Presentation of the McKinsey Macro-Economic study

Presentation of the SESAR Programme

The record number of orders placed for airplanes at the Le Bourget airshow in France, which took place from 20 to 26 June, has served effectively as a confirmation of the significant growth that is expected to take place in international and European air traffic over the course of the next two decades. The projections made by the relevant European authorities such as Eurocontrol envisage an increase of over 70 per cent between now and 2030.

The European Commission has not hung around in coming up with initiatives aimed at enabling the relevant stakeholders involved in this mode of transport - air traffic control operators, airline companies, airports, etc. - to cope effectively with these changes. Thus it was that in a Communication from 2005, the European Commission stated that the costs involved in ensuring reliability and safety, “if they are to be maintained, will in the future require a qualitative leap” and, to this end, announced its intention to propose, as part of the ‘Single European Sky’ project launched in 2004, the project’s technological element: the SESAR Programme (Single European Sky ATM Research) co-founded with Eurocontrol and developed in collaboration with the entire Air Transport Industry (eg. Airbus, Thales, Selex, NATS, Indra, DFS, Boeing, etc), which was seen by the European Council as one of the infrastructure “projects of general interest” that needed to be put in place. This is making SESAR the most ambitious public-private partnership at European scale in Air transport.

The EU has thus decided to invest 2.1 billion euro between now and 2016 in order to develop a new European air traffic control system that integrates the latest in satellite navigation and digital technology.

The implementation of SESAR is due to take place in three phases:

- a definition phase (2005-2007) in which the air traffic modernisation plan (or “ATM Master Plan”) will be carried out, dealing with the different technological stages, priorities and timetables;
- a development phase (2008-2013) will make it possible to develop the basic technologies which will underpin the new generation of systems;
- a deployment phase (2014-2020), which will see the large-scale installation of the new systems and the widespread implementation of the related functions. In the view of the Commission, the new system will triple capacity in comparison to the current situation, with safety increased tenfold and unitary operating costs far lower than current levels.
Key points of the McKinsey Macro-Economic study

1 - Context

- The citizens, governments and businesses in Europe are all affected in one way or another by the expansion of air transport;
- EU airspace is used on a daily basis for commercial passenger & cargo flights, but also for civilian business as well as by the military aviation;
- In 2010, close to 9 million commercial passenger flights crossed EU airspace, with over 750 million passengers using EU airports;
- EU airports and civil airspace users employ directly around 670,000 people, while a further 3.2 million people in Europe depend directly or indirectly on the air transport sector for their livelihoods as suppliers, manufacturers or service-providers;
- The air transport system also generates benefits beyond the immediate aviation industry, including trade and tourism, securing investments, supplying labour and improving productivity and innovation, thus contributing to the welfare of society. As such, air transport is a catalyst for general travel, tourism and the transportation of goods.
- The current air transportation system is not operating at its optimum level resulting in negative effects such as additional costs, delays, noise and pollution.
- A major reason for this situation is that the operating and communication systems and standards used in the air traffic industry worldwide have not changed much over half a century. In the skies above Europe today, civilian aircraft fly according to pre-defined routes that are managed in a fragmented way by air traffic controllers in each of the EU’s Member States. At the same time, Air Traffic Management (ATM) systems still rely largely on procedures and technologies from the 1950s.

2 - The benefits offered by SESAR

- The SESAR programme will deliver a new and global interoperable concept of air traffic management where the operations will be built around a continuous sharing of data between aircraft and air navigation service providers and airports ground infrastructure. This development of operational and technical solutions will enable improved services, more fuel efficient and energy optimized point-to-point and more direct flight trajectories, minimum CO2 operations.
- The targets of the European ATM Master Plan, delivered during the “definition phase”, are:
  - Shorter flight times,
  - 50% fewer delays,
  - More sustainable air travel through 10% reduction in CO2 emissions,
  - Enhanced mobility through expanding air capacity in line with demand and economic growth,
  - Safer air travel,
  - An overall increase in economic growth/GDP,
  - The creation of new jobs.
3 - The objectives of the study

The study was commissioned by the SESAR Joint Undertaking and provides a quantification of the impact of SESAR on the EU economy, society and environment. This study and methodologies have been validated by the European Commission, Eurocontrol and OECD. Many partners have contributed to the study such as: Airbus, Lufthansa, IATA, Air France, AENA amongst others key players in aviation.

The main results are:

- Impact on the economy

With air transport being an facilitator of economic growth, SESAR will serve to boost GDP by € 419 billion over the period 2013-2030 (0.16% of combined EU GDP over that period), with 41% of the benefit being generated by SESAR directly and 59% from impact on suppliers and third parties. The economic benefits of implementing SESAR will be shared among European Union Member States and will contribute as much as two percentage points over and above yearly projected economic growth.

- Impact on employment

The overall job creation generated by SESAR is an estimated 328,000, of which approximately 42,000 jobs will be generated in the major air transport industries, 116,000 by way of indirect impacts and 170,000 by induced effects.

