



**WORKING PAPER**

**WORLDWIDE AIR TRANSPORT CONFERENCE (ATCONF)**

**SIXTH MEETING**

**Montréal, 18 to 22 March 2013**

**Agenda Item 2: Examination of key issues and related regulatory framework**

**Agenda Item 2.7: Economics of airports and air navigation services**

**PERFORMANCE OF AIR NAVIGATION SERVICES**

(Presented by Ireland on behalf of the European Union (EU) and its Member States<sup>1</sup> and other Member States of the European Civil Aviation Conference<sup>2</sup> (ECAC))

**EXECUTIVE SUMMARY**

This paper presents the European developments on the economics of air navigation services in the context of the Single European Sky, the gate-to-gate approach and the future concepts of aviation. The economics of air navigation services concern the performance and charging of such services as well as investments in Air Traffic Management (ATM) infrastructure. Economic aspects are regulated, applying ICAO principles. ICAO is requested to include these new developments in its future provisions.

**Action:** The Conference is invited to agree to the recommendations presented in paragraph 3.

**References:** ATConf/6 reference material is available at [www.icao.int/meetings/atconf6](http://www.icao.int/meetings/atconf6).

**1. INTRODUCTION**

1.1 Europe is working on improving its Air Traffic Management (ATM) system. Many issues dealt with in the European context are familiar to other regions in the world, which all have in common the need to rely on the appropriate ICAO Standards, Recommended Practices (SARPs) and guidance material in order to achieve global interoperability. The Single European Sky (SES) is a transport policy for air navigation services. It includes major economic objectives such as the reduction of congestion in air traffic, the reduction of distance flown by aircraft, the increase of cost-efficiency, the improvement of safety as well as bringing environmental benefits. This policy binds 27 EU Member States, plus Switzerland and Norway, and other European States who have concluded or will conclude agreements

<sup>1</sup> Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

<sup>2</sup> Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Croatia, Georgia, Iceland, the Republic of Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

with the EU to implement the SES. Economic measures are considered as an essential contribution for improving the performance of the ATM system, in particular through a better use and increase of existing capacity and the improvement of efficiency.

1.2 Economic issues dealt with in the SES are not only relevant for Europe but also for other States and regions and for ICAO. Economic issues will be an important aspect for modernisation of air navigation, when implementing the ICAO Global Air Navigation Plan (GANP) and the Aviation System Block Upgrade (ASBU), recently discussed as the major subject of the ICAO Twelfth Air Navigation Conference (AN-Conf/12, 18-30 November 2012). Modernisation will require incentives for investments, and such incentives should be in line with global standards and other ICAO provisions (including guidance material). These matters are further addressed in this working paper.

## 2. BACKGROUND

2.1 The SES policy has introduced a separation between service provision and regulation functions (in line with ICAO recommendations), with certified air navigation service providers (ANSPs) and independent national supervisory authorities. The concept of Functional Airspace Blocks (FABs) was also adopted to promote an efficient use of airspace and more integrated cross-border service provision.

2.2 Performance planning, target setting and review is one of the cornerstones of the SES policy, including the following key elements:

- a) a Performance Scheme, with European-wide performance targets and mechanisms for approving regional and national performance targets (which, in turn, need to be consistent with, and adequately contributing to, the European-wide targets);
- b) a Charging Scheme for air navigation services linked to performance targets, consistent with the aim of increasing the cost-efficiency of ANSPs, through the performance scheme;
- c) the establishment of FABs aiming at defragmentation of the airspace and the governance of ATM; and
- d) a “network” perspective, with strong European coordination at operational and planning level via a Network Manager (Eurocontrol) to make better use of capacity (reduce congestion) and improve flight efficiency, covering both operations through the Network Manager and the modernisation of ATM systems, through the SESAR programme<sup>3</sup>.

2.3 The Performance Scheme is already in force for an initial reference period from 2012 until 2014 (known as the first reference period) with target setting limited to en route services in the areas of environment (horizontal flight-efficiency, addressed by the Network Manager), capacity (minutes of en route ATFM delays) and cost-efficiency (evolution of en route unit cost), with safety being protected through the enforcement of European safety legislation. The scheme is now in the process of revision to apply for a subsequent period from 2015 until 2019. The purpose is to strengthen and broaden the Performance Scheme, with target setting also on terminal air navigation services and safety, thus covering ATM performance in a gate-to-gate perspective, and covering with target-setting all key performance areas of safety, environment, capacity and cost-efficiency.

