# The Eco Airport Toolkit e-collection

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## INTRODUCTION

Airports are the closest link that communities have to aviation. They connect people through different modes of transportation. Some airports look like cities themselves. These elements combined with the critical infrastructure they provide give airports both the ability and the responsibility to play an ever-growing role in implementing sustainable initiatives at the local level and influencing action at the international level.

Sustainability can be described in different ways, but at the core of any sustainability concept there should be three main elements: environment, social, and economic. For example, the EONS model defines it as a balance of economic viability, operational efficiency, natural resource conservation and social responsibility. Since society is constantly evolving, so is the concept of sustainability. What was considered socially accepted many years ago has changed. The capacity to accommodate these changes has become an imperative.

For an airport, environment (and sustainability) will touch upon several aspects; from the design of infrastructure, through operational efficiency, energy consumption and the ability to use renewable sources, and to the implementation of environment management systems and even new technologies embraced to improve their overall efficiency.

In addition, well-known topics such as waste management have seen a transformation through a series of innovative approaches, including the introduction of the circular economy concept. Moreover, investing in the communities they serve to improve overall quality of life is becoming an integral part of several airports' sustainability strategies. Considering ICAO's outreach capacity and responding to the call from some Member States to expand the availability of ready-to-use online materials on selected environmental topics, CAEP/10 agreed to develop the Eco Airport Toolkit.

## SUSTAINABILITY

Each individual airport is unique and their approach to sustainability is different from each other. In spite of that, airports can learn from each other's best practices and sharing these is an important tool to support global action. Some airports also have a local framework which can be a driver for action. These are excellent examples where relevant stakeholders' close collaboration and alignment support further action and commitment.

For example, San Francisco International (SFO) set a goal in its 5-Year Strategic Plan (2017-2021) "to become the very first airport in the world to achieve zero net energy, carbon neutrality, and zero waste" (Cooke, 2017). SFO's goals are supported "by historic leadership in Sustainable Planning, Design and Construction that has curtailed emissions by nearly 33 per cent from a 1990 baseline and has cut water use by 52 per cent and energy use by 25 per cent over the last three years," all despite being one of the fastest-growing airports in the United States.

More recently, ACI Europe launched a Sustainability Strategy in June 2019 based on the vision that "*every airport builds local and global partnerships to accelerate the journey towards fair, prosperous and environmentally responsible societies*", and on the UN Sustainable Development Goals (SDGSs) and the Global Reporting Initiative (GRI). This strategy is expected to be updated with the understanding that sustainability is an evolving concept.

In addition, several airports are currently working to set/redefine their mid and long-term carbon goals. The new IPCC Report published last October has had a catalyst effect on their near future vision.

Sustainability is a positive feedback loop of beneficial actions for an airport that can save money and time leading to an improved environmental profile. Successful examples often start with strong management leadership in developing a mission statement and setting the appropriate goals. In most cases the airport actions to address the goals also lead to improved community relations, more satisfied concessionaires, and better employee wellbeing.

## THE ECO-AIRPORT TOOLKIT

Airport sustainability is an exciting area where innovation, best practices, and new technologies continue to evolve. The Eco-Airport Toolkit task is one piece of this dynamic system. It consists of a series of short e-publications on various airport-related environmental topics, and when applicable they also include case studies. Initially, the task consisted of four topics which were developed and approved during the CAEP/11 cycle and four additional e-publications were requested for the CAEP/12 cycle:

Four publications developed and approved by the CAEP/11 cycle:

- A Focus on the production of renewable energy at the Airport site
- An Environmental Management System for Airports
- Waste management at airports
- Eco-design of airport buildings.

Four publications requested for the CAEP/12 cycle:

- Climate resilient airports
- Water Management at Airports (including glycol management)
- Air quality management
- Green airport surface access.

The overall idea behind the Eco-Airport Toolkit is to support airports and their stakeholders at the initial phase of identifying pressing sustainability issues. The toolkit highlights elements to consider as airports strive to achieve the balance of environmental and sustainability measures that is right for them. In addition, the case studies will be able to provide practical examples of best practices and innovative solutions chosen by some leading airports.

Each publication is meant to be a short overview of an individual topic. The papers range from 10 to 20 pages in length, and most have case studies to demonstrate the concepts and nuances of the topic they introduce. The Eco-Airport Toolkit website was launched in the summer of 2018.[1] Three of the papers have been posted online, and more are forthcoming shortly, including their appropriate case studies.

