International Civil Aviation Organization

MIDANPIRG/20 and RASG-MID/10 Meetings

(Muscat, Oman, 14-17 May 2023)

Agenda Item 7: Any other business

1ST DRAFT OF SULTANATE OF OMAN'S ACTION PLAN ON REDUCING CO_2 EMISSIONS FROM INTERNATIONAL AVIATION

(Presented by the Sultanate of Oman)

Summary

This paper provides information on the Sultanate of Oman's progress on international aviation and climate change, including the preparation of its voluntary State Action Plan as part of an ICAO initiative for aviation CO_2 emissions reduction from international aviation. The State Action Plan provides information on the baseline scenarios and associated mitigation measures to reduce the environmental impact on the civil aviation industry. This will contribute to ICAO's Long Term Goals (LTAG) of the Decarbonization Strategy 2050 as well as its contribution to the sustainable development of the air transport system in the Sultanate of Oman, taking into account its three pillars: Economy, environment and society that in turn enable the achievement of related Oman's Vision 2040 objectives.

REFERENCES

- ICAO Assembly Resolution A41-18/21.
- ICAO Doc 9988, "Guidance on the development of action plans for CO_2 emission reduction activities".

1. INTRODUCTION

1.1 The 39th Session of the ICAO Assembly held from September 27 to October 7, 2016, adopted Resolution A39-2: Consolidated statement of continuing ICAO policies and practices related to environmental protection — Climate change. Resolution A39-2 reflects the determination of ICAO's Member States to provide continuous leadership to international civil aviation in limiting or reducing its emissions that contribute to global climate change. A central element of Resolution A39-2 is for States to voluntarily prepare and submit action plans to ICAO, which States were initially invited to submit by the 37th Session of the ICAO Assembly in October 2010.

1.2 The Assembly recognized ICAO's tremendous progress during the 2013 - 2016 triennium and reaffirmed the collective aspirational goals that were established by the 37th Session of the ICAO Assembly. It agreed on a comprehensive strategy to progress all elements of its "basket of measures", namely: technology and standards, sustainable aviation fuels, operational improvements, and market-based measures.

1.3 Climate change and reducing carbon emissions are of great importance to the Sultanate of Oman, as their environmental impacts may be a fundamental constraint on air transportation growth. We recognize that there must be immediate and focused actions to reach our target of net-zero emissions if we

are to undertake the interconnected challenges to the sector from aviation noise, air quality, and climate impacts.

1.4 The Sultanate of Oman will continue to actively work alongside ICAO to support the development of a global sustainability framework for Sustainable Aviation Fuel (SAF), Lower Carbon Aviation Fuels (LCAF), and the Carbon Offsetting and Reduction Scheme for International Civil Aviation (CORSIA).

1.5 Ensuring the long-term sustainability of the Aviation market in the Sultanate of Oman needs access to cleaner technology for airlines and deployment in airports to ensure ICAO's (LTAG) of the Decarbonization Strategy 2050 and consequently to achieve the 17 UN Sustainable Development Goals.

1.6 The voluntary State Action Plan (ICAO) is a reporting tool for states to communicate information on actions to address CO_2 emissions from international aviation to ICAO, which enables it to compile the aspirational goals. At a minimum, a State Action Plan should contain five elements (Doc 9988):

i- **Focal Point Information:** Contact information of the officially nominated SAP Focal Point.

ii- **Baseline Scenario:** Estimated fuel consumption, CO_2 emission, and RTK for international aviation (Without action).

iii- **Mitigation Measures:** Details of the actions to be taken to mitigate CO_2 emissions.

iv- **Expected Results:** Estimated impact of selected mitigation measures on the baseline, including fuel consumption, CO_2 emissions.

v- **Assistance (If needed):** Details of any assistance needed by the state.

1.7 This paper regarding the State Action Plan is in response to the initiative launched by the International Civil Aviation Organization (ICAO) to establish a long-term strategy on climate change and is in accordance with ICAO Assembly Resolution A41-18 “Consolidated statement of ICAO's continuing policies and practices related to environmental protection – Climate Change". It will highlight the current CO_2 emissions from air transport in the Sultanate of Oman and our ambitious mitigation measures. Preparing this voluntary SAP will assist ICAO in noting the relevant activities and initiatives that will be undertaken by the Sultanate and showcase the commitment and progress toward reducing CO_2 emissions from international aviation.

2. DISCUSSION

2.1 Geography and Economics

2.1.1 The Sultanate of Oman is positioned astride the Tropic of Cancer at the south-eastern corner of the Arabian Peninsula between latitudes 16°40'N and 26°20'N and between longitudes 51°50'E and 59°50'E. It is situated at the southeast corner of the Arabian Peninsula, encompasses a land area of 309,500 km^2, and is characterized by a diverse range of topography, including mountain ranges, arid deserts, and fertile plains.

a) **Map of the Sultanate of Oman to be on ICAO's green map after the approval of SAP.**

2.1.2 The Sultanate of Oman has the fifth-largest economy in the (GCC) region. In 2017, the Gross Domestic Product (GDP) reached US$ 70.78 billion, compared to US$ 19.507 billion in 2000 (The World Bank, 2019). The average annual GDP growth rate from 2014 to 2017 was nearly 2.9%. However, over this same period (2014-2017), the gross national income per capita decreased at an average rate of -7.07% per year, according to the sharp decline in crude oil prices in the global market, which led to a sharp fall in Omani oil export receipts.