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<sup>3</sup> The Single European Sky ATM Research Programme.

2.4 The European Charging Scheme for air traffic control (ATC) services is based on the ICAO principles. These principles were already applied in Europe by many States via Eurocontrol, but are now part of the European Union (EU) regulation with a legally binding character and linked to the improvement of the performance of the ATM system. States still apply their national charges, but these must be in line with this regulation. Unit rates are calculated and adopted in advance for the reference periods, with limited possibilities of adjustment (e.g. inflation). Cost-capping (through a "determined costs" concept) replaces the previous full-cost recovery mechanism. An incentive scheme is introduced, in the form of a traffic risk sharing mechanism with financial consequences where losses due to unforeseen decrease in traffic, or additional revenues resulting from traffic being higher than forecasts, are shared between ANSPs and airspace users. There is an opportunity for ANSPs to apply incentives for users, e.g. for early equipage of aircraft, or for better use of available airspace (congestion pricing or charges modulation to encourage use of more optimal routes), but there are also overall provisions to protect ANSPs' viability through capping of risk and alert mechanisms to avoid creating major financial and cash-flow problems.

2.5 The European performance and charging schemes allow the inclusion of costs for the funding of national supervisory authorities (but leave it to the States to do so or not). The approach followed, in line with the work carried out by the ICAO Airport Economics Panel (AEP) and the Air Navigation Services Economics Panel (ANSEP), is described in an Information Paper on funding the oversight functions, in support of this Working Paper.

2.6 Europe has built this Performance Scheme with the aim of securing a sustainable and high performing European aviation. The Charging Scheme will be updated again to include new developments in parallel with the revision of the Performance Scheme. ICAO is invited to use this European experience when updating its documentation for air navigation charges.

2.7 The "network" perspective is provided by the Network Manager whose tasks include:

- a) air traffic flow and capacity management;
- b) coordination in the management of scarce resources, namely route network design, transponder codes and radio frequencies; and
- c) coordination of crisis situations.

2.7.1 Eurocontrol has been designated by the EU as the Network Manager. The scope is not limited to the EU, but is focussing on all 39 Eurocontrol States and other States interested in cooperation. The Network Manager, who is also subject to the Performance Scheme, has to contribute to a better performance of the aviation system and is in particular contributing to reduce congestion and delays, add capacity and increase operational efficiency and shorten route lengths. Cooperation with airports, including also the slot-coordinators, is an important element. The work of the Network Manager impacts the ANSPs and therefore their ability to work cost-efficiently.

2.8 The "network" perspective must also be addressed in the modernisation of the ATM system. This should also lead to more cost-efficiency and to the progressive integration of the ATM network while offering opportunities for cooperation, integration or consolidation of the provision of air navigation services.

2.9 Many States and regions in the world are modernising their ATM system. In Europe SESAR is the technological pillar of SES, which aims at developing, validating and deploying a European ATM system able to support SES high-level objectives. The European ATM Master Plan (reviewed in

2012) provides the roadmap for the development and for the deployment phases of SESAR, which will, in particular:

- a) change the operational paradigm;
- b) increase predictability; and
- c) promote operations in function of required time of arrival.

2.9.1 The SESAR Joint Undertaking (SESAR JU) is managing the development phase of SESAR, via a European ATM Public-Private Partnership, based on cooperation between three partners, the European Commission, Eurocontrol and the industry (including several ANSPs). Each partner is funding one third of the SESAR JU budget. The EU has a Memorandum of Cooperation with the United States (USA) on research and development. An important element of this cooperation is the link between SESAR and its USA equivalent NextGen, to promote global interoperability. Programmes like SESAR have given input to ICAO to develop the GANP and its ASBUs, recently discussed at the AN-Conf/12.

2.9.2 The developments of SESAR are in line with the ICAO GANP and its ASBUs and will require an update of the ICAO provisions to enable global interoperability for new concepts and techniques. Therefore, the AN-Conf/12 urged ICAO to develop and update its Standards, when needed, and to have a planning mechanism for that. Implementation also requires adequate governance mechanisms and incentives. Cooperation is sought with ICAO to update relevant documentation concerning these matters.

