AVIATION/ BENEFITS BEYOND BORDERS/

Providing employment, trade links, tourism and support for sustainable development through air travel

EUROPEAN UNION



DRIVING EUROPEAN CONNECTIVITY AND GROWTH/

Aviation's economic, social and environmental profile

The air transport industry supports 7.8 million jobs in the European Union and contributes €475 billion to EU gross domestic product (GDP), equivalent to 3.9% of GDP.

Air transport is a major contributor to European Union economic prosperity The Treaty of the European Union, in its first few paragraphs, mentions 'European integration', 'free movement of its peoples' and 'stronger social union'. The connectivity provided by the European transport network, both between citizens of EU states and to third party trading partners, provides a crucial conduit for trade, tourism and economic growth.

Aviation brings with it a wide range of benefits. It not only provides services to the people who fly on board, or the people who work in the sector, but also drives economic growth through trade and tourism. In fact, the connectivity it provides can in its own right boost economic prosperity. In Europe, the air transport sector supports 7.8 million jobs and €475 billion in economic impact. In fact, if European aviation were a Member State, it would rank 7th in size by GDP. But perhaps more important than that is the connectivity that it provides for Europe. Airports in the EU serve around 12,314 routes. Nearly 23% of EU trade with other parts of the world is carried by air - over €650 billion in 2010. And EU passengers make up 23% of the global total.

The report *Aviation: benefits beyond borders* provides a global view of one of the most global industries. Oxford Economics has worked over the last two years to analyse the economic and social benefits of aviation at a national level in over 50 countries and has used the results of that assessment to build the most



comprehensive global picture of air transport's many benefits. Working with partners across the industry, the Air Transport Action Group (ATAG) has expanded the analysis to build a unique view of the air transport system. This is a special European Union summary of the findings, exploring the role aviation plays in the 27 Member States of the EU.

Connecting Europeans with each other and the world

Air transport helps to bring Europe's citizens together. One of the principal aims of the European Single Market was to drive economic prosperity in the region by creating an area conducive to competition, where people and capital are allowed to move freely to areas where they are of greatest value, improving the efficiency in the allocation of resources and driving increased specialisation. The principle of the free movement of people within the EU was established following the signing of the Schengen agreement in 1985. Air transport in the EU has been successively deregulated to create a competitive single market, such that any valid operator cannot be prevented from operating on any given route within the EU. One consequence of this process of liberalisation is the growth of the low cost



carrier in the short-haul point-to-point market. These 'no-frills' services have altered the typical profile of passengers, making air transport – on both low-cost and full-service carriers – more accessible for EU citizens who in the past were priced out of this market.

The EU is uniquely placed globally as the meeting point between east and west. As such, it has traditionally acted as a world hub of economic and social connectivity. That connectivity with the rest of the world is reliant on the linkages that air transport provides to European citizens and businesses. In fact, 38% of air passenger traffic in the region is to extra-EU destinations - nearly half of which is to the emerging economies of Latin America, Africa, the Middle East and Asia. However, the geographic position which has made Europe a hub of world trade for centuries is now coming under threat from fast developing nations. A key factor in the EU's ability to remain competitive in the future will be the connectivity to these trading partners. In the same period (2005-2010) as passenger movements between the EU and Brazil grew by 20%, movements between China and Brazil grew by 256%. In those five years, traffic between China and Africa grew by 311%.



POWERING THE EU ECONOMY

Key facts and figures from European Union air transport



50% By 2050, aviation aims to reduce its net aviation carbon emissions to half of what they were in 2005.

registered in the EU

15,000 passengers

per year)*

A GLOBAL INDUSTRY/

Key facts and figures from the world of air transport

56.6 million

Jobs supported by aviation worldwide

Aviation's global employment and GDP impact



17_{trilli}

Aviation's global economic impact (including direct, indirect, induced and tourism catalytic)

3.5% of global GDP is supported by aviation

Aviation jobs are, on average, 3.5 times

more productive

than other jobs

Amount the world's airlines paid for fuel (in 2011, it was €128 billion)

CO2 emitted by airlines (in 2011, it was 676 million tonnes). This is just under 2% of the global human emissions of 34 billion tonnes. 80% of aviation CO2 is emitted from flights over 1,500 kilometres in length, for which there is no practical alternative form of transport.



Employment (millions)



1.5% Aviation will improve its fleet fuel efficiency by 1.5% per annum between 2010 and 2020.

Stabilise From 2020, net carbon emissions from aviation will be stabilised through

All global figures are for 2010, unless otherwise stated, to give a single set of data for one year. National figures are primarily 2009. Where available, the latest figures are also noted.

Air transport: a stimulus for greater productivity

The largest economic benefit of increased connectivity comes through its impact on the long-term performance of the wider economy through enhancing the overall level of productivity. A rise in productivity in firms outside the aviation sector comes through two main channels:

- » through increased competition, both from foreign firms entering the domestic market and also through increased domestic exports; and
- » through promoting the freer movement of investment capital and workers between countries.

Improved connectivity also encourages foreign direct investment by enhancing the accessibility of domestic markets to foreign firms.

