Challenges of Growth 2013

Task 1: on the use of the 20-year forecast published in 2010

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nominated by
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SUMMARY

The aim of the *Challenges of Growth* series of studies is to provide decision-makers with the best-achievable set of information to support long-term planning decisions for aviation in Europe, with a particular focus on the capacity of the air transport network. Studies were completed in 2001, 2004 and 2008. Work has now started on an update to be published in 2013. This is the report of the first task, which looked at the implications of the recent economic and traffic downturn for the latest long-term flight forecast, published in 2010.

Challenges of Growth 2008 was based on a 20-year flight forecast prepared in 2008. This forecast has since been updated (in 2010, the "LTF10"), and this updated forecast was the basis for the SESAR Master Plan update, amongst other studies.

Since 2010, traffic has *not* grown according to what was then seen as the most-likely scenario. This note explores the implications of this for the use of the LTF10 in master planning, and what it suggests will need to be considered in a future update for *Challenges of Growth*.

The conclusions are as follows:

- We used four scenarios in LTF10 to capture the uncertainty about what air transport might be like in 2030. These already indicated that the forecast traffic volume for 2030 might be reached several years earlier or later than in the most-likely case.

- The economic and traffic downturn that has emerged since the last long-term forecast was published in 2010 shifts forecast traffic in 2030 down by about 6%, or equivalently back by 2 years.
- This leaves forecast traffic closer to the previous most-likely Scenario C than to other scenarios; though it is also close to the higher-oil-price Scenario D.
- Given the current economic mood of pessimism, it would be easy to overlook the possibility of catching up the original forecast. In spite of slow traffic growth in 2010-2012, the published traffic for 2030 is reachable with only moderately faster growth than originally forecasted (3.2%/year in place of 2.8%). Even the forecasts for 2020 and 2025 are still possible, though less likely than they were.
- Recent events highlight the need to consider a number of issues related to the oil price (which now is close to the assumptions of the LTF10 lower-growth Scenario D) and the economic cycle. On the other hand, a number of significant external events are proving to be of relatively short-term impact, emphasising the limited relevance of such events to a long-term forecast.

1. INTRODUCTION

The long-term forecast will not be updated for another 12 months. In the interim, this note considers the effects of the recent economic and traffic downturn.

The aim of the *Challenges of Growth* series of studies[1] is to provide decision-makers with the best-achievable set of information to support long-term planning decisions for aviation in Europe, with a particular focus on the capacity of the air transport network. Studies were completed in 2001, 2004 and 2008. Work has now started on an update to be published in 2013. This is the report of the first task, which looked at the implications of the recent economic and traffic downturn for the latest long-term flight forecast, published in 2010.

The Statistics and Forecast Service of EUROCONTROL (STATFOR) prepares forecasts of air traffic in Europe to inform and support planners and decision makers. The latest EUROCONTROL 20-year, long-term forecast (LTF10[2]) was released at the end of 2010 and has been available since for projects looking at aviation ten to twenty years ahead. In particular, the LTF10 was used as the reference forecast in the European ATM Master Plan Update within SESAR.

This note first recaps the scenario assumptions of the LTF10 (section 2). Then it reviews changes in the economic and traffic situation since the LTF10 was prepared and their impacts on the medium- and long-term traffic outlook (section 3). It considers the possibility of an up-side risk, in the form of traffic recovery (section 4) and it finishes by briefly considering lessons from recent events for the next Challenges of Growth 2013 (section 5).

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[1] See www.eurocontrol.int/statfor and select the "Challenges of Growth" link on the left.
[2] *EUROCONTROL Long-Term Forecast: IFR Flight Movements 2010-2030*, EUROCONTROL STATFOR, December 2010

2. SCENARIOS FOR LONG-TERM AVIATION GROWTH

We use four scenarios to capture the uncertainty about what air transport might be like in 2030. These indicate that the forecast traffic volume for 2030 might be reached several years earlier or later than in the most-likely case.

