

THE AVIATION ENVIRONMENTAL SYSTEM



CAPACITY BUILDING FOR CO₂ MITIGATION FROM INTERNATIONAL AVIATION



ICAO



European Union



ABOUT THE ICAO - EUROPEAN UNION ASSISTANCE PROJECT

The **International Civil Aviation Organization (ICAO)** has an ongoing joint initiative with the **European Union** on Capacity Building for CO₂ Mitigation from International Aviation. The overarching objective is to contribute to international, regional and national efforts to address growing CO₂ emissions from international aviation. The **ICAO-European Union Assistance Project** is a project initiated in 2014 and articulated around three objectives to support fourteen Member States in Africa and the Caribbean to track, manage and reduce their aviation CO₂ emissions from international aviation.

OBJECTIVE 1

ACTION PLANS DEVELOPMENT:

Improved capacity of the National Civil Aviation Authorities to develop an Action Plan on CO₂ emissions reduction from international aviation

OBJECTIVE 2

AVIATION ENVIRONMENTAL SYSTEMS (AES):

Efficient CO₂ emissions monitoring system for international aviation developed in each selected Member State

OBJECTIVE 3

IMPLEMENTATION OF MITIGATION MEASURES:

Priority mitigation measures identified, evaluated and partly implemented



OVERVIEW

One of the main objectives of the ICAO-European Union Project is to establish, in the Civil Aviation Authority of each selected State, an efficient CO₂ emissions monitoring system to facilitate the preparation of robust emissions inventories and the periodic reporting to ICAO of CO₂ emissions from international aviation.

This objective has been achieved through the development of a dedicated software, the Aviation Environmental System (AES), which has been installed in the fourteen States of the project in 2015 and 2016 through on-site missions and several capacity building activities. The operationalization and training phases are still on going, allowing the States to collect increasingly more data from their national airlines and to submit to ICAO their monthly CO₂ reports generated directly from the AES.

The AES has proven to be particularly useful to

monitor the implementation of the State Action Plans for CO₂ emissions reduction in the selected States and to assess the actual results in terms of CO₂ emissions reduction compared to the baseline scenario and the expected results forecasted in the Action Plan.

In addition, the AES can be used to generate reports for national purposes (e.g. reporting to the Ministry of Environment) and for compliance with ICAO's requirements (e.g. automatic generation of ICAO and for compliance with ICAO's reporting requirements and recommendations).

The AES constitutes therefore a Monitoring, Reporting and Verification (MRV) tool for CO₂ emissions from international aviation that is still being improved based on the feedback of the current users and the evolution of ICAO's recommendations and reporting requirements.



DESIGN

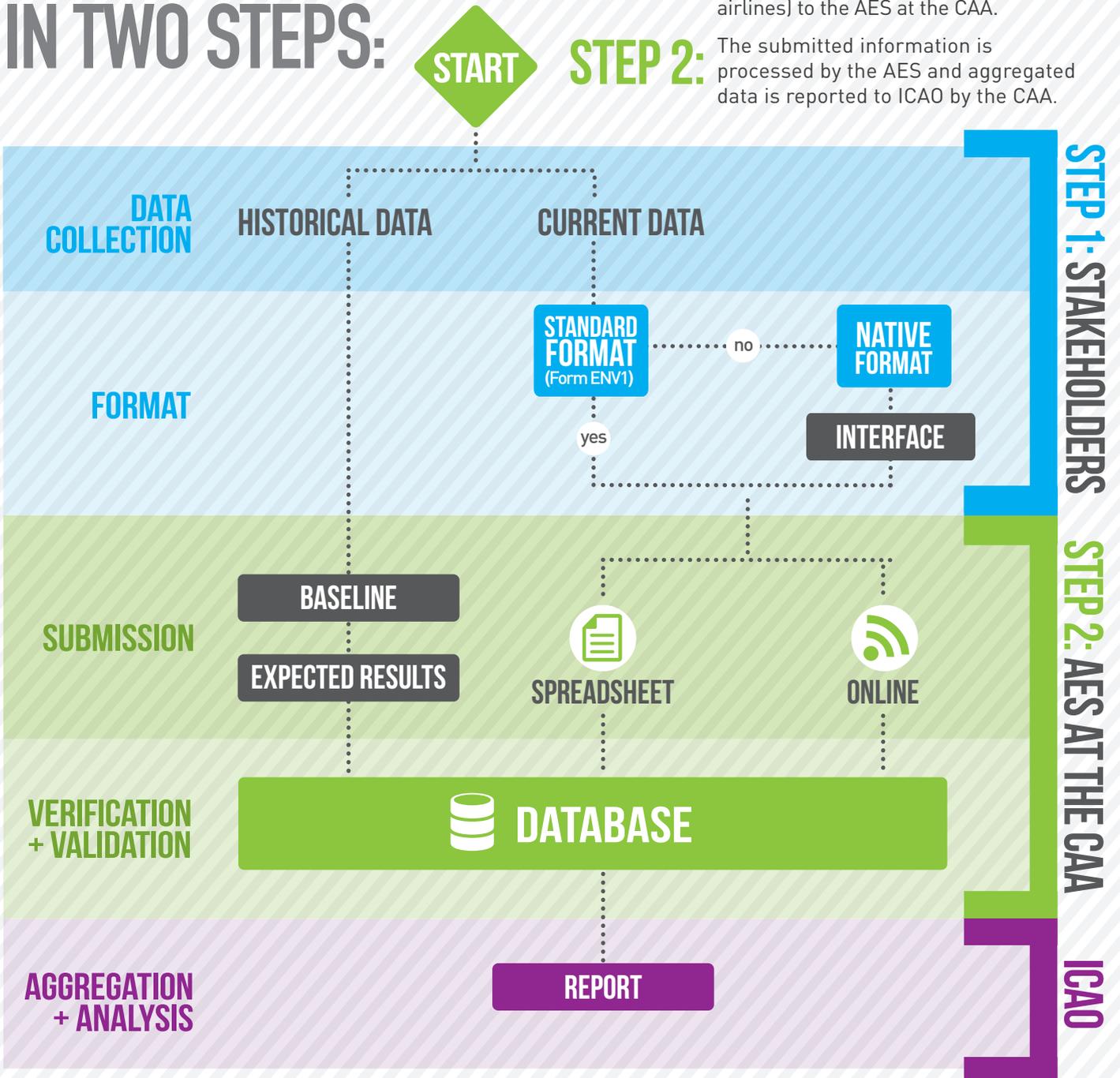
The AES is designed as a stand-alone application with a database back-end installed directly at the Civil Aviation Authority (CAA) of the States, that can be complemented with a web interface included in the CAA website for an easier data submission from the external providers. The main menu consists of:

