

**54th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

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AGENDA ITEM 5: AVIATION AND ENVIRONMENT

**MEASURES TAKEN BY PAKISTAN CAA TO
IMPROVE THE ENVIRONMENT**

(Presented by Pakistan)

INFORMATION PAPER

SUMMARY

Pakistan has taken significant measures under its new aviation policy to improve the environmental standards in aviation. To attain quieter environment a limitation on the age of aircraft has been introduced through National Aviation Policy. In the last few years, Pakistan has introduced several new routes which have consequently resulted in reduction of CO₂ emission. PCAA further ensures that the aircraft on its register are maintained and operated in compliance to their design noise levels. It also calls for the Government and the industry to work together for a number of environmentally beneficial or “green” aviation initiatives.

MEASURES TAKEN BY PAKISTAN CAA TO IMPROVE THE ENVIRONMENT

1. INTRODUCTION

1.1 Pakistan as a contracting state has lately stressed the significance on compliance to the international noise and environmental standards through its National Aviation Policy issued in 2015 (known as NAP-2015). The Policy emphasises to reduce or possibly eliminate as much potential harm to the environment as possible and make air travel as efficient and economical as it can be. It also calls for the Government and the industry to work together for a number of environmentally beneficial, or “green” aviation initiatives

2. INFORMATION

2.1 Aircraft Noise

2.1.1 The introduction of jet aircraft operations, as well as the general increase in air traffic, has resulted in international concern over aircraft noise. To facilitate international collaboration on the solution of aircraft noise problems, ICAO vide Annex 16 Vol I, part III to recommend a procedure for monitoring aircraft noise on and in the vicinity of aerodromes, however, owing to limited traffic on Pakistani Aerodromes, no such procedure has been developed as yet.

2.1.2 However, aircraft noise certificate is issued pursuant to Volume I of Annex 16 to the Convention on International Civil Aviation, in respect of an aircraft which is considered to comply with the prescribed noise standards, when maintained and operated in accordance with the relevant requirements and operating limitations.

2.2 PCAA Compliance

2.2.1 PCAA as a State of registry, in compliance to Annex 16 Vol I, issues Noise Certificates based on the satisfactory evidence provided either by the manufacturers’ documents approved by State of Design (i.e. Airplane Flight Manual, Noise Type Certificate Datasheet, Type Certificate Datasheet) or the Noise Certificates issued by previous State of Registry, which confirms that the aircraft meets the requirement of ICAO.

2.2.2 The certificate is required to be carried at all times in the aircraft and remains valid until the aircraft is de-registered from Pakistan Civil Aircraft Register.

2.2.3 Government of Pakistan has not prescribed any specific requirement regarding aircraft noise over and above the limits given by ICAO. The noise levels of aircraft comply with the ICAO Standards, when the aircraft is maintained and operated in accordance with the relevant requirements and operating limitations. PCAA, therefore, ensures that the aircraft on its register are maintained and operated in accordance with the approved Aircraft Maintenance Program and operating limitations and thus remain in compliance to their design noise levels. During last ICAO USOAP Audit the compliance level of PCAA was determined as 84.6%, which shows that the Maintenance and Operation standards are being followed and consequently, aircraft Noise levels are within the prescribed limits.

2.2.4 Older aircraft generally have an inherent problem of noise. In compliance to NAP 2015, another step towards a quieter Aviation environment has been taken by Government of Pakistan, by restricting the aircraft age to 12 years for induction and 20 years for operation in Pakistan. The aircraft older than 20 years are being phased out by the operators in Pakistan.

2.3 Aircraft Emissions

2.3.1 Purpose of Annex 16 Vol II is to control following emissions for certification of aircraft engines:

- a) Smoke Gaseous emissions
- b) Unburned hydrocarbons (HC)
- c) Carbon Monoxide (CO)
- d) Oxides of Nitrogen (NOx).

2.3.2 Annex 16 Vol III has recently been introduced which will become effective on 1st January 2018, and will specifically deal with the Carbon Dioxide CO₂ emissions.