It would be very risky to plan 20 years ahead based on a single set of assumptions about how politics, economics and aviation might develop – the number of uncertainties is too large. To enable a more robust approach to planning, the LTF10 developed a balanced set of four scenarios for future aviation growth: *A: Global Growth, C: Regulated Growth* (constructed as the most-likely), *D: Fragmenting World*, and *E: Resource Limits*. Each of the scenarios has its own 'storyline' to follow, detailed by a mix of economic and industry characteristics that are translated into quantitative terms for modelling. The scenarios were constructed after a detailed discussion with the STATFOR User Group in mid-2010.

The scenario assumptions elaborate on five main groups of factors: global economy, passengers and their preferences, ticket prices and their influencers, the air transport network and its market structure. As the LTF report (section 3 of ref[2]) summarises them they are:

- Scenario **A: Global Growth (Technological Growth)**: Strong economic growth in an increasingly globalised World, with technology used successfully to mitigate the effects of sustainability challenges such as the environment or resource availability.

- Scenario **C: Regulated Growth (Most-Likely)**: Moderate economic growth, with regulation reconciling the environmental, social and economic demands to address the growing global sustainability concerns.
- Scenario **D: Fragmenting World**: A World of increasing tensions between regions, with more security threats, reduced trade and transport integration and knock-on effects of weaker economies.
- Scenario **E: Resource Limits (Peak Oil)**: Strongly growing economies focusing on short-term gains rather than long-term sustainability are not able to react and adapt quickly when faced with unexpected persistent oil supply deficiency after a production peak in 2020.

The traffic results of these scenarios will be shown later in Figure 5. For this section, the detail is not as important as the differences. While in the most-likely case traffic was forecast to reach around 16.9M flights in 2030, this could be 6 years earlier in a fast-growth scenario, or 3 years later (excluding the very low peak-oil scenario for simplicity here).

3. RECENT TRAFFIC AND ECONOMIC DEVELOPMENTS

The economic and traffic downturn that has emerged since the last long-term forecast was published in 2010 shifts forecast traffic in 2030 down by about 6%, or equivalently back by 2 years. This leaves forecast traffic closer to the previous most-likely Scenario C than to other scenarios; though it is also close to the higher-oil-price Scenario D.

The EUROCONTROL long-term forecast (LTF) uses a model of economic and industry developments to grow *baseline* traffic and produce a view of future flight movements. For each LTF, this *baseline* traffic is the final year of a 7-year, medium-term flight forecast (MTF) that is available at the time of the LTF production. This means that the LTF in fact looks only at a more distant future, starting beyond the first seven years covered by the MTF.

The most-recent long-term forecast was published in December 2010 (LTF10). The starting point for the LTF10 was the September 2010 update of the medium-term forecast (MTF10b)**3** which itself was based on historical traffic data up to Summer 2010. Since then, actual data for years 2010 and 2011 have become available, and the MTF has also been updated to capture more recent trends and expectations for future developments. At the time of drafting this note, the latest MTF update was released in February 2012 (MTF12**4**).

The October 2011 update of the MTF already reflected the weak traffic growth in 2010 (0.8%) and expectations for slower economic growth mainly in the near future and therefore it ended about a year behind the MTF10b used for the LTF10. Then at the end of October 2011 there was another sharp deceleration of traffic growth as several carriers cut below the flight counts of the previous Winter and overall 2011 ended about 1.5% below even what the MTF11b expected (Figure 1).

The economic outlook has deteriorated sharply in the last 12 months and the GDP forecasts mainly for 2012 have been revised down (Figure 3). On the other hand, looking further ahead the outlook has seen relatively little change (Figure 2). The lighter line in Figure 2 corresponding to the GDP forecast of January 2012 fairly closely follows the darker line of November 2010, GDP growth assumptions used in the LTF10.

