable, to drive decarbonisation of the aviation sector.

The main barrier to the use of these scopes of fuels is the significant difference between the price of conventional kerosene and the so-called sustainable aviation fuels (SAF), taking into account that SAF can cost between 3 and 6 times more than kerosene, according to its origin.

In this context, to try to mitigate the effect of additional costs of SAF and incentivise their use, in addition to regulations, the company has worked in 2022 to elaborate a compensation proposal for airlines, in consultation with the sector, for the use of SAF in airports of Aena's Spanish network. The definition of SAF will be adjusted from the 2018/2001 RED II Regulation the Refuel Regulation.

Said compensation will take effect in tariffs for 2024.

Aena belongs to the main European alliances for the **production and use of SAF**, and we are participating effectively in task forces promoting the use and production of SAF and identification of ideal technology given environmental and economic criteria, both for the European Commission and for ACI.

## Hydrogen

To ensure the sustainability of the aviation sector, not only in the short term but also in the medium and long term, we must accelerate, through collaboration with stakeholders in the aviation ecosystem, the collaborative planning of measures for the rollout, as soon as possible, of zero-emission aircraft.

One of the main challenges to resolve is the place of hydrogen in airport logistics, taking into account the associated security requirements, its transport requirements, both in gas form (for ground vehicles) and in liquid form (for aircraft), liquification requirements, and various alternatives to guarantee its availability for every airport. For all the above, it is necessary to rollout both vehicles and aircraft that are hydrogen-based in airlines and companies related to ground handling, and take into account that we must provide a technological mix of sustainable aviation solutions, which will oblige us to provide an ample range of logistical energy solutions.

It is especially noticeable in 2022 that all the collaborative work achieved, both with aviation sector actors and with hydrogen manufacturers and technological centres, which concluded in the signing in January 2023 of the "Protocol of the aviation and energy sectors to promote the use of green hydrogen in aviation."

This alliance is formed by the Ministry of Transport, Mobility and Urban Planning, Aena SME, S.A., the Spanish Agency for Air Security (AESA), the Spanish Association of Operators of Petroleum Products (AOP), the Associations of Airlines (ALA), the National Centre for Hydrogen (CNH2), GASNAM, the National Aerospace Institute (INTA), the Spanish Technology Platform for Hydrogen, the Spanish Association of Defence Technology, Security, Aeronautics and Space.

Additionally, work continues in the context of the European Alliance for Green Hydrogen, the main European body for the development of a green hydrogen supply chain, as well as the participation of the SHYNE initiative, headed by Repsol, which brings together the main companies and institutions in relation to hydrogen on a national scale.



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## Innovative and sustainable projects

Especially worth mentioning, due to their innovativeness, are the following Aena projects:

### Proyectos HYSTORENEW

A research and integration project for conjoined technology and processes for green hydrogen as a strategic energy vector, which has been financed by CIEN of CDTI.

Its main objective is to research key technologies that will allow for optimised management solutions for projects, generation of hydrogen based on renewable energy, transport and storage of H<sub>2</sub> using the gas infrastructure, the use of industrial spaces and use of hydrogen in transport.

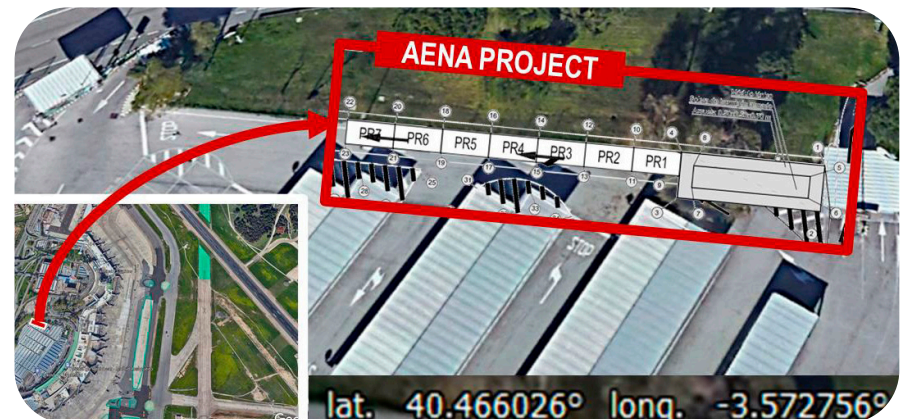
Aena's role is to incorporate green hydrogen as an energy vector into airport infrastructure, focusing on security conditions of processes, and the participation is proofs-of-concept, such as for example the installation of a fuel cell in Barcelona airport.