2.10 Deploying SESAR according to the Master Plan is an important step, as while business cases might be positive at regional or sub-regional level, they will not always be positive for all stakeholders (i.e. States (civil and military), ANSPs, airspace users, airports) at the same time, which could lead to delays in implementation and jeopardise potential benefits and investment decisions of the stakeholders concerned. Specific governance measures are under development to ensure that SESAR deployment is:

- a) performance driven;
- b) timely, synchronised and civil-military coordinated;
- c) based on existing SES policy and EU funding mechanisms;
- d) led by the industry (ANSPs, airspace users, airports);
- e) based on the ATM master plan thus inspired by technological innovation;
- f) consistent with the interim deployment steering arrangements already in development;
- g) based on industrialisation processes; and
- h) supported by adequate financing and funding.

2.11 Opportunities will be explored to give incentives to invest in new equipment and apply new procedures, providing "best" services to aircraft that are better equipped and capable to use this equipment (the concept of "Best Equipped Best Served" (BEBS) was presented at the AN-Conf/12), in

such a way that the performance of the ATM system is improved. This could be reflected in the charges as well. This should be applied without discriminating any airline and in full transparency. The principle of BEBS was recently accepted at the AN-Conf/12, to be further worked out. This relates to the ICAO provisions for air navigation services and airport charges. In fact, the often heard principle "first come, first served" is not a formally established ICAO principle. Modernisation, like with incentives, is already possible, but ICAO is invited to pay more attention to these aspects, as was requested at the AN-Conf/12.

2.12 The SES is also covering the gate-to-gate approach, which includes airports, in order to:

- a) manage capacity on the ground;
- b) consider airports as an integral part of the ATM network, as entry and exit points of the network;
- c) make effective use of capacity which depends on all rings of the chain; and
- d) enable green flights that require real-time flow of information between all actors.

2.13 Since airspace is used by several types of users including the military, civil-military cooperation and coordination is an important element of the SES policy and is also included in the SESAR programme. Airspace is treated as a continuum, made available for civil and military activities. In several States the military is also involved in ATC for civil traffic.

2.14 Investments in ATM infrastructure are necessary. States, regions and stakeholders will have to determine which investments are to be made. Cost benefit analyses will have to be performed. This was also addressed at the AN-Conf/12. More supporting material from ICAO regarding the economic aspects of ATM modernisation will be appreciated, to support States, regions and stakeholders to perform their own cost benefit analyses in the context of regional planning. The AN-Conf/12 recommended (recommendations 1/3 and 6/), that ICAO:

- a) complete the development of guidance material on business case analysis, adopting such appropriate guidance material that may be already available or under development (Rec. 1/3);
- b) undertake work toward developing a network-wide operational improvement level assessment for global use, which should include the development of standard values and processes for economic evaluations; and
- c) take the relevant conclusions from AN-Conf/12, regarding economic, financial and social aspects of the aviation system block upgrades, to the Sixth Air Transport Conference with the aim of developing solutions which would support a safe and sustainable air navigation system.

### 3. **RECOMMENDATIONS**

3.1 To improve ATM performance, investments in ATM infrastructure are necessary. The AN-Conf/12 made clear that operational and technology changes in ATM need to be supported by ICAO Standards and Recommended Practices (SARPs) and other reference material, to enable global interoperability. This is also related to economic instruments and the principles for charging. The

developments in Europe are not unique; in many States and regions improvements are needed from a gate-to-gate perspective aiming at an increased performance.

3.2 The Conference is invited to recommend to ICAO to:

- a) include the performance based approach of the aviation system in the provisions for airport and ATC charges as an option;
- b) consider the development of economic instruments from a gate-to-gate perspective, in line with the development and implementation of the ICAO Global Air Navigation Plan and its Aviation System Block Upgrades;
- c) develop business case study material to assist in the conduct of cost benefit analyses for ATM modernisation and to determine cases that might trigger the need for incentives;
- d) study the possibility to include incentives in air navigation charges to stimulate the application of new concepts and procedures, within the ICAO air navigation framework; and
- e) take account of the option to include the costs of oversight functions for air navigation services in the cost basis for the calculation of air navigation services user charges, in the revision of the policies on charges (Doc 9082) and the *Manual on Air Navigation Services Economics* (Doc 9161).

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