### 1. A Focus on the production of renewable energy at the Airport site

Energy consumption is a critical element for any airport. It is generally big source of emissions for an airport operator, as well as cost. Renewable energy sources are often lower in emissions and therefore can positively impact local air quality. Besides their environmental benefits, implementing a renewable energy project at an airport can help reduce utility costs, develop a more reliable source of energy, and improve community engagement. Increasingly we see airports improving their energy efficiency, developing onsite-airport renewable electricity generation like solar, wind and/or geothermal. This e-publication provides a high-level overview of the topic, including rationale for investing in renewable energy, which types are available, and basic considerations before a project is started. In addition, case studies provide a series of different examples of successful implementation of renewable projects worldwide.

1 See: https://www.icao.int/environmental-protection/Pages/Ecoairports.aspx

### 2. An Environmental Management System for Airports

An Environmental Management System (EMS) is a set of management principles intended to identify, evaluate, monitor, and reduce the negative environmental impacts of an organization's activities. This e-publication highlights the basic principles of an EMS; a few examples of internationally recognized systems, including a comparison between them; the benefits for an airport to implement an EMS; the elements they should consider before, during and after its implementation, including lessons learned from different airports while going through a similar process.

### 3. Waste Management at Airports

Waste management is another relevant topic for any airport, and one which presents many challenges. For instance, waste management requires an overall understanding of the different types of waste an airport produces, and the different stakeholders involved and responsible for that, issues that are also based on national regulations. This e-publication focuses on several aspects: definition of waste, types of waste, waste management principles, approaches, implementation, and finally, waste recycling. The general rule is to avoid, reduce and recycle, but the concept of circular economy has been gradually introduced by some airports where the life cycle of a product is extended and there are additional business models and value for a single product that goes beyond the idea of simply recycling. For example, the concept of airport lighting as a contracted service at Schiphol to minimize waste is one excellent case study forming this publication. Despite being a local issue, there are several local, national and international practices around the globe that can be shared and learned.

### 4. Eco-design of Airport buildings

This e-publication provides an overview of planning and design elements of an airport building that can positively impact their environmental footprint. Eco-friendly planning and design can improve an airport building's energy efficiency, and save of resources during construction, operation, maintenance, refurbishment, and demolition. For instance, a new terminal project designed to add capacity and reduce aircraft taxi times is also an opportunity to improve water use, heating/cooling efficiency, better lighting, and to save money reusing and recycling construction materials. Technologies like gate electrification and preconditioned air at gates can be planned well in advance and they allow pilots to shut off the auxiliary power unit (APU) on the aircraft while parked, which conserves jet fuel. Electrification and alternative fuel for ground support equipment (GSE) reduce emissions from vehicles and improve the airfield conditions for employees.

## FUTURE DEVELOPMENTS

The importance of sustainability shouldn't be underestimated. This is exemplified by the first chapter of Airports Council International's (ACI) Policy and Recommended Practices Handbook, which sets out sustainability as the overarching theme. The principle of sustainability allows airports to continue to operate and grow, while balancing economic, social, and environmental considerations and ensuring community acceptance and permissions to grow.[2]

There has been a lot of interest recently in actions that improve climate resilience, for both extreme events like hurricanes as well as for longer term changes such as sea level rise. This topic will be the first Eco-Airport e-publication to be developed by the CAEP/12 cycle. Other relevant topics for airports such as Local Air Quality and Water management will follow as the 2nd and third e-publications. Last, but not least, we'll be looking at an external component – surface access, because sustainability at airports is also about the surrounding community and the ability and efficiency of their journey to get to and from airports.

Finally, beyond the Eco-Airport Toolkit but still under the sustainability umbrella, forward-looking airports are now asking how they can help airlines meet their

2 ACI Policy and Recommended Practices Handbook, Ninth Edition, 2018. Online: https://aci.aero/Media/2259c3f4-8016-442f-8c7a-8138ebb1eb0c/JWWLuQ/About%20ACI/Policies%20and%20Practices/2018/ACI_Policy_Handbook_Jan_2018_FINAL.pdf

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) requirements, and are pursuing options to offer sustainable aviation fuels at their facility. These are areas in which the industry may also see creative developments in the near future.

The concept of sustainable airport management is no longer seen as just a nice thing to have, or a practice for those interested in the environment. Sustainability is simply good business, resulting in a combination of benefits that will position airports to be viable and competitive in the future.

## REFERENCES

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