### Ionic module

In the context of renewable production, Aena has identified a technology compatible with airport infrastructure that could reinforce renewable self-generation. It is a technology already used in non-airport environments, and the objective of the initiative is the validation of the technology for its use in airports.

**The ionic module** is a renewable electricity generator **that produces electricity by ionisation by mixing water and salt in a tank.**

During 2022 the installation of **this module progressed in the car park of T1 of AS Madrid-Barajas Airport** for the rapid charging of electric vehicles, and in the **installation of 6 50 kW chargers.**





## Efficient flight operations

ENAIRE, with which Aena maintains close collaboration, plays a crucial role in the reduction of air transport emissions in our country. Both companies have developed a **conjoined analysis of our objectives for sustainability**, in the ambitious ENAIRE programme "Green Sky" and in our Climate Action Plan.

As a result, in our contract of services the following commitments are based not only on emissions but also on other environmental improvements:



**Reducing atmospheric emissions:** Through the implementation of A-CDM and Advanced Towers, and the "additional Taxi Out time". Also through improving Taxi-In efficiency, together with General Management for Civil Aviation.

Finally, also included are CEM\* Task Forces, where we identify and launch all initiatives relevant for ENAIRE, Aena and the interested parties that can contribute to making our industry more sustainable.



**Control of sound levels** in Spanish airports.



**Improvement in environmental management** in navigation equipment rolled out in the Spanish Aena airport network



\*CEM (Collaborative Environmental Management), collaborative framework of EUROCONTROL



# Annexes



## Programme: Carbon Neutrality

Line of action	Area	Measures	Specific objective	Indicator
<b>Renewable energies</b> Ensuring 100% of green self-generating electrical energy and 90% of green energy of consumed climatization (purchase and production) in 2030	Production of renewable electricity	Generation of green electricity through the Photovoltaic Plan (950 GWh/year available from 2026)	Ensuring 100% self-generating green electricity from 2026	% of green electricity consumed
		Pilot trial of substituting 2 electricity generating groups For hydrogen cells in BCN in 2023 according to results of the PMI and LPA projects in 2028	Rolling out pilot BCN project in 2023	NA
	Sustainable production of climatization energy	Generation of sustainable energy for climatization through geothermal means in MAD, BCN and PMI airports by 2026	Ensuring self-generating climatization energy that is 19% sustainable by 2026 and 25% by 2030	% of sustainable climatization energy
		Production of biogas in MAD by 2026		Production of biogas at MAD in 2026 self-generating
<b>Energy efficiency</b> Reduce the consumption of energy per passenger by 9% by 2030	Purchase of green electricity and of sustainable fuels for climatization	Purchase of electricity with guaranteed origin	Purchase of 100% renewable electricity with guaranteed origin by 2020	% of purchase of green electricity
	Efficiency in electrical consumption	Extension by 100% of terminals in 2026 with LED implantations in platforms and beacons by 2030. Extension of the platform of intelligent management of energy to monitor consumption in 10 airports by 2030	Reduction in electricity consumption per passenger by 10% by 2030	Consumption of electricity per passenger
<b>Own sustainable fleet</b> 100% sustainable vehicles by 2026	Efficiency in climatization	Reduction of the cogeneration plant's emissions by 2026 in a progressive renovation plan for equipments for other with better energy efficiency (boilers etc.)	Reduction of energy consumption for climatization per passenger by 9% by 2030	Consumption of climatization energy per passenger
	Electric vehicles	Electrification of passenger vehicles and vans owned by Aena	Electrification of 26% of vehicles by 2026	% de vehículos propios sostenibles
	Use of alternative fuels	Sustainable use of fuels in the rest of existing vehicles (e.g. lorries, coaches and ATVs)	74% of own vehicles using sustainable fuels in 2026	
<b>Emission offsetting</b>	Own car sharing	Promoting sustainable mobility in the airport fleet	Rolling out of pilot project of Car sharing fleet in airports in 2022	N/A
	Neutral emissions	Projects for emission offsetting	Reach carbon neutrality by 2026 through progressive offsetting of emissions	% emissions offset



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## Programme: Sustainable Aviation