In addition to the economic troubles of Europe, the high price of fuel is also contributing to the weakness of traffic. Figure 4 shows how fuel prices in nominal € terms have been at record levels, in part due to the relative weakness of the euro compared to the US dollar.

The third recent factor has been the Arab Spring. Although Egypt and Tunisia are outside Europe, their importance as holiday destinations and the depth of their traffic downturn are such that they contributed to a significant reduction in traffic, of order 0.5 percentage point for the whole year, in spite of a gradual recovery. However, our forecast scenario is for a recovery from this, so for the long-term this is not a significant issue.

In view of the weak economic outlook and the current traffic situation, the expectation is now for a decline in traffic in 2012, followed by a weak recovery in 2013, and return back to some 2.5%-3.0% annually in the medium-term. These rates, though below the typical pre-recession figures, are similar to what the MTF10b and MTF11b expected for 2014 onwards. Putting all this together, the medium-term traffic outlook is now slightly more than 2 years behind the forecasts prepared in end 2010: previously 11.5 million forecast for 2016, now 11.3 million flights forecast for 2018. This same difference in terms of flights forecast for 2018 is 0.8 million.

Assuming no major changes in the economic growth or other assumptions in the long-term this means that the LTF10 is about two years ahead of what we now see as the most-likely development. To put it an other way, what the LTF10 forecasted for 2030, we now expect to come in around 2032. To demonstrate this we have re-baselined the LTF10 on the results of the MTF12, that is now starting from the forecast for 2018 that was published in February 2012.

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3 *EUROCONTROL Medium-Term Forecast: IFR Flight Movements 2010-2016*, EUROCONTROL STATFOR, September 2010
4 *EUROCONTROL Medium-Term Forecast: IFR Flight Movements 2012-2018,* EUROCONTROL STATFOR, February 2012

Figure 1: Strong deceleration of traffic since end-October (pale blue) not fully anticipated by MTF11b (grey band).
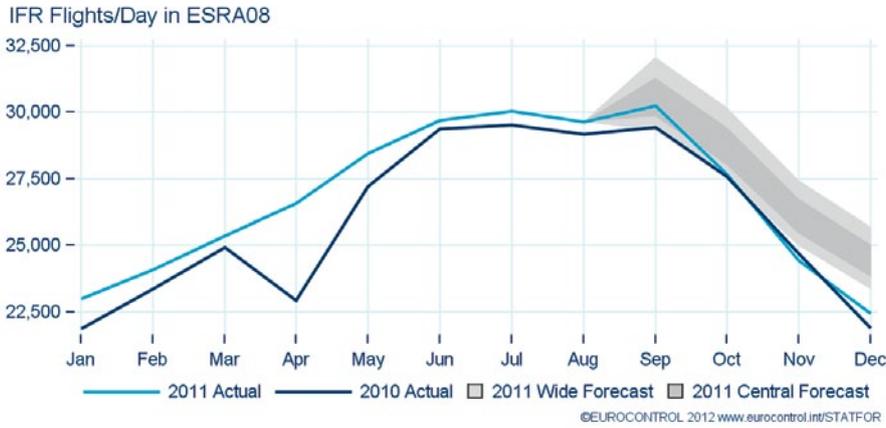

IFR Flights/Day in ESRA08

2011 Actual — 2010 Actual — 2011 Wide Forecast — 2011 Central Forecast

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Figure 2: Revised GDP forecast over the long term.

