SUSTAINABLE AIR TRANSPORT IN THE FUTURE TEN-T

This document is part of a series of technical support documents to the green paper "TEN-T : A policy review – Towards a better integrated trans-European transport network at the service of the common transport policy". It provides background information to the contribution of air transport infrastructure to the TEN-T goals. It offers inputs to the questions put forward in the TEN-T Green Paper and explains the European air transport policy framework for airports and air traffic management in this context.
This document does not limit the scope for proposals in response to the consultation process on the Green Paper.

1. Introduction: The contribution of Aviation in the European transport system

Air transport has become a part of daily life and business, and until recently it had been characterised by continuous traffic growth[1]. Notwithstanding the current decline in air traffic due to the economic crisis, air traffic in Europe is expected to double by 2030. This increase will result in an ever-growing gap between capacity and demand. A significant part of European air transport infrastructure already faces difficulties in coping with existing traffic.

Airports are of vital importance since these are the entry and exit point of the air transport network. In order to accommodate growing demand for air traffic and preserve the overall efficiency of the network, airport capacity needs to be fully aligned with air traffic management (ATM). The Commission has recognised the role of airports as an integral part of the ATM network and launched a comprehensive 'action plan for airport capacity, efficiency, and safety in Europe'[2] which promotes measures to make better use of existing airport capacity, optimise the planning of new infrastructure, and raise safety and environmental standards. Furthermore, the development of interconnections between modes such as air and rail underpin the complementarity of modes in the wider transport network and the importance of aviation for individual mobility.

The fragmentation of airspace and air traffic management leads to inefficiency and unnecessary costs to airspace users (and therefore the passengers) of approximately €3 billion per year. Fuel consumption and emissions are higher than necessary and further growth may outbalance aircraft and engine efficiency improvements, potentially leading to an increase in aviation greenhouse gas emissions. In addition, air navigation services are based on outdated systems neglecting many available technological advances.

The Single European Sky (SES) is the main policy vehicle to bring about the necessary fundamental overhaul of air traffic infrastructure and management in Europe. In addition to the existing legislative framework, the Single European Sky II (SES II) package[3] will reinforce the European network approach through performance targets, and the fundamental overhaul and modernisation of the European ATM system. However, it will be challenging to ensure the sustained momentum and commitment to invest into improvements when stakeholders are so highly exposed to economic fluctuation.

The purpose of this document is to use the publication of the Green Paper to better define air transport TEN-T policy and to invite stakeholder participation in a debate about its possibilities.

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[1] Until 2008, air transport had the highest annual growth rates among transport modes for more than 10 years, at an average of 4.6% between 1995 and 2006.
[2] COM(2006)819 final of 21.1.2007.
[3] See footnote 6

2. Current situation of Air transport in the TEN-T guidelines

Air transport infrastructure including airports and air traffic management (ATM) are both included in the current TEN-T Guidelines[4] and network definition, together with a geographic outline map of airports in Europe.

2.1 Specifications for airport related projects of common interest

Airports are part of the comprehensive network approach, which embraces high density areas and hubs as well as areas with less traffic and regional airports. The specifications for airport related projects of common interest support four main objectives: the optimisation of existing airport capacity, the development of new capacity, the improvement of environmental compatibility, and the development of surface access[5].

The TEN-T Guidelines emphasise the integration of rail and air transport, particularly through rail access to airports.[6] The Milan Malpensa airport project (completed in 2001) and the new Lisbon airport are included in the list of 30 priority projects. Between 1995 and 2008, 89 Commission Decisions allocating TEN-T grants to airports have been adopted, and 48 different airports in 18 Member States have benefited from TEN-T funding. About one third of these projects concerned intermodality at airports, totalling over €150 million.

2.2 Specifications for ATM related projects of common interest

> *SECTION 9 AIR TRAFFIC MANAGEMENT NETWORK*
> *Article 16 Characteristics*
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> *The trans-European air traffic management network shall comprise the airspace reserved for general aviation, airways, air navigation aids, the traffic planning and management systems and the air traffic control system (control centres, surveillance and communications facilities) that are necessary for safe and efficient aviation in European airspace.*

ATM is included as a 'conceptual approach' to infrastructure and as part of this TEN network, all equipment such as control centres, and surveillance and communications facilities needs to provide a safe and efficient aviation system. Therefore, no geographic map of ATM is provided[7]. The *early* TEN-T projects in this area have addressed the feasibility and deployment of ATM systems, through the infrastructure and strategies of air navigation service providers. The *current* TEN-T programme focuses on preparing the establishment of Functional Airspace Blocks (FABs) and SESAR[8] Definition and Development Phases which is the largest ATM initiative in receipt of TEN-T funding.

