



Foregone Economic Benefits from Airport Capacity Constraints in EU 28 in 2035



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All currency is in Euros at 2012 prices, unless otherwise stated.

Summary

There is a high cost by 2035 to the EU 28 from not addressing airport constraints. This assessment compares Eurocontrol's 'regulated growth' (most likely) scenario to the 'unconstrained growth' scenario and finds that in 2035:

- Constraints lead to unaccommodated passenger departures of 118 million, more than 1 in 10 people wishing to travel by air are unable to do so.
- Compared to the 'unconstrained growth' scenario, economic footprint of the air transport sector shrinks:
 - » Aviation will support 818 thousand fewer jobs, in addition there will be 485 thousand fewer jobs supported in the tourism sector.
 - » Aviation's contribution to GDP will be lower by 52 bn EUR, in addition contribution from tourism will be 24 bn EUR lower.
- Productivity erodes: Worse connectivity leads to lower productivity of up to 86 bn EUR per year.
- Economic welfare dips: Longer delays lead to lost passenger time worth 14 bn EUR per year.



Methodology and approach to quantifying foregone economic benefits in air transport

There are a range of established approaches for assessing the economic impact of aviation. This assessment compares the economic outcomes in the 'regulated growth' (most likely) scenario against the 'unconstrained growth' scenario of the Eurocontrol Challenges of Growth 2013 study using three complementary and mutually reinforcing approaches¹:

Economic Footprint

An 'economic footprint' analysis of the industry is measured by looking at the contribution to GDP and jobs generated by the sector and its supply chain. It can also include consideration of other associated activities such as tourism.

Productivity and Connectivity

Greater connections to the global air transport network can boost the productivity and growth of economies. Based on established statistical relationships between connectivity and productivity it's possible to estimate the impacts of changes in connectivity.

Economic Welfare

An assessment of the impact on economic welfare of users can be undertaken by translating operational impacts to economic values through cost benefit analysis.

Policy-makers wishing to draw conclusions from anticipated capacity constraints can use any of these three methodologies. This study does not endeavor to recommend one methodology over another, but rather it uses each approach to present different analyses of the economic impacts of airport capacity constraints. The choice of the most appropriate approach will need to consider a number of factors, including the purpose of work, data available and its quality, scope of work, feasibility of employing the selected methodology and the intended audience.

Eurocontrol scenarios from Challenges of Growth study

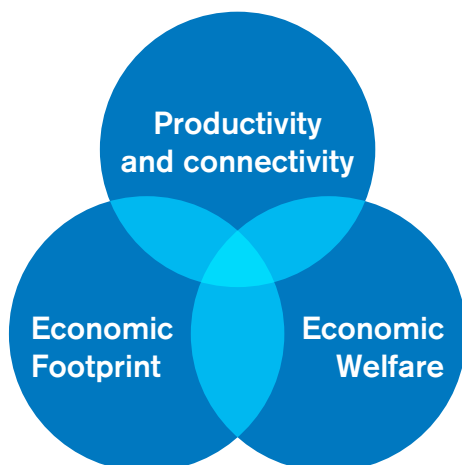
As part of the Challenges of Growth study Eurocontrol developed different scenarios for the future of aviation in Europe. The most likely scenario modelled was the 'regulated growth' scenario, which this assessment compares against the 'unconstrained growth' scenario. The 'unconstrained growth' scenario was also developed by Eurocontrol and is considered to be a robust and credible counterfactual to use as a basis of comparison. The 'regulated growth' scenario is underpinned by moderate economic growth, with regulation reconciling the environmental, social and economic demand to address growing global sustainability concerns.

Eurocontrol estimates that in the 'regulated growth' scenario 118 million fewer passengers will depart from airports in the EU 28 compared to the 'unconstrained growth' scenario. That implies that approximately 1 in 10 travelers who want to travel by air will not be able to do so in 2035.

This assessment combines country level projections from Eurocontrol with other economic data and statistics to assess the foregone economic benefits associated with the regulated growth scenario compared to the unconstrained growth scenario.