Line of action	Area	Measures	Specific objective	Indicator
<b>Clean fuels for aircraft</b> Participating proactively in the development of new sustainable fuels and their integration in the aviation sector	Promoting the use of SAF	Participation in projects for SAF production to promote their use by airlines Facilitating distribution of SAF in the airport network Creation of a system of incentives for airlines that drives consumption of sustainable fuels	Forecasting of consumption of SAF in the network of Aena in accordance with the compensation SAF scheme (approx. 0.3% above regulated levels)	% of SAF consumed in the airport network
	Hydrogen	Position of Aena in relation to hydrogen in the future	Definition of the hydrogen strategy before 2026	N/A
	Sustainable aircraft	Definition of ranking programme of campaigns linked to sustainable fleets for aviation in 2024	Definition of the coordination programme for airlines by 2024	
<b>Efficiency of aeronautical operations</b> Collaborating closely with ENAIRE, airlines and ground handlers to reduce emissions generated by airport operations	Efficiency of Ground Handling operations	Pilot pooling project in airport network	Implementation of pilot project in 2022	N/A
		Implementation of telemetry to improve consumption efficiency	Implementation of telemetry in 7 network airports by 2026	Nº of airports with telemetry system for Ground Handling vehicles
	Efficiency of LTO cycle	Implementation of A-CDM and advanced towers to improve efficiency in taxiing	5 big airports with A-CDM by 2026 10 airports with advanced towers 2021-2026	Nº of airports with A-CDM Nº of airports with advanced towers
	Flight efficiency	Collaboration with ENAIRE to optimise automatic operations (e.g., route, approach) and definition of related objectives	In 5 main Aena airports: Additional average Taxi-out time and additional average ASMA lower than the five biggest European airports 2021-2025	TAXI-OUT (Additional time for taxiing exits: min/exit) and ASMA (Additional time for approach (min/arrival) in 5 main Aena airports
		Creation of task forces for development of initiatives and objectives related to ENAIRE	Realisation of cuatrimestral meetings	N/A
<b>Sustainable ground handling fleet</b> Reaching 78% of sustainable ground handling vehicles by 2030	Electric vehicles	Requirements for electrification of Ground Handling Vehicles and implementation of electric recharge points for new electric vehicles	Installation of 250 recharge points airside by 2026 and 900 points by 2030	% of sustainable ground handling vehicles Nº of electrical airside recharge points
	Use of alternative fuels	Requirements for use of sustainable fuels in Ground Handling Vehicles Implementation of vehicles fuelled by hydrogen by 2030 Implementation of hydrogen generators for new vehicles (electrical and alternative fuel)	Installation of hydrogen generators in the five main airports by 2030	Nº of hydrogen generators



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## Programme: Sustainable Community and Supply Chain

Line of action	Area	Measures	Specific objective	Indicator
<b>Sustainable mobility</b> Promoting sustainable mobility to and from airport	Promotion of public transport	Collaboration with third parties to define sustainable initiatives (e.g mobility groups)	N/A	% of passengers using
	Sustainable private transport	Investment in recharge points to promote sustainable transport to/from the airport	Install 1 recharge point for every 40 spaces by 2024	Nº parking spaces for each recharge point
		Establishment of sustainability requirement for Rent a Car/VTC/Car Sharing	Inclusion of requirement of new contracts (VTC and Car Sharing 2022, Rent a Car 2023)	% of sustainable vehicles in Rent a Car, VTC and Car Sharing
		Promoting sustainable mobility through parking fees (concept of parking as hub of sustainable mobility)	Development of tariff scheme 2021	N/A
		Electrification of used shuttles in airport terminals of Madrid and Barcelona	100% electric shuttle fleet in MAD and BCN 2026	% fleet of electric shuttles in MAD and BCN
		Offsetting employee travel emissions	Compensation 100% for emissions generated by work trips for Aena through sustainable projects verified by 2024	Total emissions compensated for work trips each year
	Sustainable logistics	Creation of a collaboration forum with logistics operators of airports	Rollout of collaboration forum in 2022	N/A
<b>Cooperation and awareness for climate</b> Proactive collaboration with supply chain and community to drive sustainability	Conferences with universities	Agreements for collaboration with universities and technology centres to accelerate sustainable transformation of sector	Forecasted funds for promotion of agreements with universities until 2026	N/A
	Awareness of climate change	Definition of awareness mechanisms Creation of a plan of measures of awareness coordinated by an internal task force	Development of 1 awareness campaign each year	N/A
	Sustainable supply chain	Establishment of selection and requirement criteria and monitoring and penalisation in the context of sustainability for providers and leasers of Aena	Definition and implementation of sustainability requirements quantified by 100% of contracts from 2022	N/A



More information available on our certification policies at  
[www.smartrading.es](http://www.smartrading.es)