GDP Growth (%)
Zone=EU

Actual ···· FC Nov10 ----- FC Jan12

Source: Oxford Economics
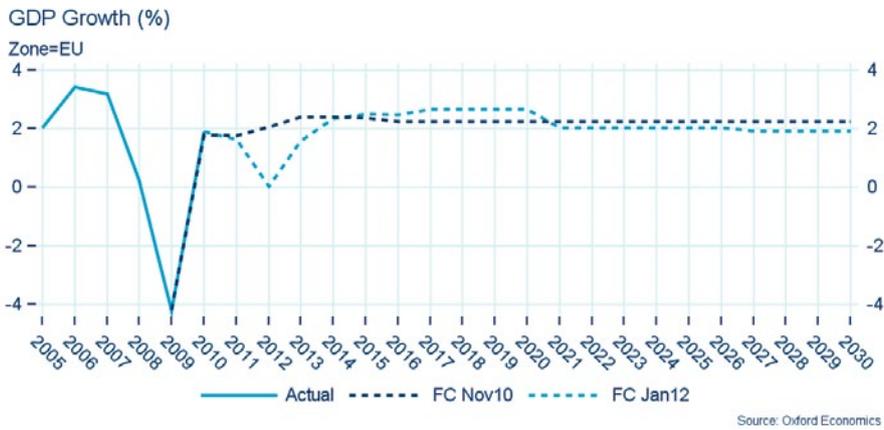
Figure 3: Recent downward revisions in the economic forecast, especially for 2012.

How economic growth forecasts have changed, for EU

Source: Oxford Economics   © EUROCONTROL 2012 www.eurocontrol.int/STATFOR
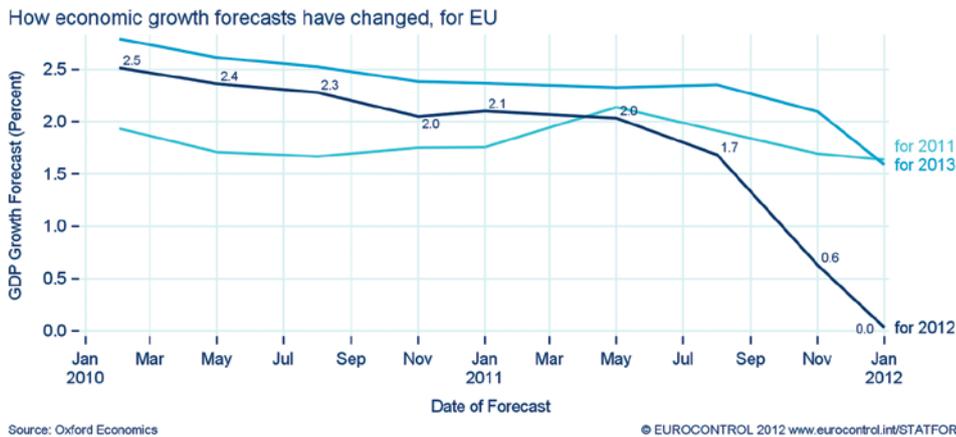
Figure 4: Fuel prices in € terms at record highs.

Crude Oil and Fuel Prices

Source: EIA, Eurostat, IATA

Figure 5: Using the MTF12 as a baseline, the LTF would now be nearly 6% below the LTF10 in 2030.

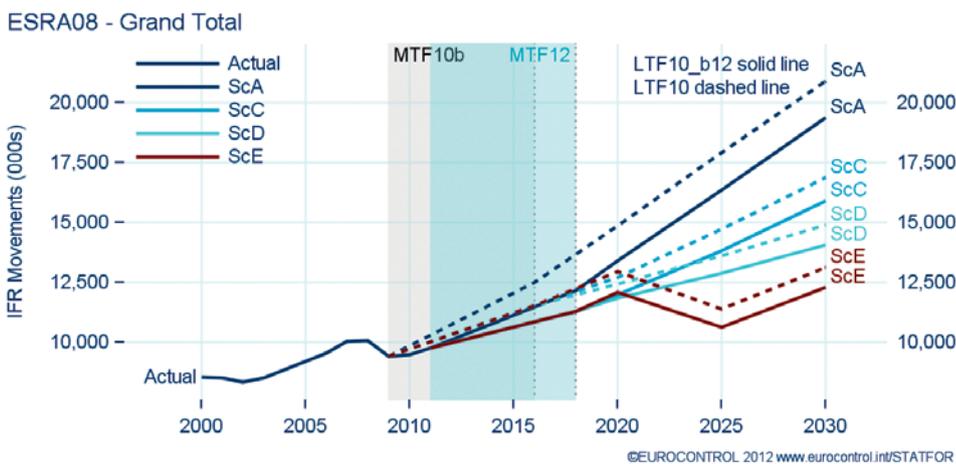©EUROCONTROL 2012 www.eurocontrol.int/STATFOR