Since the mid-1990s, average labour productivity in the EU has lagged behind both the United States and Asia. The difference between the EU and the US has largely been attributed to technological advance and the more abundant use of information technology in the working environment in the US, while in Asia the growth is largely down to a process of economic convergence. While it is recognised that aviation is only one small element of a multi-faceted relationship, policy aimed at enhancing the global connectivity of EU Member States can assist in promoting the region's competitiveness and help close the labour productivity 'gap'.

A number of recent studies have attempted to quantify the long-term impact of a country's GDP that results from improvements in connectivity. This is not straightforward, given that supply-side benefits of promoting trade and inward investment generally manifest themselves over time. However, based on a conservative estimate, a 10% improvement in connectivity (relative to GDP) would see a 0.07% per annum increase in long-run GDP.

Trade in high-tech components

Compared to other modes of transport, air freight is fast and reliable over great distances. However, these benefits come at a cost. Consequently, air transport is crucial in the distribution of products that are light, compact, perishable, time-sensitive or that have a high value-to-weight ratio. This relationship is most apparent in the data on the modes of transport used in world trade. While air accounts for less than 1% of the tonnage of EU trade with the rest of the world, air freight makes up nearly 23% of the value of that trade.

One particular industry reliant on air transportation is the manufacturing of high-tech components. The development and application of new technologies is an essential driver of economic growth, generating value added output and supporting well paid employment opportunities. High technology exports represent nearly 17% of total EU exports of goods – with countries such as Malta (43.8%), Luxembourg (41.8%), Ireland (22.1%) and Cyprus (20.1%) particularly reliant on these industries as a source of domestic export revenueⁱⁱⁱ. High-tech manufacturers are faced with quick product life cycles and constantly changing consumer trends. Businesses need to be able to react quickly to an ever-changing environment. Air connectivity is thus an important factor in facilitating growth and maintaining competitiveness in this industry where time is money, allowing firms to connect with specialist global supply chains and distribute their output to an international market.

Outlying areas of the EU and reliance on aviation

Aviation provides crucial connections to peripheral areas in the EU, such as the Shetland Islands in the UK, communities above the Arctic Circle and the Balearic Islands off the coast of Spain, whose isolation means that aviation is the only fast and reliable mode of transportation. Local economies, often heavily reliant on one dominant industry, depend on the essential connections that only the aviation sector can provide. International tourists flock to the Spanish and Greek Islands in the summer months. In 2011, nearly 10 million international tourists travelled to the Balearic Islands, a region with a population of around 1.1 million people, spending nearly €9.3 billion in the region. The oil fields in the waters west of Shetland are attracting £7.5 billion in private sector investment over the next five years, with this area now forming the UK's largest hydrocarbon resource. Local communities rely on direct links with mainland Europe, both for social and economic reasons. The transportation of fresh produce to and from these peripheral regions depends on fast delivery of air transport, for example industries such as fishing depend on the speed with which their produce reaches the consumer.

EU27 External trade by mode, 2010

Average airline connectivity growth in the EU, US and Asiaⁱⁱ



Tourism

Tourism makes a major contribution to the EU economy. It directly contributed €365 billion to EU GDP in 2011 and supported nearly 7.3 million direct jobs – 3.3% of total employment. By 2022 the World Travel & Tourism Council expects direct employment in the tourism industry to be around 8.3 million in the EU. Tourism is, therefore, a significant industry, especially for some of the countries struggling to deal with current economic climate in the EU. In Greece, for example, tourism accounted for as much as 8.4% of total employment in 2011, while in Portugal the figure is 6.6%.

In order to attract visitors, EU countries spend considerable sums of money on marketing and promotion, selling their destination to potential visitors around the world. EU Member States collectively spent over €1 billion on tourism marketing and promotion in 2009. While it is difficult to draw crosscountry comparisons in the data, it is noticeable



The full, global, report *Aviation: Benefits Beyond Borders* can be found at:



Travel and tourism competitiveness and the importance of air transport



that some of the largest levels of expenditure are in countries such as Greece that are facing the toughest economic conditions, signalling that public authorities not only recognise the importance of tourism to the domestic economy, but also the future role that tourism can play as they pull themselves out of difficulty.

With 51% of international tourists travelling by air, aviation plays a crucial role in enhancing the accessibility and attractiveness of these destinations to the world. Without frequent and affordable connections to these destinations, much of this promotional activity would be futile. This is recognised by the World Economic Forum, which includes measures of domestic air transport infrastructure as one of the 14 pillars that constitute their travel and tourism competitiveness index. While it is recognised that there are many other factors influencing the competitiveness of domestic tourism industries, countries with higher connectivity generally have a more competitive tourism industry. The issue is particularly pertinent for many central and eastern European countries – most of which are located in the upper right-hand quadrant of the graph to the left – as they try to grow their tourism industries.

Aviation sector makes substantial investments

The aviation sector is heavily reliant on good infrastructure. In 2011, European airports invested approximately €7.3 billion on capital investment on construction projects, creating jobs and building new infrastructure. Between 2011 and 2030, the capacity of the air transport system in Europe is expected to increase by around 40% to meet demand growth.

