

ENVISA
**AVIATION & ENVIRONMENTAL
SOLUTIONS**

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EDITORIAL

More than ever, the public, governments and industry stakeholders agree on the importance of reducing pollution and the environmental impact of anthropogenic activities. The aviation industry is no exception and takes its responsibilities seriously. Climate change, air pollution and noise annoyance are high on the agenda of aviation stakeholders.

As a high growth industry contributing to the global economy, the aviation sector, though relatively small in overall contribution, must be seen to be taking every possible action to mitigate its environmental impacts, if it is to continue its growth unchallenged.

Established in Paris in 2004, Envisa has been working exclusively on developing solutions for the sustainable growth of aviation.

Envisa is one of very few companies that focuses wholly on fully understanding the environmental impacts of aviation. It has been trusted by the major European aviation institutions, such as EUROCONTROL, EASA and the European Commission, to conduct strategic studies, develop tools and datasets, and generate performance indicators at both local and European levels.

Envisa is a World Business Partner of ACI Europe. Our goal is to help airports and all the aviation stakeholders find cost-effective solutions to managing their business in a sustainable way.

ENVISA & SUSTAINABLE AVIATION

This short brochure illustrates some of the services and solutions that we can bring to Airports and their Stakeholders.

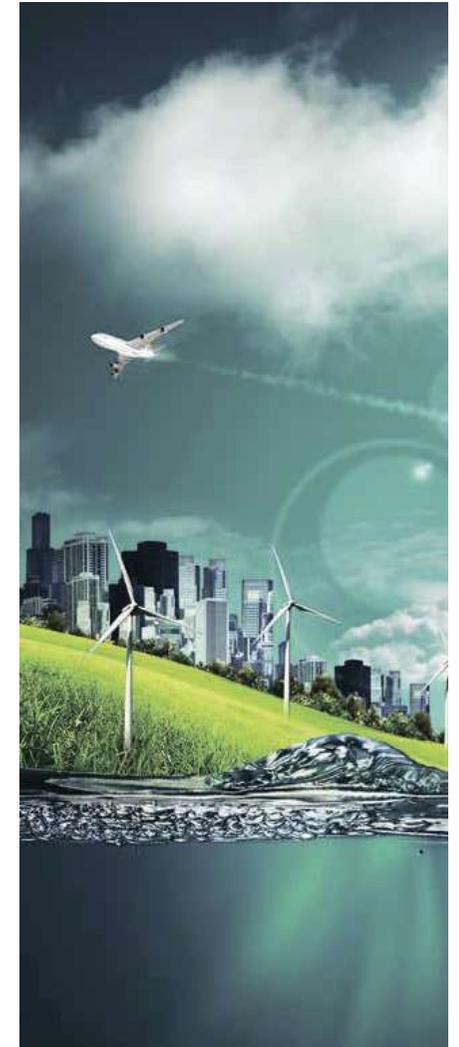
Every airport is unique, but we apply our extensive professional knowledge to developing customised solutions for each of our Clients, not only mitigating environmental impacts but also strengthening their public image and increasing their profits in a sustainable way.

Our focus areas are mainly local air quality, greenhouse gas (GHG) emissions, noise and energy management. These themes are addressed in more detail in the following pages. However, other sustainability issues can be covered as well. These include notably waste and waste water management and biodiversity.

In order to meet the requirements related to these issues, we propose to our Partners and Customers many different kinds of services and solutions. For example:

- Conducting audits on environmental topics;
- Offering Preliminary Sustainability Reviews highlighting avenues for improvement;
- Elaborating and implementing robust energy management plans;
- Assisting in the development of GHG and pollutants emissions reduction plans;
- Elaborating communication strategies to address sustainability issues and engaging stakeholders;
- Providing innovative tools adapted to the needs of individual airports;
- Delivering on-site learning sessions to train airport executives and technical staff on environmental issues;
- Proposing of cost-efficient eLearning solutions that will transform the culture of an organization.

Our experts are widely recognized at national and international levels for their proficiency and expertise on issues linked to the aviation sector, as evidenced by our diverse references in institutional, private, industrial and airports contexts. A selection of our references is available at the end of this brochure.



EMISSIONS & ENERGY

According to industry projections, the share of aviation CO2 emissions of the global emissions could increase sharply to 22% by 2050 from 3% in 2012. Committed to reducing their emissions, airlines, airports and the aviation sector, as a whole, must take concrete action to improve their emissions and energy management.