2.1.3 The Sultanate of Oman is already subject to extreme climatic conditions like destructive tropical depressions, tropical cyclonic storms, and severe cyclonic storms that will likely become extreme due to climate change. Over the past several decades, average temperatures have increased by around 0.4°C per decade (1980-2013). In the future, temperatures will increase by up to 5.0°C while annual rainfall will decrease by up to 20 mm/year by the end of the century, according to RCP 8.5. Future changes in the climate of the Sultanate of Oman will adversely affect the strategic sectors in Oman.

2.2 **Oman vision**

2.2.1 Oman Vision[1] 2040 was officially endorsed to guide the nation over the next two decades to an advanced nation's position by focusing on four key pillars: a society of creative individuals, a competitive economy, responsible state agencies, and an environment with sustainable components.

2.2.2 The main objectives under the environment with sustainable components pillar are: an environment that ensures balance between environmental, economic, and social requirements, according to sustainable development guidelines; diversified sources of energy and rationalized consumption to achieve energy security; environmental ecosystems that are of high quality and free from pollution; Food and water security are achieved through renewable resources, advanced technologies, optimal exploitation of Oman's strategic location and biodiversity, and a green and circular economy that addresses national needs and moves consistently with global trends.

2.2.3 Oman announced in 2022 its commitment to achieving net-zero emissions by 2050. Six leading decarbonization technologies would support an orderly transition: energy and resource efficiency, electrification and renewables, battery electric technology, sustainable hydrogen, carbon capture and storage, and negative-emission solutions.

2.2.4 The Sultanate of Oman aims to implement a national strategy establishing structure and action plans with practical policies to ensure a smooth transition to sustainable and decarbonized transport. The main objectives of the sustainable low-carbon transport strategy are the analysis and forecasting of carbon emissions in Oman's transportation sector, a solid low-carbon transportation policy, catalysing international and national climate finance investments for scale-up climate-smart transformation, and

[1] See: https://www.oman2040.om/index-en.html.

promoting human and institutional capabilities at all levels of government to support the transition to low-carbon transportation.

2.3 **Air transport Industry and Environment**

2.3.2 Civil aviation in Oman plays a critical role in the country's national economy and social development. Over the last decade, the aviation sector in Oman has seen a significant increase in air traffic, and it is forecast to grow considerably in the coming years. While a boost in air traffic is a positive sign of progress, it also represents detrimental impacts on the environment, which leads to an urgent need to address the environmental effects of air transportation.

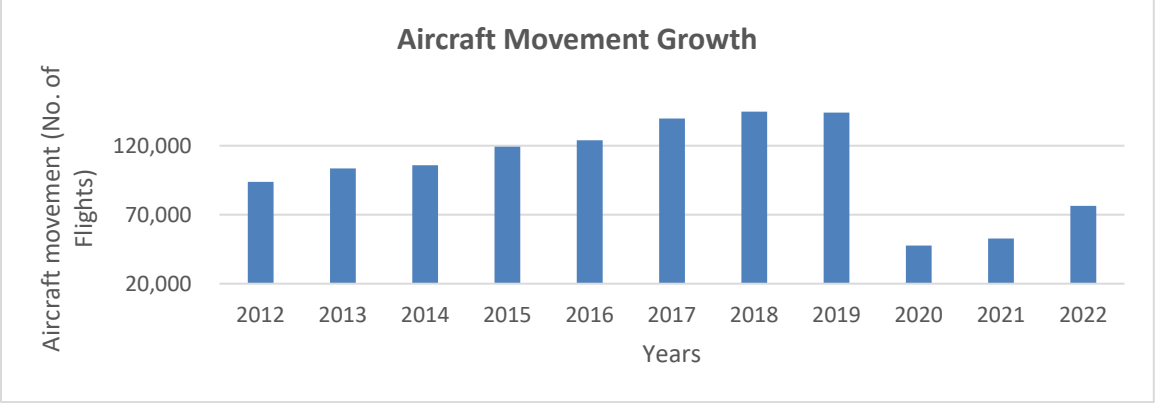
2.3.3 In 2018, the new Muscat International Airport was opened. Building modern airports with state-of-the-art technology and all the amenities and facilities necessary creates a unique experience for passengers traveling through Omani airports. During the first phase of expansion, the Muscat International Airport had a total capacity of 20 million passengers; however, further development plans can accommodate 56 million passengers per annum in later stages.

