Turning Policy Into Action

Capacity Building and Assistance to Advance Environmental Protection in Aviation

By ICAO Secretariat

Over the past years, since the beginning of ICAO's journey to progress in terms of policy development and standards-setting for environmentally sustainable aviation, ICAO Member States demonstrated that they were interested in taking action and advancing initiatives on environmental protection. However, not all of them had the human, technical and financial resources to do so. To overcome this challenge, ICAO proposed means to resolve these issues.

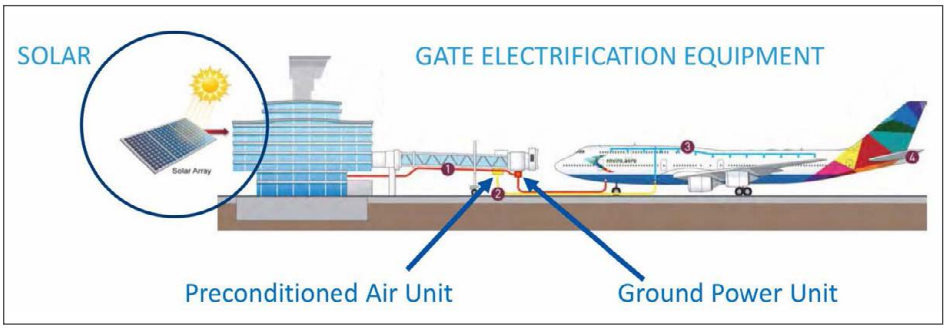
Since ICAO's global aspirational goal of carbon-neutral growth from 2020 was adopted, and Member States agreed on a basket of measures to reduce greenhouse gases in aviation to achieve this aspirational goal, capacity building and assistance became fundamental for the success in turning this environmental policy into action at the State level.

The State Action Plan initiative was launched in 2010, in order to enable all ICAO Member States to establish long-term strategy on climate change for the international aviation sector, involving all interested parties at national level. This process has led to the elaboration of a "do-nothing" scenario, estimating the amount of CO_2 emissions generated by international aviation, should no mitigation measure be implemented. Such a baseline scenario forms a useful starting point for a robust discussion between international aviation stakeholders at national level on a shared vision for the long-term CO_2 emissions of the international aviation sector and on the prioritization of possible mitigation measures. The latter element greatly benefits from the participation of the national authorities in charge of energy, environment, innovation and mobility. In order to support its 193 Member States with the development of their State Action Plans, ICAO has developed a series of guidance documents and quantification tools. ICAO *Guidance on the Development of States' Action Plans on CO_2 Emissions Reduction Activities* (Doc 9988) provides the States' Action Plan Focal Points with a comprehensive understanding of the context, policies and resources available to progress with the States' Action Plans.[1]

Since the 39th Session of the ICAO Assembly, a number of key decisions have been made in the area of environmental protection that have profoundly changed the regulatory and operational environment of aviation stakeholders. The adoption of Assembly Resolution A39-3 and the implementation of the Carbon Offsetting Reduction Scheme in International Aviation (CORSIA) will influence States' activities in CO_2 emissions monitoring, reporting and verification (MRV) ICAO Assistance, Capacity building and Training for CORSIA (ACT-CORSIA), and is covered under Chapter 6. Further developments of the other elements of the basket of measures, for instance, the adoption of a 2050 Vision for Sustainable Aviation Fuels has an impact on the activities that States may wish to include in their action plans. In addition, the capacity building and assistance projects implemented by ICAO in partnership with the European Union (EU) on the one hand, and with the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) on the other hand, have delivered a series of IT tools, guidance and pilot projects that all aim to provide extensive information to the States and their stakeholders on key aspects of the development of the States' Action Plans. Additionally, a third edition of ICAO Doc 9988 is being finalized with the aim to reflect all these evolutions.

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

FIGURE 1: ICAO-UNDP-GEF Assistance Project: Solar-at-Gate Pilot Project



As a result of ICAO's intensive support to its Member States, by June 2019, 114 States representing 93.4% of international air traffic have voluntarily submitted an action plan to ICAO. Such commitment to the State Action Plan initiative once again demonstrates that all ICAO Member States want to take action on environmental protection. To overcome the lack of resources, ICAO has successfully established two partnerships with international organizations to secure funding for the development of specific technical assistance projects in support of its Member States' actions to reduce aviation emissions. These projects started in 2014 and have been implemented by ICAO with great accomplishments.