More specifically, the Airports Council International (ACI) Europe decided to adopt a resolution on climate change to mark the airports members' commitment to reducing their carbon emissions, with the ultimate goal of becoming carbon neutral. In this context, ACI Europe launched in 2009 Airport Carbon Accreditation (ACA), a programme that spotlights the airports' efforts to manage and reduce their CO2 emissions. This totally voluntary approach allows airports to obtain public recognition for their efforts and to communicate their engagement to their peers. ACA's popularity comes from its success in improving carbon and energy management performance and thus increasing the profitability of the airport. The ACA scheme has now spread to all ACI regions around the world.

Envisa has conducted several emission inventories and provided ACA consultancy to different European and international airports. Envisa supported, amongst others, VINCI Airports group and its airports in Japan, La Rochelle Île-de-Ré Airport and Brest-Bretagne Airport in France, Bahrain International Airport, Bucharest Henri Coandă International Airport in Romania, Libreville International Airport in Gabon, and many others.

Our experts are proficient in carbon accounting methodologies to evaluate, report and verify greenhouse gas (GHG) emissions, such as the United Nations Framework Convention on Climate Change (UNFCCC) guidelines, the GHG Protocol, ACI's Airport Carbon Accreditation, French Bilan Carbone, etc.



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LIBREVILLE LEON M'BA INTERNATIONAL AIRPORT

CONTEXT

Currently, there are only three accredited airports in Africa. However, their number is bound to rise in the coming years with the general environmental awareness.

OBJECTIVE

Libreville International Airport obtained ACA Level 1 in 2015 and its objective was to pass to Level 2 in 2016. To do this, ADL, the company operating the airport, wished to elaborate a Carbon Management Plan to better structure its efforts for emissions reduction and energy management.

DELIVERABLE

Envisa supported ADL in the drafting of a Carbon Management Plan required for ACA Level 2 accreditation.



BAHRAIN INTERNATIONAL AIRPORT

CONTEXT

The aim of the study was to provide support to Bahrain International Airport in achieving ACA Level 1.

OBJECTIVE

The ambition of Bahrain International Airport was to show to the region, and to the world, its commitment to taking concrete action in improving its environmental performance.

DELIVERABLE

Envisa supported Bahrain International Airport in the ACA Level 1 accreditation process and provided all the savoir-faire to ensure the successful and timely realisation of this objective.



NOISE

Aircraft Noise is the foremost concern of local communities located close to airports. The management of noise annoyance issues is one of the most important tasks for an airport, in particular when it comes to communicating the impacts of mitigating actions to allow for future growth.

The general public and local authorities expect airports to take measures to reduce and mitigate noise impacts around the airport and also increasingly along the flight paths around it.

To answer these concerns, Envisa provides solutions to help airports manage their noise annoyance issues by evaluating the current noise impacts, elaborating noise reduction plans, and communicating on noise issues with local communities and public authorities.

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MADAGASCAR AIRPORTS: ENVIRONMENTAL IMPACT STUDIES

CONTEXT

Two airports in Madagascar (Ivato and Nosy Be) wished to understand the impact of proposed runway extensions and increases in future traffic on the surrounding areas. Envisa conducted an environmental impact study assessing the future noise and pollutant emissions around the airports resulting from these changes.

OBJECTIVE

The objective of this project was to identify whether the traffic growth and planned infrastructural changes would be compatible with noise and pollutant emission regulations.

DELIVERABLE

Based on the projected the traffic growth and planned structural changes at the airports, Envisa produced several noise and emissions maps and a summary report for the different scenarios explored.



CONTEXT

ATAEGINA (Airline Trials of Environmental Green Flight Management Functions) was a project in the European Clean Sky programme. The goal of Clean Sky is to develop innovative technologies to improve the environmental performance of aircraft and air transport by reducing noise and optimising fuel consumption.

OBJECTIVE

Envisa was part of a consortium also including a Portuguese airport, an ANSP and an airline. The project objective was to validate and to assess their benefits of new "green" flight procedures in a real operational environment. The aim of these new flight concepts, designed by Airbus and Thales Avionics, is to optimise flights in terms of their fuel consumption, GHG emissions and noise impacts.

DELIVERABLE

Envisa was responsible for the noise and emissions assessment in the ATAEGINA project. The environmental assessment was based on real-life flight trials and on the Flight Data Recorder (FDR) data from these flight trials.

LOCAL AIR QUALITY

Faced with the growing concerns of the public related to pollutant emissions and related health issues, the aviation sector, and in particular airports, must adopt an effective strategy to address this matter. Indeed, emissions from aircraft and other emission sources at an airport have an effect on the local air quality (LAQ): in particular, emissions of nitrogen oxides (NOx), volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) are the most important contributors on LAQ concerns.