Figure 5 shows the re-baselined forecast (LTF10_b12, the solid lines), in which we use this latest MTF12 as the 2018 baseline of traffic while at the same time keeping all the other scenario assumptions as in the LTF10[5]. The re-baselined forecast is some 980,000 flights below the previous LTF10 results in the most-likely Scenario C (Regulated Growth). This is nearly 6% of the annual traffic in 2030, or about 2 years' growth at the prevailing rates at that time, so the change can be interpreted as either:

■ About 2 years' delay in reaching the expected traffic volumes;
■ Or, traffic volumes 6% lower than expected.

This re-baselined forecast remains closer to the old, most-likely Scenario C than to other scenarios, though it is close to the higher-oil-price Scenario D.

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5 *Including the economic outlook, but some airport capacities have been updated to avoid a jump at 2018 where different capacity limits are being applied.*

4. COULD TRAFFIC CATCH UP?

Given the current economic mood of pessimism, it would be easy to overlook the possibility of catching up the forecast. In spite of slow traffic growth in 2010-2012, the published traffic for 2030 is reachable with only moderately faster growth than originally forecasted (3.2%/year in place of 2.8%). Even the forecasts for 2020 and 2025 are still possible, though less likely than they were.

A long-term forecast like the LTF presents relatively smooth growth from year to year. In reality, there will always be some years in which the growth will be below the long-term average; in others it will be above average. In Europe, there remain a number of serious economic issues to solve and consequently a mood of economic pessimism. In these circumstances, from a forecast perspective it is important not to overlook the fact that starting slowly is not in itself a reason to abandon the original forecast; we could simply have experienced most of the below-trend years first.

The question addressed here is whether we have had too many slow years for the average growth still to be likely (and if we had started with a boom, the equivalent question would be whether we had had too many fast-growing years to make the final result unlikely).

We can translate the latest traffic counts into revised average annual growth rates (AAGR), to reach the forecast traffic volumes in 2030 that were published in the LTF10. These are shown in Figure 6. Even with a downturn in 2012, the conclusion is that traffic will need to grow roughly 10% faster to reach the same values in the end: eg 3.2%/year instead of 2.8%/year in the case of the most-likely scenario C.

Figure 6: Comparison of growth rates.

	Published 20-year forecast in 2010			Same 2030 value, new, known 2011			Same 2030 value, new, expected 2012		
	Last Actual in 2010			Last Actual			Now expected		
	Flights (Thousands)		AAGR	Flights (Thousands)		AAGR	Flights (Thousands)		AAGR
	2009	2030		2011	2030		2012	2030	
Scenario A		20,906	3.9%	9,784	20,906	4.1%	9,660	20,906	4.4%
Scenario C (most likely)	9,413	16,887	2.8%	9,784	16,887	2.9%	9,660	16,887	3.2%
Scenario D		14,895	2.2%		14,895	2.2%		14,895	2.4%
Scenario E		13,142	1.6%		13,142	1.6%		13,142	1.7%

There is already more than a 20% difference in growth rates between Scenario C and its neighbours. So this 10% increase still leaves the AAGR closer to the original scenario than to any other. So, in spite of the slow start to growth in the 2010-2030 period, the divergence away from the scenarios is still relatively small: a return to the Scenario C traffic trend is possible without growth rates from the fast-growth scenario.

