The ICAO-European Union Assistance Project on Capacity Building for CO2 Mitigation from International Aviation – A Success Story

By ICAO Secretariat

FIGURE 1: ICAO-EU Project Objectives

In 2010, Member States of the International Civil Aviation Organization (ICAO) established the Global Aspirational Goal Of Carbon-Neutral Growth From 2020 For The International Aviation Sector. The ICAO Assembly also agreed on a basket of measures to achieve this goal and requested States to develop and submit State Action Plans on Emissions Reduction on a voluntary basis. While several Member States submitted action plans to ICAO, many others require technical assistance to develop their action plans.

The ICAO and European Union Assistance Project on *Capacity Building for CO_2 Mitigation from International Aviation*[1] is a response to the need of assistance for the development of action plans to ensure that all Member States can participate in the collective efforts for the achievement of the aspirational goal on environment agreed by the ICAO Assembly. The ICAO-EU project aimed at assisting 14 selected States in Africa and the Caribbean to develop and implement their action plans, and to establish aviation environmental systems for CO_2 emissions monitoring and reporting. Funded by the European Union, this 6.5 Million Euros initiative was successfully implemented by ICAO from 2014 to 2019, achieving all the expected results and even exceeding the initial targets.

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

The first objective of the ICAO-EU project was to create national capacities for the development of action plans. ICAO organized specific training-seminars, directed the establishment of National Action Plan Teams in the selected States, and assisted each Civil Aviation Authority directly in the preparation of their action plans. By June 2016, the 14 selected States had developed action plans fully compliant with ICAO's guidelines, including robust historical data and a reliable baseline scenario. A total of 218 measures to reduce fuel consumption and CO_2 emissions were proposed by the beneficiary States in their action plans, including aircraft technology, operational measures, and sustainable aviation fuels.

Lack of reliable aviation environmental data in developing States, such as the amount of CO_2 emissions produced by the aviation sector, is one of the challenges for assessing the impact of aviation on climate change and developing national strategies for environmental sustainability. To address this challenge, the ICAO-EU project developed a tool – the Aviation Environmental System (AES), which supports the establishment of data collection processes for environmental information, including CO_2 emissions from international aviation, and it also automates the organization and reporting of environmental data by the Civil Aviation Authorities. To date, all the beneficiary States have the capacity to use the AES to collect the relevant data from their aviation stakeholders and can generate monthly and yearly CO_2 emissions reports for their aviation sector.

In agreement with the European Union, and based on their carbon reduction potential and replicability, ICAO selected four pilot mitigation measures and five feasibility studies to be executed with project funding in the beneficiary States.

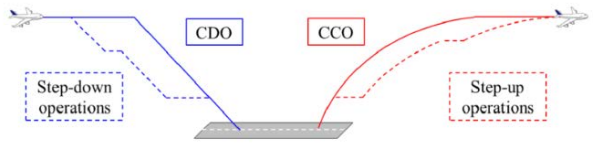
- Two "solar-at-gate" projects, which consist of a solar farm and airport gate electric equipment, to power aircraft with solar energy during ground operations at the international airports of Douala, Cameroon, and Mombasa, Kenya. The combination of electricity generated by the solar facility and the use of gate electrification equipment eliminates the CO_2 emissions while the aircraft is parked at the gate running the pre-departure procedures before departing for the next flight. The installed capacity of these projects is of 1,25MWp and 500kWp respectively, and they will eliminate over 4,000 tonnes of CO_2 per year and will serve more than 7,500 flights per year.

FIGURE 2: The Aviation Environmental System - AES

FIGURE 3: Solar PV system at Moi International Airport. Mombasa, Kenya

- Design and implementation of Continuous Climb Operations (CCO) and Continuous Descent Operations (CDO) at the international airports of Ouagadougou, Burkina Faso and Libreville, Gabon. With these new procedures, aircraft can operate without altitude restrictions during departure or arrival phase, and thus optimize their flight profile. As a result, there is less noise exposure and reductions in fuel burn and greenhouse gas emissions.

FIGURE 4: Continuous Climb and Descent Operations



- Five feasibility studies on the use of renewable energy and sustainable aviation fuels in Burkina Faso, Dominican Republic, Kenya and Trinidad and Tobago, which provide these governments with policy advice to unveil new opportunities through innovation for a sustainable aviation sector.

In addition to these four pilot mitigation measures and five feasibility studies executed directly with project funding, the beneficiary States implemented 90 mitigation measures within the project timeframe, which had been included in their action plans developed under the first project objective. The environmental benefits of the implementation of all these mitigation measures have been quantified in a total of **107,849 tCO_2** emissions reduction per year.

The implementation of the ICAO-EU project was assessed in 2016 and 2017 by a consortium of experts, contracted by the European Union, through independent Results

Oriented Monitoring (ROM) reviews. Four criteria were examined during the ROM reviews (relevance, efficiency, effectiveness, and sustainability) and they confirmed that the project design was logical and well sequenced, that the activities had been carried out as planned and that the project implementation was contributing to the achievement of the specific objectives and expected results, in some cases exceeding the targets. The project was assessed as "Good/Very good" in the four considered criteria.

With the support provided by the ICAO-EU project, ICAO has succeeded in transforming the organizational culture towards environmental protection in aviation in the beneficiary States. An issue that was not regarded as a priority before has now become more relevant for these States. The establishment of Environmental Units with dedicated staff in the Civil Aviation Authorities along with the voluntary decision of seven selected States of the project to join the Carbon Offsetting Reduction Scheme for International Aviation (CORSIA) from its outset is a testimony of the increased awareness and political will for climate action. These engagements can be attributed to the success of the ICAO-EU project and will support the sustainability of the results in the long term.

Capacity Building and Assistance on Environment will continue to be required for the transformation of policy into concrete actions at the national level. Many States have officially communicated their interest to participate in similar assistance initiatives and replicate the positive results of the ICAO-EU project. The availability of further funding will allow ICAO to extend the benefits of this successful project to other Member States so that "No Country is Left Behind".