WORKING PAPER

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A35-WP/42
EC/7
29/7/04

# ASSEMBLY — 35TH SESSION

## ECONOMIC COMMISSION

**Agenda Item 30: Other air transport issues**

## REPORT BY THE COUNCIL ON EVALUATION OF THE ECONOMIC CONTRIBUTION OF CIVIL AVIATION

**SUMMARY**

This paper reports on ICAO's work on the evaluation of the economic contribution of civil aviation and outlines future work on this subject.

The total economic contribution of air transport, consisting of the direct economic activities and the multiplier effects, is estimated at U.S. $ 1 360 billion output and 27.7 million jobs worldwide in 1998. This suggests that about 4.5 per cent of the world output that year (in terms of real gross domestic product) may be attributed to air transport and its multiplier effects.

In times of scarce funds for aviation infrastructure development, raising awareness of civil aviation's economic contribution becomes increasingly important. ICAO has developed guidance material on assessment methodologies that States can use to demonstrate the wider economic effects of civil aviation.

Action by the Assembly is in paragraph 6.

**REFERENCES**

Doc 9727, *A32 — EC, Report of the Economic Commission of the 32nd Session of the Assembly*
Circ. 292, *Economic Contribution of Civil Aviation* (preliminary version)

## 1. INTRODUCTION

1.1 ICAO's evaluation of the economic contribution of civil aviation stems from renewed Assembly mandates as part of the work in the forecasting and economic planning field. These mandates have been carried out with two objectives, namely to assess the contribution of civil aviation in the global economy and to develop guidance material on assessment methodologies. The results are to be published

in Circular 292, *Economic Contribution of Civil Aviation*, a preliminary version of which is expected to be available for the Assembly. The Circular consists of Volume I – *Global Perspective* and Volume II – *Assessment Methodologies*.

1.2 Measuring the economic contribution of civil aviation gives an account of the impact that air transport, aerospace and other affected industries have in generating output and creating employment throughout a given economy. Methodological guidance material developed by ICAO can serve as a platform for States to evaluate civil aviation's contribution within a regional/local or national economy. In particular, in times of scarce funds for aviation infrastructure development, raising awareness about civil aviation's economic contribution becomes increasingly important for planners and decision makers in aviation financing and policy matters alike.

1.3 This paper summarises civil aviation's contribution to the global economy, describes the new guidance material on methodologies to assess the economic contribution both of an airport to a local/regional economy and of civil aviation in a national economy, and outlines future work on this subject.

## 2. CIVIL AVIATION IN THE GLOBAL ECONOMY

2.1 In 1997, a preliminary assessment of the global economic impact of civil aviation was prepared and presented to the World-wide CNS/ATM Systems Implementation Conference in Rio de Janeiro. Building on that preliminary assessment, a detailed study has been conducted on the global contribution of civil aviation, measured in terms of output value and related employment. A summary of the results was first publicised in an ICAO pamphlet, entitled *Economic Contribution of Civil Aviation – Ripples of Prosperity*, on the occasion of the High-level, Ministerial Conference on Aviation Security (Montreal, February 2002). The detailed results will be contained in Circular 292, Volume I. Some of the key findings are summarised below.

2.2 For the provision of air travel and freight services, air carriers and other operators purchase a wide range of products (goods and services) mainly from airports, air navigation services providers, governmental agencies, public corporations as well as aerospace manufacturing and other industries.

2.3 ICAO estimates that civil aviation directly contributed U.S. $ 370 billion and 6 million jobs to the world economy in 1998. These jobs are comprised of 2.3 million personnel employed by commercial air carriers and affiliates, 1.9 million employed on-site at airports (excluding airline personnel) and 1.8 million employed by aerospace manufacturing and other industries.

2.4 These direct economic activities have "multiplier effects" upon industries providing either aviation-specific and other inputs or consumer products. A detailed explanation of how multiplier effects work is provided in paragraphs 3.2.1 and 3.2.2 below. In simple terms, every U.S. $ 100 of output produced and every 100 jobs created by air transport trigger additional demand of U.S. $ 325 and in turn 610 jobs in other industries. The total economic contribution of air transport, consisting of the direct economic activities and the multiplier effects, is estimated at U.S. $ 1 360 billion output and 27.7 million jobs worldwide in 1998.

2.5 The total output result suggests that about 4.5 per cent of the world output (in terms of real gross domestic product) may be attributed to air transport and its multiplier effects.

2.6 Since these results relate to 1998, consideration was given to repeating this exercise in order to have corresponding results for a more recent year. However, in view of the size of this task and the resources currently available, the Secretariat decided that this was not justified. Moreover, the findings on

the direct contribution and multiplier effects remain generally relevant beyond the assessment year, particularly in view of the steep demand contractions of air travel in 2001 followed by two years of stagnation. The ramifications of these preceding years for the entire civil aviation business testify its importance for the local/regional and national economies in which they are embedded.

2.7 In addition to its total output and employment impacts, civil aviation has a broader influence on overall economic growth, deriving from non-quantifiable benefits for the users of air transport, businesses and individuals alike. Air transport acts as a facilitator for the development of markets and trading of goods as well as services. In 2002, airline scheduled services carried more than 1.6 billion passengers and 30 million tonnes of freight worldwide. Approximately 45 per cent of some 714 million international tourists and some 40 per cent by value of the world's manufactured exports were transported by air that year.

## 3. GUIDANCE MATERIAL ON ASSESSMENT METHODOLOGIES

3.1 The second objective of this work has been to develop guidance material on the underlying methodology and possible approaches to assess the demand effects of economic activities associated with civil aviation. This guidance will be contained in Circular 292, Volume II.

