



HIGH-LEVEL MEETING ON INTERNATIONAL AVIATION AND CLIMATE CHANGE

Montréal, 7 to 9 October 2009

Agenda Item 2: Proposals for strategies and measures to achieve emissions reductions

MEASURES ADOPTED BY CIVIL AVIATION SECTOR IN INDIA

(Presented by India)

INFORMATION PAPER

SUMMARY

This paper deals with the initiatives taken by India towards mitigation of carbon emission from international aviation. The paper describes various measures that have been taken by regulatory authority, airlines, air navigation service provider and airport operators in managing the carbon emission from their respective activities. The HLM-ENV is therefore invited to note the information contained in this paper.

1. INTRODUCTION

1.1 The world is getting warmer, primarily due to the continuing concentration of carbon dioxide (CO₂) emitted through human activity and industry. Carbon emission due to vehicular exhaust is one of the major contributors towards global warming. This ultimately leads to changes in atmospheric composition and severe adverse affects, one of them being climate change. It is therefore responsibility of all nations to control the harmful emissions from various sources. During the past several years, the aviation sector has emerged as one of the biggest sunrise sectors and is expected to grow further in near future. Aircraft operations are a source of CO₂ emission and noise pollution also. Therefore, there is a need to address issues pertaining to aviation emission.

1.2 Aviation, though not a major polluter at present, contribute 2 -3% of total GHG emission. However, given the future growth of civil aviation, the contribution of the sector towards GHG is likely to become significant. There have been developments of regulatory nature within the aviation community, and continued actions are taken to mitigate the adverse effects on aviation environment caused by aircraft engine, particularly in the field of emissions and noise pollution.

2. **INDIA'S CONCERN**

2.1 India is faced with the challenge of sustaining its rapid economic growth while dealing with the threat of climate change. This threat emanates from accumulated greenhouse gas emissions in the atmosphere, anthropogenically generated through long-term and intensive industrial growth and high consumption lifestyles.

2.2 Climate change may alter the distribution and quality of India's natural resources and adversely affect the livelihood of its people. With an economy closely tied to its natural resources base and climate-sensitive sectors such as agriculture, water and forestry, India may face a threat because of the projected changes in climate.

2.3 Recognizing that climate change is a global challenge, India is actively engaged in multilateral negotiations in the UN Framework Convention on Climate Change (UNFCCC), in a positive, constructive and forward-looking manner. The objective is to establish an effective, cooperative and equitable global approach based on the principle of Common But Differentiated Responsibilities and respective capabilities (CBDR), enshrined in the United Nations Framework Convention on Climate Change.

3. **PROACTIVE INITIATIVES TO REDUCE CARBON EMISSIONS**

3.1 ICAO through the Group on International Aviation and Climate Change (GIACC) has drawn an aggressive Programme of Action to reduce carbon emissions from international aviation. However, the measures developed by GIACC will take its own time for implementation by the Contracting States. India has already initiated a few steps to reduce carbon emission from aviation sector. The initiatives being already implemented are broadly divided in the following categories:

- a) Initiatives taken by Government;
- b) Initiatives taken by Airlines;
- c) Initiatives taken by Air Navigation Service Provider; and
- d) Initiatives taken by Airports.

3.2 Each aforesaid category has been implementing the initiatives in a way most suitable to their organization without affecting the aviation growth as a whole. With the joint effort of each category, considerable mitigation of carbon emissions at different levels leading to total reduction in carbon emission is expected to be accomplished.

3.3 **Directorate General of Civil Aviation (DGCA)**

3.3.1 DGCA, the regulatory authority in India has set up an Aviation Environmental Unit to coordinate problem and provide feasible solutions to the end-users. The unit has the responsibility of providing technical guidance on issues such as fuel conservation, emission reduction, noise abatement, etc. The unit is also conducting general awareness for the people working in aviation community through lecture series. DGCA has also advised the airlines, air navigation service provider, etc to create similar environment cell in their respective organizations.

3.4 Airlines

3.4.1 The Indian airlines have drawn up various measures depending upon their fleet size and traffic movements. The reduction in fuel consumption has a dual role to play. On one hand, it benefits the operator by reducing the expenditure towards fuel cost, on the other hand it helps in reducing the total quantum of carbon emissions. The operators are being advised improvement in fuel efficiency in their respective fleets. The operators have already started reduction in fuel consumption by adopting better operational procedures such as minimum usage of APU, reduced flap takeoff and landings, idle reverse on landing, proper flight planning system, adhering to proper maintenance of aircraft, weight reductions in the form of reducing the weight of cabin equipment, catering services, avoiding carrying extra fuel on board, etc. Similar exercise are being adopted towards noise abatement also such as minimum usage of thrust reversal, low-noise low drag approaches, steep climbing during takeoff, etc. The airlines are also advised to develop Balanced Approach Procedures for minimizing noise during landing. The fuel efficiency (liters/RTK) data from airlines operating at international sectors have been collected and analyzed. The airlines are working to bring down the current fuel efficiency of their fleet close to world average.

3.5 Air Navigation Service Provider (ANS)

3.5.1 Consistent high growth rate of civil aviation in India coupled with the emergence of new airlines having fleet of new generation aircraft has necessitated the need for rapid up-gradation of facilities, procedures and infrastructure at all airports. The air navigation service provider (ANS) are also contributing to this national endeavour through implementation of PBN procedures for optimizing airspace utilization and enhancing airport capacity by taking advantage of airborne capabilities and GNSS. For sustained effort in implementing PBN procedures at all airports and airspace in India, PBN Implementation Roadmap of India has been established with the objective to accrue quantifiable benefits to the stakeholders in terms of fuel savings, reduction in emissions, capacity enhancement and improved access to the airport. PBN RNAV-1 SIDs and STARs have been made operational at Mumbai, Delhi and Ahmedabad airports since August 2008. Airports at Chennai and Hyderabad will have similar capabilities by the end of 2009. The implementation of PBN at these airports has reduced the flight distance (Great Circle Distance) leading to reduction in annual fuel consumption. This reduction in fuel consumption has reduced the quantity of carbon emissions. Further, plans for implementing Constant Descent Approach (CDA) at major airports of India are under consideration.

3.6 Airports

3.6.1 The main objective is to have a clean and green airport that will have very less carbon footprints. The new airports are being designed on Green Building Codes that are more energy efficient, use natural and renewable energy. They are also encouraged to use solar panels for lighting the interiors of airport terminal buildings, to install waste management plants and to use these wastes to generate electricity, to adopt zero discharge plants using the waste water through water treatment and filtration processes, etc. It has been made mandatory to have rain water harvesting systems for the new airports. The trees are being planted around the new airports to make the environment green.

3.6.2 The airport operators are also advised to explore the possibilities of Clean Development Mechanism (CDM) implementation opportunities at the airports in order to offset the carbon footprints. The airports are also exploring the possibilities of switching over to Compressed Natural Gas (CNG) operated vehicles inside the airport in order to reduce the carbon emissions.

3.6.3 The airports are also planning to install aircraft noise monitoring system in order to track most noisy aircraft and the airlines. The airport operators also conduct on regular basis public awareness camps on Environmental Issues among their staff and employees.

3.7 Recognizing that climate change is a global challenge, India is actively participating in all multilateral negotiations in a positive, constructive and forward-looking manner with an objective to establish an effective, cooperative and equitable global approach based on the principle of common but differentiated responsibilities and respective capabilities set forth in the United Nations framework Convention on Climate Change (UNFCCC).

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