Chapter 5

IMPLEMENTATION AND ASSISTANCE

5.1 IMPLEMENTATION CONSIDERATIONS

5.1.1 The development and submission of an action plan is not the end goal, but the beginning of a multi-year effort to reduce the impact of international aviation on the global climate while ensuring that aviation continues to grow in a sustainable manner. After the action plan has been finalized, a State will need to set in motion a process to implement the relevant measures in the action plan either directly or by working with and through stakeholders.

5.1.2 Various stakeholders will be involved in, and actively contribute to, the implementation of the selected measures. Continuous consultation and coordination between the various stakeholders will be essential to the successful implementation of the action plan.

5.1.3 The State will need to monitor the implementation of all activities. At the same time, the State will need to continue to work through ICAO to ensure that the needs identified by the State are met, in accordance with the practices and policies of the Organization, for the successful implementation of mitigation actions for which additional action at the international level would be necessary. Areas in which such assistance could be provided include gaining access to financial resources, building national capacities and receiving technological or technical assistance.

5.2 IDENTIFICATION OF ASSISTANCE NEEDS

5.2.1 The voluntary preparation of States' action plans will assist States in identifying their basket of measures to limit or reduce CO_2 emissions from international aviation, as well as the specific assistance needs to implement such measures, including financing, technical assistance and training/capacity building. In turn, it will allow ICAO to address States' specific needs in terms of facilitating access to the required assistance.

5.2.2 The financial information contained in the action plan provides an excellent forecast of when funding will be required. Funding may come from internal or external sources. Funding for the required investment may come in various forms, such as accumulated profits, government contributions, commercial debt financing (including loans and leasing), bond issues and equity financing. External sources of financing for environmental initiatives and actions to mitigate climate change exist and are expanding.

5.2.3 ***If an existing action plan is being updated***, the State should clearly indicate what assistance is needed in order to implement its updated action plan.

5.3 ACTION PLANS AS A SOURCE OF ASSISTANCE

5.3.1 Action plans create the possibility of partnerships, cooperation, capacity building, technology transfer and assistance. Stakeholders in States recognize the value in clearly communicating a strategy for achieving a specific objective. Many external organizations are creating potential funding opportunities for action on climate change from the aviation sector. To this end, States can build upon their action plan to demonstrate their commitment to the

implementation of climate change policies and mitigation measures, even if resources are not readily available. The information requested for the development of State action plans bears the potential to create a comprehensive business case for States wishing to request implementation support.

5.3.2 The ICAO public website on financing and assistance[1] provides up-to-date descriptions of climate change financing mechanisms and possibilities of financing for the international aviation sector. The guidance document on *Financing Aviation Emissions Reductions*[2] developed in the framework of the ICAO-UNDP-GEF capacity-building and assistance project also provides invaluable information on the financing options for low carbon aviation measures. In addition, a list of climate funds can be found at www.climatefundsupdate.org, with information also available on the World Bank website, www.climatefinanceoptions.org. The information presented therein is for information purposes only. Material provided by the websites is provided "as is", without warranty of any kind, either express or implied, including, without limitation, warranties of merchantability, fitness for a particular purpose and non-infringement. The Organization accepts no responsibility or liability whether direct or indirect, as to the accuracy, completeness or quality of the information, or for any consequence of its use.

5.3.3 ICAO will continue to play a pivotal role in providing assistance to its Member States through the dissemination of the latest information on best practices and the provision of guidance and other technical assistance to enhance capacity building and technology transfer, including through the ICAO Technical Cooperation Bureau.

5.3.4 Moreover, ICAO will continue to initiate specific measures to assist developing States as well as to facilitate access to financial resources, technology transfer and capacity building. ICAO's partnerships with the European Union, and UNDP with financing from GEF, are testimonials to the Organization's commitment to support its Member States, in the spirit of the No Country Left Behind initiative.

