International Civil Aviation Organization

WORKING PAPER

ATConf/7-WP/207
30/10/26
(Information Paper)
Revision No. 1
9/11/26
English and Spanish only[1]

SEVENTH WORLDWIDE AIR TRANSPORT CONFERENCE (ATCONF/7)

Montréal, HQ, 16 to 20 November 2026

Agenda Item 2: Fostering aviation growth and air connectivity through investments in infrastructure, human capital and partnerships
2.1: Integrating civil aviation into national development and investment plans

GLOBAL AIR CONNECTIVITY MEASUREMENT FRAMEWORK AND GUIDANCE ON ESSENTIAL AIR SERVICES

(Presented by Mexico)

EXECUTIVE SUMMARY

The International Civil Aviation Organization (ICAO)'s strategic plan for 2050 places air connectivity at the centre of the Organization's objectives. However, there is no common methodology for measuring it. The available indices, developed by financial institutions and the industry, measure the importance of airports within the global network rather than whether a State's territory and population are effectively served; as a result, a State can improve its ranking in these indices while its interior becomes increasingly disconnected. Goals that cannot be measured cannot be managed.

At the same time, States have been operating essential air service schemes for almost half a century to provide connectivity where the market does not reach on its own, each one designed from scratch due to a lack of international orientation. Mexico presents its own statistical evidence, offers the methodology of its Essential Air Connectivity Index (ICAE) and proposes concrete instruments to close both gaps.

1. INTRODUCTION

1.1 Air connectivity is the vehicle through which aviation delivers economic development and social well-being, and this is reflected in the Organization's strategic plan for 2050. However, connectivity lacks a common operational definition and measurement methodology within the International Civil Aviation Organization (ICAO) framework. It is measured differently by each State, agency and consultant, which makes it impossible to compare starting points, set verifiable targets and evaluate the impact of policies.

1.2 The gap is doubly relevant for developing States with complex geography, where aviation does not compete with other modes of transport but replaces what those modes cannot offer in terms of time, safety and access. For these States, measuring territorial connectivity is measuring national integration.

[1] English and Spanish versions provided by Mexico.

1.3 This working paper outlines the two gaps, the measurement gap and the guidance gap on essential air service schemes, presents Mexico's evidence and experience, and proposes to the Conference concrete and verifiable instruments to close them.

2. THE MEASUREMENT GAP

2.1 The available connectivity indices are constructed from the perspective of the global network. The main ones are the World Bank's Air Connectivity Index, the International Air Transport Association (IATA)-published connectivity indicator, and the NetScan airport connectivity indices used by international airport councils. They all weight the number of destinations, frequencies and the weight of partner airports, thus capturing the importance of the large nodes. This perspective is valuable but incomplete, as it says nothing about the population that is left out of the system.

2.2 The evidence from Mexico illustrates the difference between the two readings. The country occupies prominent positions in the network indices thanks to its large nodes and, at the same time, about 27 million of its inhabitants, one in five, reside in more than 109 thousand localities located more than 90 minutes by land from the nearest commercial airport, only 4 percent of its domestic passengers fly on routes that do not touch the six main nodes of the country (Mexico City, Felipe Ángeles, Guadalajara, Monterrey, Cancun and Tijuana) and 184 domestic routes operate with a single airline. A hub-centric index registers the connected Mexico and omits the Mexico to be connected.

2.3 To close this analytical gap, Mexico developed and maintains in operation, within the statistical information system of its civil aviation authority, the Essential Air Connectivity Index (ICAE), a composite indicator on a scale of 0 to 100 that combines five dimensions: network breadth (destinations served), service intensity (daily frequencies), international reach, airport connection function and, distinctively, territorial coverage per capita, measured as the routes available per hundred thousand inhabitants within the airport's 90-minute service area. This last dimension puts the population at the centre of the measurement, which is precisely what the network indices omit. The ICAE technical note documents the methodology and results in force for the airports in the Mexican system.

2.4 Mexico does not propose that ICAO adopt its index, but that there be a common framework. The methodology of the ICAE and the statistical evidence that feeds it are offered as an input for the work, together with the experience of the other States and organizations that have developed their own measurements.

3. THE GUIDANCE GAP ON ESSENTIAL AIR SERVICES

3.1 Where connectivity is not sustained by the market, States have resorted to essential air service schemes. The United States has been operating its program since 1978, the European Union has instituted public service obligations, and several States in Latin America, Asia and Oceania administer their own schemes of social or subsidized routes. Each was designed from scratch, because there is no guidance within the ICAO framework that would systematize half a century of global experience.

3.2 The absence of guidance has known costs. Poorly designed subsidy schemes distort adjacent markets, uncompetitive awards raise the fiscal cost, and programs without evaluation metrics cannot demonstrate results. An ICAO manual would allow States that already operate schemes to improve them and those that lack them to design them well from the source, in harmony with the principles of Doc 9082, *ICAO's Policies on Charges for Airports and Air Navigation Services*.

3.3 The manual should specifically address the economics of aviation fuel in regional operations, regardless of the energy transition agenda. The physics of the operation means that the short route burns more fuel per passenger-kilometer than the long route, Mexican evidence registers a two-and-a-half-fold ratio between the sections of less than 400 kilometers and those greater than 1,400 kilometers, and the logistics of supply make the liter more expensive precisely at small airports, with territorial differentials that in Mexico reach 21 percent per liter. This double effect compromises the viability of the regional route throughout the world and does not currently have economic guidance from the Organization.

4. CONCLUSION

4.1 The 2050 agenda needs a common yardstick. Without a standardized measurement methodology, the connectivity targets of the strategic plan cannot be verified, and without guidance on essential air services, States will continue to improvise alone the part of connectivity that the market does not deliver. Participating States in the Conference are therefore invited to reflect on the desirability of considering the following measures as concrete instruments with responsible bodies and identifiable destination documents.

4.2 To instruct the Council with the development of a standardised methodology for measuring air connectivity, with common definitions and indicators that include territorial and essential connectivity, through its bodies responsible for statistics and air transport regulations, as a reference for monitoring the objectives of the Organisation's strategic plan towards 2050.

4.3 Incorporate the resulting indicators into ICAO's statistics programme, so that States' air connectivity is comparable and verifiable over time.

4.4 To commission the preparation of a guidance manual on essential air service schemes, including their design, route allocation, financing compatible with Doc 9082 policies, and evaluation of results, compiling State practice.

4.5 Include in this manual a chapter on the economics of aviation fuel in regional operations, addressing cost formation at low-density airports, supply chain transparency, and mechanisms to mitigate territorial differentials that compromise the viability of the short route, regardless of the transition to sustainable fuels.

4.6 To take note of Mexico's offer to contribute to these works the methodology of its Essential Air Connectivity Index (ICAE) and the statistical evidence of its information system.

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