References

Airport emissions and ACA (Airport carbon accreditation):
ENV-ISA is the global leader for "ACA" carbon accreditation support to airports worldwide. More than 100 airports including heliports received their Level 1, Level 2-3-4 and Level 5 accreditation thanks to dedicated best practice methodologies and tools developed.
As a result of growing concern for local environmental impact for communities around the airport, Envisa also developed Air quality, and Noise management support. Envisa has conducted a number of airport studies.
ENV-ISA, since 2004, has been involved in airport air quality management. ENV-ISA offers internationally accredited solutions and models (ICAO/CAEP) tailored to airports (LASPORT, Open-ALAQS etc..). In addition to involvement in European research projects like ClearSky (RAPTOR for ultrafine particles), GLOA (H2Guide Green Airport) Env-ia has carried out numerous consulting and auditing missions, creating innovative tools for the airport sector.
Some of our combined air quality monitoring (low cost) and modelling case studies include:
Paris Charles de Gaulle Airport Terminal 4 Project: Environmental Impact Assessment for Air Quality & Emissions Analysis: Several low-cost stations have been set up to monitor air quality, measuring pollutants such as PM0, PM2.5, PM10, NO, NO2, H2S, SO2, CO, CO2, and O3. Additionally, in-house environmental dashboard was created, helping to correlate pollutant events with environmental conditions, aircraft movements, and many more customized parameters.
Groupe ADP (since 2019) – ADP – Air Quality Assessment for Paris-Charles de Gaulle Airport Terminal 4 Project: (atmospheric pollutant dispersion modeling for various scenarios, considering the most relevant airport emission sources.
Additionally, sustainable solutions like single-engine taxiing, green taxiing, and biofuels were incorporated into this study.) Since 2022, framework contract for noise and air quality assessment forall 3 airports in Ile-de-France.
Environmental Regulations Support for EASA:
ENV-ISA is supporting EASA under two framework contracts for the development of CO2 metrics and assessments of a range of proposed metrics against a large variety of criteria under ICOA/CAEP. These assessments have been reported to the CAEP WG3/CO2 meetings, providing the basis for the development of a metric option.
Local Air Quality Studies (Open-ALAQS) and Noise (System for Airport Noise Exposure Studies):
ENV-ISA was in charge of collecting and formatting the input flight movement data for the 28 airports in EUROCONTROL's multi-airport noise model STAPES. This included the processing of the CASPIB data for the STAPES airports.
Open ALAQS:
ENV-ISA has developed, validated and maintained EUROCONTROL's Airport Local Air Quality Studies (ALAQS) over the past 10 years. This includes the coding of the fundamental core of the model and its interface, integration with ArcGIS for graphically visualising and manipulating data, and post processing outputs for use by other applications. ENVISA also conducted the full ICAO CAEP Verification & Validation process for aviation Local Air Quality models with ALAQS. ENVISA also conducted the Vienna airport on the ALAQS case study, where emissions and local air quality modeling is conducted. Finally, ENVISA was recently awarded a contract to convert ALAQS from ArcView, a commercial GIS, to an open source GIS software, QGIS.
World Interconnected Sources Database of Operational Movements – WISDOM:
ENV-ISA was mandated to improve the quality of EUROCONTROL's WISDOM database of global flight movements and trajectories, notably by designing interfaces with Geographic Information Systems (GIS).
CO2 Metric (ICAO):
ENV-ISA developed more that a hundred candidate metrics for aircraft CO2 emissions based on technical parameters such as wingspan, take-off weight, floor area, number of seats, payload, etc. in support of the EASA for the selection and definition of new ICAO CO2 metric (recently approved in July 2022 by the CAEP Steering Committee).
Traffic / Demand Forecast:
The aim of this EUROCONTROL project is to provide a new statistical methodology for forecasting traffic demand in the short, medium and long term. Unlike previous models, these forecasts make use of confirmed future flight intentions as well as historical data. The forecasting model provides a baseline from which the forecasting model can run. The objectives are to take the expert knowledge of the individuals who currently perform this task based on years of experience and intuition and to generate a statistical method based on this knowledge that is capable of reliably and consistently predicting baseline cases with an indication of their likely representativeness. This activity belongs to the project PT-0.1 SCB as part of the SESAR Work Package 07.