2.3.4 The other international airport in Oman is Salalah Airport, which has a capacity of 2 million passengers per year and can be increased to 6 million passengers per year, and Sohar Airport, which has a capacity of 300,000 passengers per year and can be increased to 500,000 passengers per year.

2.3.5 As part of its strategic direction, Oman Airport has designated environmental sustainability as a focused strategic driver. Environmental sustainability includes several key success measures adopted from Oman Vision 2040, including a percentage of Carbon Reduction and non-hazardous waste recovery. In addition, and as part of the international aviation community, Oman Airports have joined the Airports Council International (ACI) Carbon Accreditation Program since 2017 to drive carbon emission neutralization in the airport community.

2.3.6 Travel and tourism expenditures have been growing at 8% per annum since 2009. More than 590,000 aircraft used Oman airspace in 2019, and about 75 destinations were from and to Muscat, Salalah, and Suhar airports. In the same regard, passenger traffic increased by 12% annually between 2013 and 2019, reaching 17828387 passengers at Muscat, Salalah, Suhar, and Duqm airports. Cargo traffic grew by 11% annually between 2013 and 2019, reaching 236414 tons. Flight movement at Sultanate of Oman airports grew by 6.3% annually between 2013 and 2019, reaching 144019.

b) **Aircraft Movement Growth in Oman for the period 2012 – 2022 (CAA).**



2.4 **Establishing the Baseline**

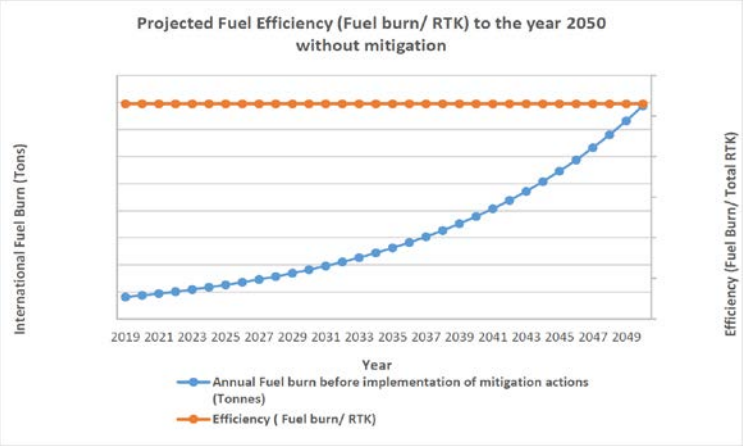
2.4.2 Establishing the baseline is a key part of an action plan because it provides the opportunity to determine the historical levels of international aviation fuel consumption and traffic and to project into

the future the growth in fuel consumption and traffic in the absence of the actions described in the plan. It provides a reference point against which the state can understand the expected progress of their actions, i.e., the implementation of mitigation measures, and monitor progress in the future.

2.4.3 A baseline scenario (business as usual) was developed using the ICAO methodology "Method C" for international transport to estimate expected fuel consumption and traffic data (RTK) over a continuous time frame given the extension of trends observed in the past by the use of the ICAO EBT tool.

2.4.4 The evolution and trend of international fuel burned show that since 2020 there has been a significant increase in the fuel burned; confirming the increasingly important role Oman may be playing in the region. Furthermore, aggregate methodologies are used to determine the amount of fuel burned. This information on fuel burned by aircraft type was obtained by both air carriers "Oman Air" and "Salam Air". For the purposes of this SAP, fuel consumption was reported in tons, using 3.16 as a conversion factor.

c) Baseline scenario (Business as usual without any mitigation measures).



2.5 Mitigation Measures and expected CO_2 emissions reduction

2.5.2 The selected mitigation measures were calculated and quantified, and it should be expected to save a certain amount that is out of the total 100 % tonne (below table) of fuel per the upcoming 30 years (up to 2050), which will reduce the amount of CO_2 emissions by % tonne for the same period.

a) Expected quantified fuel saving (% / 30 years) using different types of mitigation measures.

Type of the Mitigation Measures and Category	Total expected fuel saving (Tons)
Purchase of new aircraft for replacement.	88.33 %
More efficient operations (Single engine taxi, Minimizing/delaying flaps, Minimizing reverse use).	8.99 %
Improved Air traffic Management (CDA).	2.19 %
Economic/Market Based Measures.	0.48 %
Total Amount (Fuel Savings / CO_2 reduction (tonne))	**100 %**

3. CONCLUSION

3.1 This paper discussed the ongoing preparation for the Sultanate of Oman's SAP, which is regarded the most vital and strategic document that presents an aviation emission reduction action plan for sustainable aviation growth. The (SAP) summarizes the development of the aviation environment and aviation infrastructure in the Sultanate of Oman and quantifies the intended list of mitigation measures that have been used by our national carriers to the period 2050 and consequently to achieve ICAO's Long-Term Aspirational Goal (LTAG) of the Decarbonization Strategy 2050.

4. ACTION BY THE MEETING

4.1 The meeting is invited to note the contents of this Information Paper.

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