One of the reasons for the relatively slow growth (2.8% AAGR) in the original forecast is airport constraints, causing some demand to be unaccommodated. When starting from a lower baseline, later years of the forecast can indeed see faster growth, because they are less constrained by airport capacity. Thus there is a potential mechanism to support this faster growth. So, we should not yet exclude the possibility of

catching up with the 2030 most-likely forecast. Indeed, looking to the more immediate most-likely forecast of 12.7 million flights in 2020 (LTF10, scenario C). From 9.7 million now expected in 2012, this requires an average annual growth over the 8 years 2013-2020 of 3.5%.

Each of the 17 consecutive, overlapping 8-year periods from 1981-1988 to 1997-2004 achieved 3.5%/year average growth or higher. So historically there are plenty of precedents for the growth that we would need. For reasons that have been discussed elsewhere in the forecasts, we do not believe that the future is most-likely to be like this fast-growing past, for example because the boost from de-regulation, EU and low-cost expansion is running out of steam. Nevertheless, it remains a possibility which should not be ruled out.

5. LESSONS FOR THE NEXT FORECAST

Recent events highlight the need to consider a number of issues related to the oil price (which now is close to the LTF10 lower-growth Scenario D assumptions) and the economic cycle. On the other hand, a number of significant external events are proving to be of relatively short-term impact, emphasising the limited relevance of such events to a long-term forecast.

This section completes the report by considering some potential lessons from recent events about the risks in the forecast between now and 2030. This is a supplement to the discussion of risks in section 4.2 of the MTF**4**.

The **fuel price** has climbed strongly and stayed high. Oil is not above the $130/barrel (in 2008$) that was the most-likely scenario for 2030, but in reality is not so far below the trend line to $150/barrel by 2016 which was the assumption of Scenario D. In this respect, the previous scenario assumptions about oil prices are proving to be robust, so far. Nevertheless, there are some lessons here:

■ Oil price assumptions will certainly need revisiting as current prices seem closer to those of Scenario D than the most-likely Scenario C.

■ The normal euro benchmark oil (Brent) has become widely separated from the US benchmark (WTI Cushing) in dollar terms. Moreover, the weakness of the euro has pushed the fuel price in euro terms even higher. These distinctions were not made clearly in the LTF10 and need exploring in the development of the scenario for the next LTF.

■ The LTF model assumes that the influence of fuel prices is felt through increasing ticket prices which in turn reduce passenger demand. Recent traffic developments suggest that the effect has instead strongly influence supply directly; faced with sharply rising operating costs due to fuel costs, airlines have pushed load factors higher, added seats, trimmed frequency and connections, held back from growth, made bigger changes within-year, or shifted to more profitable longer haul. Perhaps this is the difference between a short-term and long-term fuel price rise, or perhaps these amount to the same slowing of flight growth in the end; but this should be considered during the preparation of the next LTF.

The flight forecast relies on the **economic forecasts**. Economic growth forecasts have been revised sharply downwards within just 9 months, by an amount approximately equivalent to a 3 percentage point decline in traffic in 2012 alone. In a previous analysis of the influence of economic forecast errors on traffic forecasting, we noted a healthy lack of bias in economic forecasts. The exception to this was where they concerned periods of negative growth, which were often not foreseen. This re-confirms the difficulty in forecasting turning points in economic growth.

■ We always forecast from the current point in the economic cycle, wherever that may be. If near-future turning points are not anticipated, we could miss out on a down-turn, or for that matter an economic (and hence traffic) upswing. As we have seen, that can shift a forecast by several years in a similar period. So for the next LTF, and the MTF13 that will provide its baseline, we should consider even the short-term economic outlook, relative to the then position on the economic cycle.

■ Several of the motors of traffic growth, such as Turkey and Russia have weathered the recent economic downturn well, even if they saw GDP declines in 2009. Another hiccough in their growth seems possible over the span of the forecast, if not currently probable.

On the other hand **external events**, such as the Arab spring, ash-cloud and the tsunami in Japan, have proven to have effects of fairly limited duration on European traffic. We should consider in the next LTF whether such events are given too much priority in discussions.

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