Presentation

Env-isa is a leading international consultancy specializing in environmental and sustainability aspects of aviation, with a proven track record of successful projects around the world. We provide independent expertise to support our clients in achieving their sustainability goals with a unique focus on the aviation industry.
ENV-ISA's comprehensive environmental solutions help create greener airports and contribute to net zero carbon, reduced environmental impact, biodiversity preservation, community engagement, and climate change adaptation, making us a leader in integrating sustainability across the aviation and soon, beyond.
One of ENV-ISA's main missions is to bridge environmental performance and cost-effectiveness in the air transport industry. We have diversified services, including support to airports on environmental management for noise, air quality; consultancy for ACA (Airport Carbon Accreditation) and climate change adaptation, with a strong emphasis on European research and innovation (dedicated R&D budget for a range of tools designed for our clients on air quality, global emissions, noise, SAF and many more). These combined digital consulting capabilities provide best-in-class solutions to our clients' environmental challenges.

Activities

ENV-ISA is an international environmental research and Consultancy Company specializing in finding innovative solutions to reduce the environmental footprint of aviation industry. ENVISA provides airports industry with a unique offer of integrated services for environmental management.

Steadily increasing demand for air transport means that airports are faced with capacity constraints. Airports are highly concerned with understanding how to address the challenges of sustainable growth. ENVISA provide the world's leading aviation stakeholders with cutting edge analytical tools for traffic and demand forecasting, noise impacts, local air quality studies, global emissions and cradle-to-grave carbon foot printing.

Carbon management is not only part of environment strategy but also a means of increasing the efficiency of airport operations and energy use. As one of Europe's most innovative aviation environmental research companies, ENVISA believes responsible environmental stewardship is not only a fundamental part of doing business; it is at the core of who we are as a company.

ENV-ISA have been conceiving, designing, developing, validating and consulting with environmental models since 2004 and are a driving force behind some of the world's most trusted data in aviation environmental policy.
Aspects:
• Verifiable carbon footprint ACA (for use under mandatory / voluntary schemes) and allocation of carbon action plans.
• Local Air Quality studies: we have developed on behalf of EUROCONTROL - the ALAQS tool - which is used to support both European and International assessments of airports contribution to local air quality,
• Energy/utilities management efficiency in buildings, equipment and systems - with a focus on housekeeping and existing systems utilisation,
• Aircraft ground-operations operational/fuel efficiency (e.g. taxi times, queuing and APU use optimisation),
• Utilities income/cost recovery from third parties on-site,
• Waste management and circular economy,
• Balanced approach for noise Management, noise modelling and noise trade-offs analysis,
• Community relations effectiveness review- which could be any or a‌ll of neighbour relations and complaints handling; social/perception surveys; land-use planning capacity protection effectiveness, future development risk analysis,
• Noise mitigation, monitoring and modelling,

CONSULTING

ENV-ISA's independence and integrity allow us to offer high-value consulting services to all stakeholders in the transportation chain, from manufacturing to regulators and operators. We outline some of our capabilities below, with examples of support we have provided in the past.

ENV-ISA provides a full range of services to support airport planners and managers facing the challenges of sustainability.
This includes:
• strategic noise mapping in accordance with European Directive 2002/49/EC, community management,
• local air quality modelling and mapping,
• environmental impact assessment of ATM procedures (i.e. new landing and take-off, preferential runway..),
• noise vs. emissions trade-off analyses,
• designing, developing and validating noise and local air quality models (including dispersion models),
• cost-benefit analyses and life cycle assessment.

ENV-ISA's services relevant to airlines include:
• assessing gate-to-gate fuel burn and emissions related to specific fleets and trajectories,
• assessing noise, fuel burn and emission tradeoffs for new landing and take-off procedures,
• conducting market analyses for future concepts and regulations in the air transport industry.

ENV-ISA's activities relevant to Air Navigation Service Providers (ANSPs) include:
• assessing the environmental impact of airspace reorganisations,
• designing, developing and validating multiple-scale noise and emission modelling tools (including weather and atmospheric modelling),
• designing and developing flight movement and gate-to-gate trajectory databases,
• performing ATM market and cost-benefit analyses.

ENV-ISA's services to aircraft and engine manufacturers include:
• investigating future regulatory and operational concepts for aviation and their environmental / economic impact,
• investigating the environmental benefits of future propulsion technologies,
• assessing the environmental impact of new flight procedures either en-route or during the Landing and Take-Off (LTO) cycle.

AUDITING AND BEST PRACTICES

• Planning: Strategic and Environmental planning, Airport infrastructure planning and design, and International project coordination.
• Assessment: Environmental impact (EIAs), Environmental performance, Evaluation/reduction of carbon footprint (ISO 14064, ACI-ACA), Emissions and waste, Environmental tradeoffs (emissions, noise, fuel, air pollution).
• Management: including basic concepts of environmental concerns in aviation, Legal framework for aviation, Environmental control and reporting, ATM/ATC environmental concept development, Cost benefits and efficiency, Safety and security solutions, Integrated management system, Performance-based project management, Global Emissions Best Practices, and guidance for best practice on aircraft noise management.

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