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1. http://www.icao.int/environmental-protection/Pages/financing.aspx
2. https://www.icao.int/environmental-protection/Documents/ICAO_UNDP_GEF_FinancingLowCarbonAirportGuidance.pdf

Appendix A

BASKET OF MEASURES TO LIMIT OR REDUCE CO_2 EMISSIONS FROM INTERNATIONAL CIVIL AVIATION

This appendix summarizes all measures to limit or reduce CO_2 emissions from international civil aviation. All measures listed below can also be found on the Action Plan for Emissions Reduction (APER) website. These measures have been developed by the Group on International Aviation and Climate Change (GIACC) and subsequently approved by the High Level Meeting on Climate Change in November 2009. This list has since been updated in line with the basket of measures defined by Assembly Resolution A39-2.

The list below is deconstructed into four categories, which are subdivided into measures (a, b, c, etc.) and subsequently into actions (i, ii, etc.).

1. Technology and Standards

    a) aircraft fuel efficiency standards

    b) purchase of new aircraft

    c) retrofitting and upgrade improvements on existing aircraft

        i) improve fuel efficiency through development of modification (wingtip fence, blended winglet/sharklets, raked wingtip, etc., drag reduction, turbulent flow drag coatings, high power light emitting diode (LED) lighting, wireless/optical connections)

        ii) replacement of engines

        iii) replacement or modification of avionics

    d) optimizing improvements in aircraft produced in the near- to mid-term

        i) maximizing contribution of lightweight materials in aircraft planned for the near future

        ii) maximizing contribution of engine technology in aircraft planned for the near future

        iii) maximizing contribution of auxiliary power sources in aircraft planned for the near future

    e) avionics

    f) adoption of revolutionary new designs in aircraft/engines

        i) open rotor

        ii) blended wing body

iii) improved laminar flow

2. Sustainable aviation fuels (SAF)

a) development of aviation fuels with lower life cycle CO_2 emissions

b) standards/requirements for SAF use

3. Operational improvements

3.1 Air Traffic Management (ATM)

a) more efficient ATM planning, ground operations, terminal operations (departure, approach and arrivals), en-route operations, airspace design and usage, aircraft capabilities

i) measures to improve pre-departure planning and arrival planning (departure management (DMAN) and arrival management (AMAN))

ii) measures to improve ground operations

iii) measures to improve airport collaborative decision-making (A-CDM)

iv) measures to improve the use of optimum flight levels

v) measures to improve the use of optimum routings

vi) measures to improve flexible tracks

vii) measures to improve fuel efficient departure and approach procedures (PBN STAR, CCO, CDO, etc.)

viii) measures to fully utilize RNAV/RNP capabilities

ix) measures to improve flexible use of civil-military airspace

b) more efficient use and planning of airport capacities

i) measures to improve taxiing

ii) measures to improve parking

iii) measures to enhance terminal support facilities

iv) measures to plan new capacity when bottlenecks cause environmental problems

v) enhancing weather forecasting services

c) collaborative research endeavours

3.2 Operations

a) best practices in operations (Doc 10013 — *Operational Opportunities to Reduce Fuel Burn and Emissions*)

i) minimizing weight

ii) minimizing flaps (take-off and landing)

iii) minimizing reversers use

iv) single engine taxi

v) E-Taxi (only for A320 and B737)

vi) improving load factors

vii) reduced speed

viii) improved ground operations

ix) training pilots

4. Market-based measures

a) Voluntary inclusion of a State in the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

b) Incorporation of emissions from international aviation into regional or national market-based measures, in accordance with relevant international Standards and instruments

c) Emissions charges or modulation of landing and take-off (LTO) charges, in accordance with relevant international instruments

i) NO_x charges

ii) Fuel charges

iii) other

d) accredited offsetting schemes

Supplemental benefits for domestic sectors

Market-based measures

Airport improvements

a) airfield improvements

i) installation of LED lighting instead of classic lighting

b) reduced energy demand and preferred cleaner energy sources

   i) use cleaner alternative sources of power generation (photovoltaic panels, wind generators)

   ii) use cleaner heater/cooler equipment and/or minimize heater/cooler utilization

   iii) reduce electrical demand (switch off unnecessary lights, promote stairs instead of lifts, etc.)