2.3.3 Emissions certification is granted by the certificating authority of engine manufacturer on the basis of satisfactory evidence that the engine complies with requirements which are at least equal to the stringency of the provisions of Volume II of Annex 16.

2.3.4 The Type Certificate of an aircraft certifies compliance to Annex 16 Vol II. Moreover, type Certified Engines are also verified by ICAO for compliance of applicable emission standards.

2.3.5 Being State of Registry, Emission standards are ensured at the time of induction of aircraft for which these requirements are applicable.

2.4 Pakistan's Commitment To Greener Environments

2.4.1 A study conducted by Air Transport Action Group suggested that human-made CO₂ emissions by Aviation Industry contribute to only 2% of global CO₂ emissions. IATA Annual Review 2016 stated that the average number of flights in a day has crossed 100,000 mark worldwide, whereas the average number of daily flights in Pakistan are around 430 at all airports. It is evident that Pakistan's aviation contributes less than 0.0086% of the global CO₂ emissions, which can be considered negligible. However, Government of Pakistan is still strongly committed to the Green Initiatives as shown through NAP 2015. The following measures have already been implemented by PCAA:

2.4.2 **Aircraft Fleet Age:** For Airlines, the age of aircraft has been limited to a maximum of 12 years at the time of its induction and maximum operating life of 20 years for already registered aircraft. These steps are greatly helping in reducing emissions to the environment. Statistically speaking, since the issuance of National Aviation Policy NAP 2015, Airlines inducted 33 aircraft having age, less than 12 years, while 20 registered aircraft have been grounded/retired which exceeded the 20 years threshold. Resultantly, more than 50% of the country's RPT aircraft fleet comprises of modern aircraft of less than 12 years of age.

2.4.3 Enroute operations - Improved ATS route structure

2.4.3.1 In the last few years, Pakistan has introduced several new routes e.g. M875 & L509 resulting in 53 and 66 NM reduced track distances respectively. This has resulted in substantial reduction in CO₂ emissions (13M and 14.6M Kg per annum as reported by IATA).

2.4.3.2 Aircraft operations are being carried out at optimum flight levels to minimize fuel burns / environmental impact. Similarly, through implementation of operational scheme under ATFM optimum numbers of aircraft are being accommodated at economical flight levels.

2.4.4 Terminal operations

2.4.4.1 All major airports are being served by surveillance facility (PSRs & SSRs) and arriving/ departing aircraft are vectored to maintain efficient operation avoiding holdings,

intermediate level off and final approach interception at **optimum position. These efforts are contributing in reducing CO₂ emissions** through better management.

2.4.4.2 PBN (RNAV) STARS have been implemented at all major airports, which significantly help in reducing fuel consumption/ CO₂ emissions.

2.4.4.3 The implementation of Continuous Climb Operations (CCO) and Continuous Descent Operations (CDO) at major airports by re-structuring airspace with PBN airspace concept, has also contributed towards reducing fuel burns / CO₂ emissions.

2.4.5 **Approach operations**

2.4.5.1 Implementation of RNAV (PBN) approaches enable aircraft to intercept final approach course directly without requiring any reversal or racetrack manoeuvres, thus reducing track miles / fuel burns. PBN approaches with the vertical guidance using CDO technique also helps in minimizing fuel consumption and reducing CO₂ emissions.

2.4.5.2 On ground delays have been reduced significantly through improved operational procedures to minimize environmental impact through less fuel burn and CO₂ emissions.

2.4.6 **Airport Operations:** All major airports are being equipped with pre conditioned air (PCA) supply units reducing dependence on Diesel engine operated units, In addition all such airports have now been equipped with solid state GPUs operated on commercial power supply and medium sized airports are also been provided the said facility. Some of the airports have been installed with LED CAT-III B technology to cut dawn on unplanned diversion of aircraft, under a comprehensive plan all major and medium size airports are being audited to switch over with environment friendly sources of energy with an envisaged target of energy reduction of 20%. In order to utilize the day light, the new terminal building are being design to avail the natural light to a maximum.

3. **ACTION BY THE CONFERENCE**

3.1 The Conference is invited to note the information contained in this Paper.

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