However, the airport is not the only source of emissions. Usually airports are surrounded by road networks and supplied by power stations and other industrial facilities. The airport is therefore not the only, and often not even the major, responsible for all the air pollution measured in the area.

The pragmatic solution to understanding the contribution of an airport to the measured air quality at any point around it is through modelling. Envisa has been one of a small group of experts participating to the development of international guidance and tools to support Airport Local Air Quality Studies.



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EGTS (ELECTRIC GREEN TAXIING SYSTEM- SAFRAN)

CONTEXT

Looking for ways to reduce emissions from aircraft taxiing at airports, SAFRAN decided to investigate whether electrically powered taxiing would be a feasible solution. They chose Envisa, a recognised independent expert, for the technical assessment.

OBJECTIVE

The objective of this study was to quantify the reduction in fuel burn and noxious pollutants due to the implementation of the Electric Green Taxiing System (EGTS) compared to the current status quo (dual or single engine taxiing). Fuel burn and emissions were compared both for a single aircraft movement and at the airport level.

DELIVERABLE

Envisa conducted an independent analysis of the benefits of Electric Green Taxiing System for SAFRAN compared to Single Engine Taxiing (SET) and Dual Engine Taxiing (DET) in both single-movement operations and in a typical airport implementation scenario.



OPEN-ALAQS

CONTEXT

The ALAQS (Airport Local Air Quality Studies) Tool was developed by the EUROCONTROL Experimental Centre between 2002 and 2009 under the name ALAQS-AV. In the context of the Single European Sky ATM Research (SESAR) programme, EUROCONTROL contracted Envisa to develop a new version, Open-ALAQS, that would allow SESAR partners to perform local air quality assessments. Open-ALAQS is based on an open source geographical information system.

OBJECTIVE

The main objective of Open-ALAQS is to provide a four-dimensional emissions inventory for an airport in which the emissions from the various fixed and mobile sources are aggregated and subsequently displayed for analysis.

DELIVERABLE

Envisa has developed, validated and maintained EUROCONTROL's Airport Local Air Quality Studies (ALAQS) tool over the past 10 years. This included the coding of the fundamental core of the model and its interface, integration with various geographical information systems for graphically visualising and manipulating data, and post-processing outputs for use by other applications.

RESEARCH & DEVELOPMENT

Backing up Envisa's credentials in delivering robust solutions to airports is over 12 years' of experience in working in European Aviation Research and Development Projects.

Thanks to our highly-qualified, internationally recognised experts, Envisa is routinely involved in many European projects through the European Aviation Safety Agency (EASA) and the European Commission's R&D programmes such as Clean Sky, the Single European Sky ATM Research (SESAR) programme and Horizon 2020.

Envisa has a unique advantage compared to other consultancies: we are able to exploit our knowledge gained in cutting edge R&D work to implement pragmatic and robust solutions for the Airport Industry.



SOME PROJECTS

Under the **SESAR (Single European Sky ATM Research)** programme, Envisa worked with EUROCONTROL to develop new, innovative key performance indicators (KPIs) for airports. These KPIs allow airports to measure and evaluate their noise and local air quality performance.

AIMERE - Aircraft Metal Recycling was a **Clean Sky** project aiming to improve the treatment of aircraft at the end of their life cycles by better recycling practices and enhanced compliance with environmental constraints. In partnership with Bartin Recycling, a subsidiary of Veolia, Envisa performed a state-of-the-art study on aircraft end-of-life and drafted recommendations for Design for Environment.

Envisa contributed to the drafting of the **first European Aviation Environmental Report**, launched in 2016 jointly by the European Commission, EASA, the European Environment Agency and EUROCONTROL. Envisa participated notably in the coordination of efforts from different stakeholders, transformation of raw data into visualisations and drafting of text sections.

For numerous years, Envisa has provided support to EASA and EUROCONTROL in the work of the **Committee on Aviation Environmental Protection (CAEP)** of the **International Civil Aviation Organization (ICAO)**. Recently, Envisa supported EASA's efforts for the establishment of a global aircraft CO2 standard.

In order to reinforce European forecast modelling capabilities, Envisa supported EASA and EUROCONTROL in the testing and validation of the **Aircraft Assignment Tool (AAT)**. Envisa's tasks included the creation of input datasets, and analysis and visualisation of modelling results using various database and data analysis tools.





LET'S WORK TOGETHER



NETWORK



EXPERTISE



PROFESSIONALISM

Some of our Partners & Clients:



Envisa is member of:



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