c) enhanced ground support equipment (GSE) management

   i) reduce distance travelled

   ii) avoid unnecessary idling of equipment

d) conversion of GSE to cleaner fuels

   i) electrical operated ground vehicles

   ii) gas operated ground vehicles

   iii) alternative fuel operated ground vehicles

e) improved transportation to and from airport

   i) improved public transport access

   ii) improved employee transportation

Appendix B

TEMPLATE FOR STATES' ACTION PLANS ON CO_2 EMISSIONS REDUCTION ACTIVITIES

1. This template has been developed to assist States intending to prepare and submit to ICAO an action plan outlining their policies and actions for addressing CO_2 emissions from international aviation. An action plan is a tool that a State can use to showcase and communicate, both at the national and international level, its efforts to address CO_2 emissions from international aviation.

2. In many respects, the development of an action plan resembles the execution of any project potentially involving activities such as securing resources, assembling a team, and planning and implementing various tasks. The structure of the action plan is intentionally simple in order to facilitate straightforward communication of the actions that a State intends to take and their expected results.

3. This template is generic and can be used for all types of action plans, ranging from simple compilations of data to elaborate reports. The level of information presented should be sufficient to clearly demonstrate the effectiveness of the actions implemented by a State and for ICAO to determine the anticipated global benefits from these actions.

4. ICAO has developed an interactive Action Plan for Emissions Reduction (APER) website that follows this template to simplify the submission of an action plan. This is the preferred method for submitting an action plan, and instructions for accessing the APER website are presented in Chapter 2, 2.6. Alternatively, if you are unable to access the website, you may fill out the template and submit it by e-mail to actionplan@icao.int.

5. This template is divided into five sections:

Section 1 — Contact information

Section 2 — Baseline scenario

Section 3 — Measures to mitigate CO_2 emissions

Section 4 — Expected results

Section 5 — Assistance needs

6. Per Assembly Resolution A39-2: *Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change*, States are encouraged to share information contained in their action plans. Focal points would need to inform the ICAO Secretariat action plan team (actionplan@icao.int) if they want their entire action plan or any part of it to be made publicly available on the ICAO public website.

SECTION 1 — CONTACT INFORMATION

For more information, please refer to Chapter 2 of this guidance document.

1.1 Contact information

Please provide below the contact information for the focal points within your State for your action plan. Please note that the first point of contact entered should be the individual responsible for submitting the action plan to ICAO.

Name of the Authority: ……..

Point of contact: ……..…

Street address: ……..

Country: ……..

State/Province: ……..

City: ……..

Telephone number: ……..

Fax number: ……..

E-mail address: ……..

Please note that you can provide as many contacts as necessary and one individual per mitigation measure, if desired.

SECTION 2 — BASELINE SCENARIO

In order to understand the benefits that can be expected from the implementation of a basket of measures, it is useful to quantify both the historic fuel consumption and traffic, as well as to project into the future what would happen in the absence of the action plan.

For more information, refer to Chapter 3 of this document.

2.1 Baseline scenario

In the table below, describe the estimated baseline of fuel consumption and CO_2 emissions for international aviation within your State.

	Data required in order for an action plan to be considered complete by ICAO			*Optional Data*		
Year	***International RTK (tonne kilometres)***	***International fuel (litres)***	***International CO_2 emissions (metric tonnes)***	*Total RTK (tonne kilometres)*	*Total fuel (litres)*	*Total CO_2 emissions (metric tonnes)*
Historic year						
Historic year						
Future year						
2040						
Future year						
2050						

Please indicate by checking the box below how your State accounts for CO_2 emissions from international traffic:

☐ All international flights operated by all air carriers registered in your State (ICAO methodology — State of registration)

☐ All international flights that depart from your State (IPCC methodology — State of departure)

SECTION 3 — MEASURES TO MITIGATE CO_2 EMISSIONS

Various measures could be taken by States, air carriers, airports and air navigation service providers to reduce CO_2 emissions from civil aviation. Different categories constituting the basket of measures have been identified, including:

a) technology and standards;

b) sustainable aviation fuels;

c) operational improvements; and

d) market-based measures, including CORSIA.

For more information, refer to Chapter 4 of this document.