### 3.2 Economic Contribution of an Airport to a Local/Regional Economy

3.2.1 The first part of the guidelines describes how to assess the economic impact of an airport in a local/regional economy. An economic impact assessment identifies the multiplier effects of the direct demand throughout industries providing either aviation-specific and other inputs or consumer products by applying input-output analyses. Input-output analysis is a method which enables the cascading demand effects generated by an airport to be tracked sequentially along the production process throughout an economy. It is based on input-output tables within a system of national accounts which capture the supply-and-demand transactions, in terms of expenditures, between industries on an annual basis. The guidelines present the procedural steps to be followed for each assessment phase when conducting an economic impact assessment, using either a core or an expanded assessment approach. The methodological descriptions conclude with empirical case studies demonstrating the various approaches possible.

3.2.2 Taking a core approach of an impact assessment, civil aviation activities are captured, in terms of output and employment, on an annual basis in three dimensions: a) **directly** in servicing air transport users (see para. 2.2), b) **indirectly** through transactions with numerous aviation-specific and other suppliers, and c) **induced** by generating direct and indirect income which is re-spent mainly in consumer industries. An expanded approach feeds into the analysis the additional **catalytic** demand, i.e. the off-airport expenditures by air transport users (passengers and freight forwarders).

3.2.3 The employment generated by an airport could play an important role for the local/regional economy concerned or, in the case of small countries, even for the national economy (particularly islands or land-locked countries). A well researched economic impact study can demonstrate the contribution that an airport makes to the economy concerned. This can be instrumental in obtaining financing or negotiating better loan conditions, particularly from public or foreign sources (such as governmental guarantees or development banks and funds), that may be attracted by the wider economic effects of a planned aviation infrastructure project or expansion of an existing facility.

### 3.3 Economic Contribution of Civil Aviation in a National Economy

3.3.1 The second part of the guidelines describes how to explore the contribution of civil aviation throughout a national economy with an expanded impact assessment. At the national level, the stimulating economic impact of civil aviation as job creator and contributor to economic growth is evident when airlines, airports, air navigation services providers and aerospace industries and their respective affiliates meet a growing direct demand for air transport services by expanding operations and fleets, ordering more goods and services from suppliers, hiring more employees and thus increasing their outputs. These direct economic activities have multiplier effects upon other industries throughout an economy. A wider or narrower spread of these multipliers will depend on the circumstances, notably the size of the industries associated with civil aviation and the assessment approach taken. For example, countries with significant aerospace manufacturing will show a wide spread, while those with limited air transport services may have a relatively narrow spread. Non-aviation travel and tourism businesses, such as hotels and restaurants, travel agencies, tour operators and retailers greatly benefit from trip-related expenses of airline passengers.

3.3.2 The impetus of civil aviation in the United States economy has been selected as a case study to demonstrate the procedural steps of the assessment phases. It has been evaluated over a number of years by Wilbur Smith Associates on behalf of the U.S. Federal Aviation Administration. In 2000 (the most recent year for which data are available), the provision of airline services, general aviation activities, airport operations and acquisition of aircraft totalled an output value of U.S. $ 177.3 billion and created more than 1.2 million jobs. Expenditures associated with business and leisure trips by air totalled U.S. $ 176.3 billion and created over 3.1 million jobs. These direct and catalytic expenditures generated additional expenditures of U.S. $ 654.6 billion and over 5.5 million jobs through the indirect demand of suppliers and induced demand effects.

3.3.3 These results for the U.S. economy can also be expressed as “multiplier effects” of the direct demand: every U.S. $ 100 of output produced and every 100 jobs created by civil aviation in 2000 trigger another U.S. $ 469 of output and 717 jobs in many different industries. The value of all economic activities of civil aviation and air travel-related expenses, plus indirect and induced multiplier effects, totalled U.S. $ 1 008.2 billion and employed 10 million people who earned U.S. $ 310.1 billion in 2000. Compared to 1987, total output increased by 27.4 per cent, while the number of jobs increased by 23.7 per cent and income rose by 31.8 per cent.

## 4. FUTURE WORK

4.1 The work on this subject has been carried out with limited resources and voluntary contributions in kind from collaborating international organizations and Contracting States. For the forthcoming triennium, no substantive new work is envisaged because there are only limited resources available for it. However, there is scope for further work on a cost-recovery basis, if needed. In these circumstances, in the forthcoming triennium it is intended to:

a) promote the results of this work, for example through the ICAO web site and other electronic means, and at suitable ICAO regional or sub-regional fora, such as workshops and seminars;

b) explore the possibility of developing training modules on this subject to be delivered in suitable regional or sub-regional fora, for example, in ICAO workshops and seminars on a cost-recovery basis; and

c) provide technical support to Contracting States upon request to assist with the implementation of economic impact assessments of civil aviation, on a cost-recovery basis.

## 5. FINANCIAL IMPACT OF THE PROPOSED ACTION[1]

5.1 The proposed future work set out in paragraph 4.1 will be undertaken within the resources available under Programme 3.3, Forecasting and Economic Planning of the draft Programme Budget 2005-2007. Programme 3.3 includes a reduction of one General Service post compared to the current triennium.

## 6. ACTION BY THE ASSEMBLY

6.1 The Assembly is invited to note the activities on the evaluation of the economic impact of civil aviation and provide further guidance as required.

— END —

[1] This information is presented only to indicate the estimated financial impact of the proposed action. The funds allocated to this proposed action will depend upon the final form of the Programme Budget for the Organization for 2005-2006-2007 approved by the Assembly.