- Impact on mobility

For passengers, flight times shortened by approximately 10%, 9 minutes per flight on average, as well as 50% fewer cancellations and delays, an increased predictability and punctuality on arrival and departures, plus a tenfold increase in safety.

- Impact on the environment and CO2 emissions

SESAR will reduce carbon emissions by a net amount of 50 million tons over the period 2013-2030. In addition, despite the additional air traffic created, SESAR will have a positive overall net effect on CO2 emissions in this period.

4 - Viewpoint taken by McKinsey

The scale of the benefits offered by SESAR is highly sensitive to the timeliness and effectiveness of its implementation.

- Three scenarios considered:

- SESAR on time scenario, in which the timeline and performance targets set out in the ATM Master Plan are fulfilled

- SESAR de-synchronised scenario, assuming a 5 year de-synchronisation between implementation and effective utilization implying a delay to achieve targets

- SESAR delayed scenario, considering the effect of a 10 year delay, due to R&D involving the technological tools required for example or a delay in operational implementation as a result of “last mover advantage”, on the identified economical impacts.
Macroscopic impact

Benefits of the on-time implementation of SESAR
- A positive impact on GDP estimated at € 419 bn : 0.16% of combined EU27 GDP over the considered period.
- A reduction in fuel consumption: 19% of the total
- A reduction in delays and related costs, such as compensation to passengers for flight cancellations, represents 17% of total effect and would again benefit civil airspace users only
- The creation of on average, 328,000 additional jobs
- The positive environmental effects will more than compensate the negative effects of additional flights.

Benefits put at risk in case of de-synchronisation

De-synchronisation means that not all of the parties involved invest in SESAR simultaneously (for instance in case of geographic differences or air/ground de-synchronisation) leading to a situation in which some players have already invested in the new system, but none can benefit from it. In the hypothesis of a de-synchronisation period of 5 years, the benefits of SESAR would be:
- a reduction of € 62 bn in GDP compared to the “SESAR on time” scenario (or € 117 bn including indirect/induced effects);
- the creation of 72,000 new jobs;
- 35 million tons-worth of reductions in CO2 emissions would also be put at risk.

Benefits put at risk in case of delay

Any negative deviations from an effective and timely implementation, in this hypothesis by 10 years would:
- cost about €124 bn in direct GDP, representing 72% of the overall direct value. When indirect and induced benefits are included, the negative impact rises to € 268 bn (or 0.10% of combined GDP);
- a reduction in job creation of 189,000 units;
- in environmental terms, 55 million tons-worth of reductions in CO2 emissions would also be put at risk.

Further information:

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SUMMARY

1. Importance of the SESAR programme

The SESAR programme is key to achieving the Single European Transport Area and enabling smart economic growth for Europe.

SESAR is expected to contribute directly to at least 3 of the 5 core goals of the EU’s “Europe 2020” strategy, namely:

- creating employment
- improving European R&D
- helping fight climate change

SESAR will create approximately 42,000 additional jobs in the major air transport industries.

SESAR will create a combined positive impact on GDP of €419 billion over the period.

SESAR will mean flight times being shortened by approximately 10% or 9 minutes per flight.

SESAR will eliminate a net amount of 50 million tons of CO₂ emissions over the period 2013-2030. In addition, despite the additional air traffic created, SESAR would have a positive net effect on total CO₂ emissions in this period.

2. Importance of timely and effective implementation

A 10 year delay will result in a loss of benefits estimated at €268 billion of GDP, the non-creation of 189,000 jobs, and the loss of 55 million tons-worth of reductions in CO₂ emissions.

A de-synchronized implementation of SESAR would result in the loss of around €117 billion of GDP, the non-creation of 72,000 jobs and 35 million tons-worth of reductions in CO₂ emissions.

3. Impact on specific countries

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<tr>
<th>Country</th>
<th>on GDP</th>
<th>On Jobs</th>
<th>Saving of CO₂</th>
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<tbody>
<tr>
<td>Germany:</td>
<td>€64 billion = 0.12 % of total GDP</td>
<td>+ 31,000</td>
<td>- 11 millions tons</td>
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<tr>
<td>France:</td>
<td>€66 billion = 0.16 % of total GDP</td>
<td>+ 47,000</td>
<td>- 2 millions tons</td>
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<td>Italy:</td>
<td>€15 billion = 0.05 % of total GDP</td>
<td>+ 5,000</td>
<td>- 4 millions tons</td>
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<td>Poland:</td>
<td>€3.8 billion = 0.04 % of total GDP</td>
<td>+ 1.800</td>
<td>- 1 million tons</td>
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<tr>
<td>Spain:</td>
<td>€19 billion = 0.09 % of total GDP</td>
<td>+ 9,000</td>
<td>- 9 millions tons</td>
</tr>
<tr>
<td>UK:</td>
<td>€84 billion = 0.19 % of total GDP</td>
<td>+ 49,000</td>
<td>- NA</td>
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