The 'regulated growth' scenario will also have consequences for industry structure and although a quantitative analysis of these impacts is more difficult to undertake, given available data, some conclusions can still be drawn. The impacts from lack of capacity available at Europe's major airports will likely lead to a less efficient industry structure. Crucially, under the 'regulated growth' scenario, despite significant unaccommodated demand, capacity at many of Europe's airports remains idle. This underlines that the core challenge facing Europe lies not in simply adding more airport capacity but rather is centered on adding airport capacity where it's needed – at Europe's major airports.

Chart 1: Assessing Economic Impact in Air Transport



¹These approaches can capture some of the same impacts or have overlapping components. Furthermore, the metrics used to present the impacts may not always be the same. For these reasons, the result from each of these methods should not be assumed to always be additive.

Economic footprint of air transport industry and associated activities shrink

Air transport has a significant economic footprint within the EU 28 measured by its contribution to GDP and jobs. While the benefits from aviation go beyond the activity of the sector and its supply chain, this framework provides a key insight into the scale of economic activity support by the sector, its supply chain and related activities.

Table 1 summarizes findings from the ATAG 2014 report Benefits Beyond Borders on the direct, indirect and induced economic activity supported by aviation in EU 28 countries as well as associated tourism benefits. These findings were developed based on extensive research, and industry surveys as well as data from national input-output tables

was used for quantitative economic assessment of the interdependencies between different branches of the economy. National statistics on tourism are also used for assessing the tourism benefits.

Table 2 provides a summary of projected economic activity supported by aviation in the EU 28 in 2035 based on the Eurocontrol passenger growth scenarios for regulated and unconstrained growth. It also presents the difference between the two scenarios².

Table 1: Economic activity in 2012 supported by aviation sector, EU 28

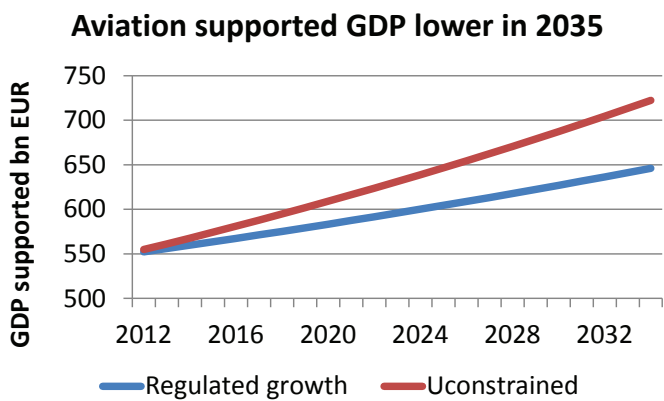
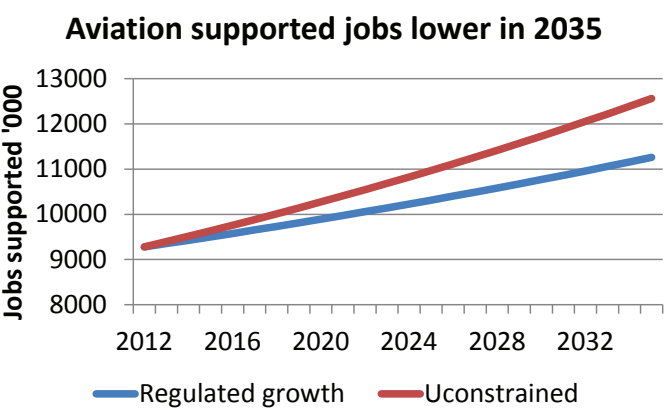
	Jobs, '000	GDP, EUR bn
Direct	2,031	121
Indirect and Induced	3,499	213
Tourism	3,749	178
Total	9,279	512

Source: ATAG, Aviation Benefits Beyond Borders 2014

Table 2: Projected 2035 economic activity support by aviation sector in EU 28, 'regulated growth' and 'unconstrained growth' scenarios

