International Civil Aviation Organization
CAR/SAM Regional Planning and Implementation Group (GREPECAS)
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Agenda Item 7: Other Business

MANAGING THE ENVIRONMENTAL CHALLENGES OF AIR TRANSPORTATION

(Presented by the International Air Transport Association)

SUMMARY

This paper highlights the increased importance of CNS/ATM activities in the management of aviation's environmental impacts. Against the background of the ICAO goal of limiting or reducing the impact of aviation emissions on the global climate, it discusses air transportation's responsibility in environmental matters. Environmental impact and benefits need to be considered when defining CNS/ATM systems, including the environmental savings associated with new routes, terminal procedures and ground movements.

This paper calls for all stakeholders to take a more proactive approach to environmental management and pursue the use of operational measures that can limit or reduce the environmental impact of aircraft engine emissions

1. Introduction

1.1 Scientific research, political activity and media attention have familiarized the world with the issue of climate change and its apparent cause and effect. Consequently aviation continues to be questioned and criticized for its contribution to greenhouse gas emissions. Currently, aviation contributes about 2% to total CO2 emissions worldwide – as compared to:

- 18% for road transport
- 35% for electricity/heating, and about
- 23% for industry.

1.2 Aviation is one of the most efficient means of mass transportation. Modern aircraft transport passengers at about 3.5 lt. per 100 km., and as an industry aviation has improved its fuel efficiency performance by about 70% over the last 40 years.

2. **Discussion**

2.1 The ICAO 33rd General Assembly instructed the Council to promote the use of operational measures as a means of limiting or reducing the environmental impact of aircraft engine emissions and to submit at each ordinary session of the Assembly for review a consolidated statement of continuing ICAO policies and practices related to environmental protection. The ICAO Committee on Aviation Environmental Protection (CAEP) has been addressing environment issues and has recently developed the Operational Opportunities to Minimize Fuel Use and Reduce Emissions (Circular 303/AN/176). The fourth meeting of the ALLPIRG/Advisory Group (ALLPIRG/4) addressed environmental issues and concluded that "ICAO Regional Offices and PIRGs support ICAO/CAEP efforts to expand the methodology for the quantification of CNS/ATM environmental benefits to each region by collecting data"

2.2 The March 2006 meeting of ALLPIRG/5 adopted the following Conclusions related to Environmental Benefits:

CONCLUSION 5/7 — Environmental benefits of CNS/ATM systems.

That PIRGs and States:

a) Use the Committee on Aviation Environmental Protection (CAEP) provided CO2 conversion factor in the analysis of environmental benefits of implementing CNS/ATM systems;

b) Prioritize the implementation of voluntary, operationally-based improvements in their air traffic management systems, with emphasis on fuel savings, emissions reductions and noise benefits, and also to mitigate costs to the industry;

c) Provide feedback to ICAO on studies conducted on the environmental benefits of implementing CNS/ATM systems; and

d) Share air traffic data to improve future CAEP assessments, in line with State letter AN 1/17-03/86.

CONCLUSION 5/8 — Globally coordinated air traffic services (ATS) routes.

That PIRGs:

a) Establish a global consolidated, prioritized list of routes and terminal area (TMA) improvements in close coordination with airspace users; and

b) Work with neighboring PIRGs/States/air navigation service providers (ANSPs) to accelerate international route improvements

CONCLUSION 5/9 — Terminal area (TMA) structure and area navigation.

That States:

a) Employ area navigation in all TMAs, including appropriate arrival and departure procedures, to improve efficiency and reduce emissions in the vicinity of airports; and that, in special cases where there are particularly challenging obstacles and where air traffic density is very high and additional approach paths are possible, the more precise and contained required navigation performance (RNP) procedures be employed; and

b) Review operations, procedures and training of controllers to ensure the optimum management of air traffic services

CONCLUSION 5/10 — Environmental benefits of RVSM introduction and regional expertise.

That ICAO:

a) Undertake a study on the environmental benefits of the introduction of RVSM and to ensure that this information is transmitted to policy makers; and

b) Seek appropriate support from recognized expert organizations in its work on quantifying the environmental benefits of RVSM, noting the support offered by EUROCONTROL in this regard.

2.3 It is clear that ICAO, international organizations and contracting States have a valuable role to play to address and minimize the use of fuel and its associated gaseous emissions.

2.4 Therefore, it is important that the CAR and SAM regions take on a proactive role on implementation programs that are “pro-environment”. The ICAO airspace planning forums need to aggressively promote regional awareness of environment issues, pursue environmental saving initiatives, document environment benefits, promote environmental saving programs and implement measures to reduce emissions.

2.5 Although much has been done, there is still room for improvement in the management of aircraft operations in CAR/SAM. The UN Intergovernmental Panel on Climate Change (IPCC) estimates 12% inefficiency in the management of air traffic by ATC. Operational improvements that should be more vigorously pursued include:

a) Shortening air routes,

b) Promoting flexible flight planning,

c) Promoting RNAV and RNP over continental airspace,

d) Further expansion of RVSM,

e) Pursuing reduced separation,

f) Promote dynamic sharing of airspace between civil and military,

g) Promoting flex-tracks, DARP and UPRs in oceanic airspace

h) Promoting RNAV procedures in TMAs,

i) Promoting Continuous Descent Approaches (which can save 450-900 lb. of fuel per flight),

j) Promoting Collaborative Decision Making to reduce ground delays and reroutes,

k) Promoting cruise climbs and oceanic step climbs.

2.6 In order to promote awareness, environmental savings of CNS/ATM should be addressed and environmental benefits documented. Where simple formulas or tables exist, environmental savings should be quantified to routes in the air navigation plan, proposals to airspace planning forums and in report documentation. IATA will do its part in documenting environmental savings to its proposals. Common methodology and standardization of benefit analysis is important and the determination of environment benefits should not be a costly exercise but to the greatest extent possible it should be a simple and cost effective methodology to assess environmental benefits.

2.7 In summary, it is important for the ICAO CAR and SAM Regional Offices, State ATS Providers, and its associated bodies to assess the environmental impact of specific implementation plans and to promote those benefits to the government policy makers faced with making the necessary commitments to CNS/ATM systems implementation.

3. Action by GREPECAS

3.1 The Conference is requested to:

a) Recognize the mandate for ICAO to review how aviation can limit or reduce the emission of greenhouse gases

b) Recognize the requirement to address environmental matters, and therefore the need to consider the environmental issues when defining CNS/ATM systems, including the environment savings of new routes, terminal procedures and ground movements

c) Note the need to establish and maintain a simple and cost effective common methodology to assess and document environmental benefits to airspace and CNS/ATM planning initiatives

d) Commit to a proactive approach by promoting the use of operational measures that can limit or reduce the environmental impact of aircraft engine emissions.

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