The present approach to air transport infrastructure in the trans-European Transport Networks may <u>need to be revised</u> in order to adequately match the objectives and needs for the

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[4] Decision No 1692/96/EC on Community guidelines for the development of the trans-European transport network (OJ L228 of 09.09.1996) as amended by Decision No 884/2004/EC of the European Parliament and of the Council of 29 April 2004 (OJ L 167 of 30.04.2004)

[5] See Section 6, Article 2 of the TEN-T Guidelines ' Specifications for projects of common interest related to the airport network'.

[6] See Articles 3 and 10 (4) of the TEN-T Guidelines

[7] When the TEN-T Guidelines were first developed (1996) and amended (2004), the Single Sky policy had just been defined.

[8] Single European Sky ATM Research aiming at the modernisation of the ATM infrastructure at European network level., with the Definition Phase 2006-2008 and the Development Phase 2008-2016 financed from TEN-T (the latter together with the Transport programme in the 7th EU Framework Programme for research and technological development 2007-2013)

modernisation of the ATM and airport networks in view of establishing a 'gate to gate' solution.

3. New scenarios for future TEN-T guidelines

The Green Paper offers three main options. The first of these is to maintain the present TEN-T dual-layer definition, based on a comprehensive network with priority projects, including airports and ATM in a conceptual/ITS framework. The other options are to implement a new single-layer purely geographic European 'priority network', or a dual-layer 'core network' which would combine a comprehensive network with geographic and conceptual pillars[9].

Should air transport be considered as part of a priority network for transport infrastructure or as part of a dual-layer 'core network'? The geographic approach obviously remains important in either case and TEN-T requirements including that of a truly European network approach, interoperability and capacity targets, reducing environmental effects are all in full compliance with the SES framework (including airports), the ATM Master Plan and SESAR programme.

For airports, the question can be focussed on which airports or category of airports should be part of the TEN-T network? Is there an advantage in selecting airports for the definition of the TEN-T network (for a priority or core network approach)? With a view to considering the most competitive and sustainable transport solution, it may be necessary to better reflect the role of airports as interconnection points with other transport modes at local, regional and inter-regional level.

For ATM, the underlying question is whether the ATM network should remain a purely conceptual issue related to 'intelligent transport systems'? This current TEN-T approach highlights its 'intangible' nature, supporting the tangible transport and network driven by the business approach of transport service providers.

- However, ATM by nature also includes growingly important *airspace* design and *network management*. Should this remain as a conceptual factor or could the FABs provide for a (temporary) geographic map of ATM in Europe before a full Single Sky? Indeed, the potential of FABs should be clearer by 2010 which coincides with the time horizon for a possible revision of the TEN-T Guidelines.

- Furthermore, how should 'ATM infrastructure' be defined in the future? To achieve safety, efficiency, and environmental targets, the SESAR programme and the ATM Master Plan include ground and airborne systems. Both air navigation service providers as well as airspace users will need to make significant investment for future services.

- Would air transport fit better in a 'core network' approach which would explicitly include the geographical and 'conceptual' nature of air transport infrastructure and could incorporate a strong innovation element (possibly related to the implementation of the ATM Master Plan)?

3.1 International Cooperation

The EU has concluded international aviation agreements with countries worldwide ensuring a coherent business environment for the air transport industry. The cooperation with neighbouring countries and in particular in the context of the European Common Aviation Area

[9] These are clearly defined in the core Green Paper pp. 17-18.

(ECAA) aims at a seamless policy and operational environment for safety, security, air traffic management, social and environmental aspects. At a global level, the interoperability of the future European ATM system with other regional systems needs to be ensured. What role could the TEN-T could play in the cooperation of the EU with partner countries?

4. Infrastructure development and TEN-T funding

In addition to the network definition for the TEN-T, the possible definition of projects and their potential funding should also be discussed.

The aviation share of TEN-T funding has accounted for approximately 5% of the total TEN-T budget, principally for conceptual and feasibility studies to prepare infrastructure development decisions of air navigation service providers and initial studies to explore and prepare the establishment of FABs. The SESAR programme is the by far largest ATM project financed from the TEN-T budget and it represents a truly European network approach with the participation of a wide spectrum of stakeholder groups.

Air transport has historically been a self-financing sector, and it is expected that the private financing of ground and on-board infrastructure will continue. However, the ambitious targets of the Single Sky, the ATM Master Plan, and SESAR, will require innovative methods of aiding this private financing, in particular that of new ATM infrastructure.