	2035 (Unconstrained)		2035 (Regulated growth)		Difference	
	Jobs, '000	GDP, EUR bn	Jobs, '000	GDP, EUR bn	Jobs, '000	GDP, EUR bn
Direct	2,727	170	2,421	151	306	19
Indirect & Induced	4,977	318	4,465	285	513	33
Tourism	4,856	235	4,371	211	485	24
Total	12,561	722	11,257	646	1,304	76

Sources: ATAG, Eurocontrol, IATA



² This analysis projects growth in aviation's contribution to the economy based on the Eurocontrol passenger growth forecast under the regulated growth and 'unconstrained growth' scenarios but also incorporates an annual industry wide productivity improvement of 1.75% per year.

Box 1: Overview of using 'economic footprint' analysis as an assessment approach

(adapted from Oxford Economics – <http://www.iata.org/policy/Pages/benefits-country-reports.aspx>)

An 'economic footprint' analysis of the industry is measured by looking at the contribution to GDP and jobs generated by the sector and its supply chain. The resources deployed by the aviation sector are measured by its Gross Value Added (GVA). GVA is calculated either as the output created by the sector less the cost of purchased inputs (net output measure), or by the sum of profits and wages (before tax) generated from the sector's economic activity.

From this direct contribution, the sector's economic footprint is calculated by adding to it the output (and jobs) supported through indirect and the induced contributions. The indirect contribution measures the resources deployed by the aviation sector through using domestically produced goods and services produced by other firms – i.e. the resources used through its supply chain. The GVA generated through the indirect and direct channels supports jobs both in the aviation sector and in its supply chain. The workers whose employment depends on this activity in turn spend their wages on goods and services. The induced contribution is the value of the domestic goods and services purchased by this workforce. Taken together, these three channels give the aviation sector's economic footprint in terms of GVA and jobs. This assessment can also be expanded to include other associated activities such as tourism.

This approach does not take into account the benefits created for the passengers and shippers (users) and the wider economy through enabling FDI, business clusters, specialization and other spill over impacts that support enhance productivity of the economy.

When using this approach for impact assessments it needs to be taken into account that some of the jobs and GVA may not be additional, that the indirect and induced (and where used catalytic) effects all double-count some jobs/ GVA generated by sectors other than air transport. The use of different types of computable general equilibrium models can be used to address the additionality related concerns when assessing policy impacts.

Useful resources:

- <http://www.iata.org/publications/economics/public-policy/Pages/benefits-old.aspx>
- <http://aviationbenefits.org/downloads/>
- http://aviationbenefits.org/media/13964/ATAG_AviationBenefits2014_EU28.pdf



Productivity improvements curtailed as connectivity is constrained

Air transport represent an important infrastructure asset that generates benefits through enabling foreign direct investment, business clusters, specialization and other spill-over impacts on the economy productivity. Studies suggest that a 10% increase in connectivity (relative to GDP) will raise level of productivity in the economy by between 0.07% and 0.5%³.

There are technical challenges in projecting connectivity based on passenger numbers only. However, this assessment is based on a conservative methodology informed by expert judgment⁴.

Possible impacts from lower connectivity are estimated based on Oxford Economics forecasts of EU 28 GDP in 2035, projections of expected connectivity and the statistical relationships between connectivity and productivity. It's estimated that with connectivity lower by 8% the long-run productivity of EU 28 economies will be lower by up to 86 bn EUR per year in 2035.

Air connectivity
reduced by

8%



Economy wide
productivity
lower by up to
86 bn EUR
per year



Box 2: Overview of using 'productivity and connectivity relationship' as an assessment approach

Greater connections to the global air transport network can boost the productivity and growth of economies by providing better access to markets, enhancing links within and between businesses and providing greater access to resources and to international capital markets. Aviation connectivity is a measure which reflects the range and economic importance of destinations, the frequency of service and the number of onward connections available through each country's aviation network. IATA developed an air connectivity measure in 2007 and is the basis of this analysis. However, other institutions have also developed other air connectivity measures. Research undertaken based on the IATA measure show that there is a strong positive link between higher connectivity to the global network – as a proportion of GDP – and labor productivity.