- IMPORT DATA**
Import baseline, monitored and forecasted data from the information provided by external stakeholders. Generate template files.
- EXPORT DATA**
Output summary or detailed trends and export data into an ICAO form or a custom format.
- MANAGE DATA PROVIDERS**
View data providers and corresponding contacts, as well as the flights they reported.
- MANAGE DATABASE**
Create a new database, relink the AES to another database or edit the user profile.
- BROWSE DATABASE**
View/edit the data directly in tabular format.
- HELP**
Check for help on the AES.

DATA IS COMMUNICATED IN TWO STEPS:

STEP 1: Data on individual flights is communicated from the external stakeholders (such as airlines) to the AES at the CAA.

STEP 2: The submitted information is processed by the AES and aggregated data is reported to ICAO by the CAA.





MONITORING, REPORTING AND VERIFICATION

MONITORING

The main input to the AES is aviation traffic and fuel consumption data transmitted by airlines to the Civil Aviation Authority (CAA) in a State. While data from any airline can be input in the AES, States that use ICAO definition for international flights will typically only need data from their nationally registered airlines serving international flights.

This data must be input in the AES in a specific format, the **Form ENV1**, gathering the required information per flight:

- Aircraft
- Seats available
- Passengers carried
- Payload available (kg)
- Freight carried incl. express (kg)
- Mail carried (kg)
- Scheduled or non scheduled
- Fuel consumed (liters)
- APU usage time (minutes)
- Taxi time (minutes)

REPORTING

The AES can output reports in various formats on the collected data, to allow the CAA to closely monitor CO₂ emissions from international (and possibly domestic) aviation. A monthly CO₂ report, as well as ICAO's Air Transport Reporting (ATR) Form M¹ - Fuel Consumption and Traffic for a particular year and airline can also be generated through the AES, thus facilitating the reporting to ICAO. Additionally, the AES can also help the CAA contribute to the national inventory of CO₂ emissions usually conducted within the Ministry of Environment in the scope of the National Communication to be reported to UNFCCC (United Nations Framework Convention on Climate Change).

VERIFICATION

During the importing process, the AES performs some validation checks and only imports data that is valid and consistent with the data already contained in the database. Further verification by cross-checking is possible if data on the same flights are imported from different stakeholders such as an airline and an airport.

¹ <http://www.icao.int/sustainability/Pages/eap-sta-excel.aspx>



HOW CAN A STATE OBTAIN THE AES?

Currently, the AES is only available to the States selected for the ICAO-European Union Project. However, the tool may become available to other States in the future. For more information and to be kept informed on the releases of the AES please contact icao-eu-project@icao.int.



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WEBSITE: www.icao.int/environmental-protection/Pages/ICAO_EU.aspx

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