ICAO-UNDP-GEF ASSISTANCE PROJECT: TRANSFORMING THE GLOBAL AVIATION SECTOR: EMISSIONS REDUCTION FROM INTERNATIONAL AVIATION[2]

This technical assistance project aimed at supporting States implementing emission reduction measures, in particular developing States and Small Island Developing States (SIDS). Funded by the Global Environment Facility (GEF), the project was implemented by ICAO from 2015 to 2018, in cooperation with the United Nations Development Programme (UNDP) (for further information on this project, see the dedicated article under this Chapter).

Through this project, ICAO developed a set of guidance documents for States on how to implement and secure financing for renewable energy and sustainable aviation fuels projects, and also created analytical tools to compare the cost-effectiveness of emissions mitigation initiatives. These guidance and tools are beneficial for the civil aviation authorities and aviation stakeholders for the implementation of the States' Action Plans on emissions reduction and are available on the ICAO website.

The Solar-at-Gate technology

Part of the ICAO partnership with the GEF and UNDP was to define a pilot project that could be fully replicated in ICAO Member States, and particularly in SIDS and Least Developed Countries (LDCs). As energy costs and reliability can represent a challenge in these States, an aviation project using renewable energy was chosen as the pilot project.

Aircraft conventionally use on-board auxiliary power units (APUs) and ground power units (GPUs) to provide electricity and cabin climate control while an aircraft is parked at a gate before departing for their next flight. The "solar-at-gate" technology is an innovative solution, for which a methodology was designed by ICAO in cooperation with the United Nations Framework Convention on Climate Change (UNFCCC) to reduce greenhouse gas emissions by providing solar energy directly to aircraft during ground operations.

A solar facility is installed at the airport premises, which supplies the power demand to operate an electric GPU and pre-conditioned air (PCA) units. 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.

2 https://www.icao.int/environmental-protection/Pages/ICAO_UNDP.aspx

With the funding of the ICAO and UNDP-GEF initiative, ICAO was able to implement the first of its kind "solar-at-gate" project at Norman Manley International Airport in Kingston, Jamaica in 2018. This small-scale (100kWp capacity) demonstration project now serves as a model for other airports to follow as an emission mitigation strategy.

ICAO-EUROPEAN UNION ASSISTANCE PROJECT: CAPACITY BUILDING FOR CO_2 MITIGATION FROM INTERNATIONAL AVIATION[3]

This project has been one of the landmark capacity building and assistance initiatives at ICAO and one of the first projects to fully represent the spirit of ICAO's *No Country Left Behind* initiative. With the financial contribution of the European Union, ICAO supported a group of fourteen States in Africa and the Caribbean to develop and implement States' Action Plans on emissions reduction, and to establish an efficient CO_2 emissions monitoring system – the Aviation Environmental System (AES) - for the collection and reporting of environmental data.

To assist in the implementation of mitigation measures, ICAO selected four pilot projects to be executed with project funding in the beneficiary States based on their carbon reduction potential and replicability, as follows:

- *Two new solar-at-gate projects to power with solar energy aircraft during ground operations at the international airports in Douala, Cameroon and Mombasa, Kenya.* 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; and
- *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.

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

In addition to these pilot projects, the project also funded a set of feasibility studies on clean energy and sustainable aviation fuels, which provide the governments of the selected States with policy advice that may unveil new opportunities to get to the edge of innovations for a sustainable aviation sector.

The implementation of this assistance project has been a successful journey for ICAO. From its inception in 2013, ICAO aimed at strengthening capacities of the civil aviation authorities to engage in the development and implementation of environmental protection policy through tailored training, tools equipment, and other resources. ICAO succeeded in transforming the organizational culture towards environment in the aviation sector of the beneficiary States. Environmental Units with dedicated staff have been created in the civil aviation authorities of most of these States. This gives ICAO confidence that the results achieved will be sustainable in the future.

The implementation of such assistance projects should not remain as one-time initiatives but should be part of a long-term strategy in ICAO. Specific funding for capacity building and technical assistance on environment will allow ICAO to ensure that all Member States can contribute to the collective efforts to achieve ICAO's aspirational goals on environment and that *No Country is Left Behind*.