Useful resources:

- <http://www.iata.org/publications/economics/public-policy/Pages/benefits-old.aspx>
- http://www.iata.org/whatwedo/Documents/economics/aviation_economic_benefits.pdf
- http://www3.weforum.org/docs/WEF_TravelTourismCompetitiveness_Report_2007.pdf

³"The Economic Catalytic Effects of Air Transport in Europe", by Oxford Economic Forecasting (2005) on behalf of the EUROCONTROL Experimental Centre and "The Economic Contribution of the Aviation Industry in the UK", by Oxford Economic Forecasting (2006). These studies also allow for connectivity to increase the long-run level of GDP through increasing investment. "Measuring the Economic Rate of Return on Investment in Aviation" by InterVISTAS Consulting Inc. (2006).

⁴This study projected forward connectivity based on a relationship between the growth in passenger numbers and connectivity of 75%. So a 1 percentage point growth in passengers is estimated to translate to a 0.75 percentage point growth in connectivity.

Economic welfare suffers due to longer delays

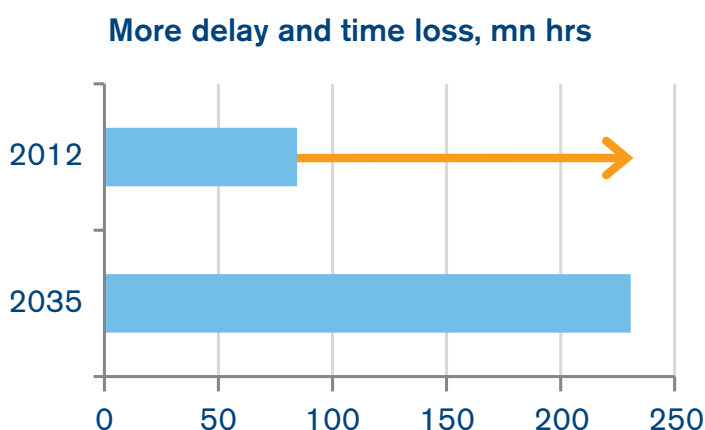
Air transport creates benefits for passengers and shippers through the air transport service. However, inefficiency and constraints in providing that service can curb the potential benefits to consumers. Eurocontrol expects a growing delay challenge and estimate total delays to increase from 8.75 minutes per flight in 2012 to 14.2 minutes in 2035.

The implication for air transport users is that the increasing shortfall in performance will imply an increase in time lost to passengers due to delays from 84 million hours in 2012 to 231 million lost hours in 2035.

When quantified in terms of the value of time lost to passengers it is expected to result in an increase in losses from 4 bn EUR in 2012 to 13.6 bn EUR in 2035. The monetary values for the value of time are based on figures in Eurocontrol's standard CBA inputs⁵.

This is only an assessment of delay impacts, which means it's only a partial assessment of the impact from lower network resilience and reliability. A more comprehensive review of the impacts would need to assess the operational cost implications and quantify other factors impacted by lower network reliability and resilience.

When quantified in terms of the value of time lost to passengers losses are expected to increase from **4 bn EUR in 2012 to 13.6 bn EUR in 2035.**



Box 3: Overview of using 'economic welfare' as an assessment approach

Economic welfare assessments are informed by cost-benefit analysis methods. When scoped and performed correctly cost benefit analysis can offer a powerful method for identifying the policy option that is best suited to deliver societal benefits. It can serve two important objectives. First, it can be used to identify whether a policy offers a sound investment that creates net benefits. Second, it can offer a common metric with which to compare policy options.

Useful resources:

- <http://www.iata.org/publications/economics/public-policy/Pages/benefits-old.aspx>

⁵ Projection for 2035 incorporates a 1% per year increase in the value of time.