4.1 Airports

The TEN-T guidelines also refer to the goal of sustainable mobility as a tenet of Community transport policy. In order to be supported by TEN-T funding, financial profitability should be deemed insufficient therefore excluding self supporting projects such as airport retail space. European airports need to move away from purely national or local considerations, and consider their role in the European airport network, be it as hubs or airports with regional service functions.

As regards the rationale for public funding, the business case and the competitive situation of airports, needs to be taken into account together with the current focus of Community concerns in other areas. Moreover, it will be crucial to analyse the real added value of the EU financial support for a specific airport project and its impact at network level. The specific ownership situation, revenue streams and income (from aviation and non-aviation business), the risk of market distortion (considering the competitive situation of airports for market shares within the aviation network) needs careful consideration.

In this context, some areas could be suggested for airport funding in the TEN-T:

4.1.1 Airport capacity

Given the expected traffic evolution, Europe could face an ever growing gap between capacity and demand. This concerns main as well as regional hubs. The risk of higher environmental and safety costs result from capacity bottlenecks should be considered, although it must also be noted that capacity increases also carry environmental costs.

4.1.2 Aviation in an intermodal environment

At present, any newly built airport includes a rail link while most existing airports are in the process of building or planning one. Frankfurt Main airport for example has more than 170 mainline intercity trains per day. Rail can positively impact airport: for congested airports,

precious slots used by short haul flights can be freed through substitution by efficient train services and used more efficiently. An airport rail link also enlarges the airport catchment area and reduces the use of private cars and therefore pollution. In view of the overall benefits to the transport system and considering possible funding difficulties, TEN-T could focus on this issue.

4.1.3 Green airports

Airport activity creates air and noise pollution and airports use important quantities natural resources including energy and water. It is therefore important for airports to adopt all possible measures to reduce the average level of environmental impact per passenger through investment in energy reducing measures. TEN-T could support these measures accelerating their deployment.

4.2 Air Traffic Management

For ATM, the framework for possible TEN-T support is closely related to the implementation of the Single Sky policy. The creation of FABs by 2012 as foreseen by legislation under preparation[10], represents an important answer to issues of airspace fragmentation and an intermediate step to a full Single Sky.

Necessary investments to implement the ATM Master Plan will require a doubling of the current annual investments in ATM infrastructure in Europe, estimated at about €1 billion per year on average. Total investments needs covering both ground and airborne infrastructure until 2020 are estimated at approximately €30 billion. The biggest challenge is to ensure the commitment of all stakeholders, particularly air navigation service providers and airspace users, to implement the agreed plan. The following key reasons for public financing have been provided by discussion with stakeholders[11] and the SESAR programme:

- Need for help to cope with increased investments, considering that market growth is uncertain and that the airlines are presently in a precarious economic situation.
- Coordinated, synchronised investments, with a significant number of equipped players, are essential to achieve the necessary network-level capacity, safety, environmental, and cost improvements.
- The incentives for infrastructure development and investments of individual organisations are limited in many cases. Benefits at network level may materialise late for individual stakeholder groups and/or do not match their business plan horizons.

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[10] Proposals adopted by the Commission on 25 June 2008: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Single European sky II: towards more sustainable and better performing aviation {SEC(2008) 2082} (COM/2008/0389 final); Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Council Directive 06/23/EEC {SEC(2008) 2086} {SEC(2008) 2087} (COM/2008/0390 final), Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system {SEC(2008) 2093} {SEC(2008) 2094} (COM/2008/0388 final). Adoption by the Council and the European Parliament is expected in March 2009.

[11] The ICB (Industry Consultation Body) established a joint Economics Task Force including state representatives from the Single Sky Committee to deal with financing questions. The final report of the Task Force, was released in February 2009.

In view of TEN-T support, these needs will have to be translated into a framework for the definition of projects of 'common interest'[12]. The following may be suggested as a basis for a more substantial discussion:

- FAB projects need to comply with the SES policy framework and deliver results in the foreseen time horizon.
- ATM infrastructure development projects must support the implementation of the ATM Master Plan (expected to be endorsed at the Transport Council on 30 March 2009), with defined impact at network level and targets for performance improvements (economic, environmental, and safety).
- Where investments are linked with mandatory requirements, TEN-T funding should be used to accelerate the implementation and priority should be given to early deployment and coordination of deployment.

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[12] A similar approach could help to define the nature of 'common projects', foreseen in the Single Sky legislative framework, for specific forms of private financing.