It is often asserted that the aviation industry is under-taxed in comparison to other modes of transport. However, this reflects the alternative methods of funding big network infrastructure projects. Unlike other transport modes, the air transport industry pays for an overwhelming majority of its own infrastructure costs (runways, airport terminals, air traffic control), primarily through user charges, rather than being financed through taxation and public investment or subsidy (as is typically the case for road and railways). Between 2008 and 2010 for example, state aid to the aviation sector from EU Member States averaged around €353 million per year, less than road transport (€574 million), maritime transport (€1,885 million) and most significantly, less than 1% of that which the railway sector received (€42.49 billion)*. When comparing the net contribution to government revenue, aviation often provides a net surplus, while rail services are fully reliant



on public subsidies. In fact, the subsidies paid to the aviation sector are generally only for public service obligation routes to communities who otherwise would struggle to support an economic air service.

Some argue that most European air transport could be replaced by high-speed rail. While rail plays an important role in European connectivity and can be a very useful partner to air transport through the inter-ticketing arrangements in many places, it is not suitable for all journeys. It is often recommended that trips of up to four hours are viable for rail travel to replace similar air services. It is also worthwhile to join major population centres by high-speed rail. But this expensive and spaceintensive form of travel can possibly have a larger environmental footprint than air travel when the construction of the track and origin of the electricity are taken into account. The level of infrastructure investment required for highspeed rail links also limits the number of city pair routes on which rail will work, despite the large subsidies the mode receives.





AUSTRIA

Air transport supports 75,000 jobs and €4.6 billion in GDP (1.7% of economy).



BELGIUM Air transport supports 112,000 jobs and €7.7 billion in GDP (2.3% of economy). 11.6m 5 75 1.9% **BULGARIA[†]** Air transport supports 141,000 jobs and €1.75 billion in GDP (4.9% of economy). 3.2m 4 10 0.5% CYPRUS Air transport supports 64,000 jobs and €2.7 billion in GDP (15.2% of economy). $1_2 \rightarrow 1$ 3.6m 0.6%

CZECH REPUBLIC

Air transport supports 43,000 jobs and €1.2 billion in GDP (0.9% of economy).



DENMARK Air transport supports 50,000 jobs and $\pounds 2.9$ billion in GDP (1.3% of economy). 1 3.3 m $8 \rightarrow 9$ 2.2%**ESTONIA[†]** Air transport supports 10,000 jobs and $\pounds 270$ million in GDP (1.9% of economy). $1 \rightarrow 2$ 0.1%

FINLAND Air transport supports 121,000 jobs and €7.1 billion in GDP (3.9% of economy).



FRANCE Air transport supports 989,000 jobs and €75.2 billion in GDP (3.9% of economy).



GERMANY

Air transport supports 1,100,000 jobs and \notin 63.1 billion in GDP (2.6% of economy). 96.7m 742 27 315.7%



Air transport supports 300,000 jobs and

GREECE

JOBS SUPPORTED BY AVIATION (THOUSANDS)

	ACCEPT	SEL OLLY	BULER	Share	14 Charles	OKHAR	Stores -	N. H.	S	Seattle Se	A A A A A A A A A A A A A A A A A A A	HUNGAD	ALL AND	On. The
Aviation sector	32	36	18.2	9.6	14	29	3.3	62	297	323	53	18	26	69
+ Indirect	50	71	29.7	12.2	25	39	5.5	86	596	623	75	29	42	152
+ Induced	60	84	38.8	15.5	31	45	7.1	104	780	816	100	37	54	195
+ Tourism catalytic (total)	75	112	141	63.9	43	50	10.3	121	989	1,146	300	48	117	382
	ter May	ALL	the second	Od Britty	Melling and	SS. OMAN	Copiles	A MANA	South	Stoken and a stoke	Seal When	Sun Strain	4. 55	13 ⁵¹
Aviation sector	4.4	7.9	8.7	3.8	87	20	24	28	13.6	5.6	120	44	326	1,700
+ Indirect	6.5	12.8	9.8	4.5	138	45	44	41	22.1	9.1	203	67	672	3,700
+ Induced	8.2	16.8	11.0	5.5	175	65	59	54	28.9	11.8	260	83	921	4,600
+ Tourism catalytic (total)	18.6	28.3	14.5	31.6	287	84	183	78	32.3	25.6	872	185	1,440	7,800



GDP SUPPORTED BY AVIATIONY (€ BILLIONS)

	AUSTRA	SEL OILLY	BUICHAR	Share	Stecher	OFFINAN	Stown Stown	E- HILL	AN A	Store and a store of the store	A DA	ALL CALL	AL AND	THE
Aviation sector	1.8	2.5	0.23	0.36	0.42	1.4	0.09	2.8	26.2	22.2	3.3	0.38	1.9	4.7
+ Indirect	3.0	4.8	0.36	0.48	0.71	2.1	0.15	4.5	48.1	37.8	4.4	0.66	3.1	9.8
+ Induced	3.6	5.8	0.47	0.62	0.91	2.7	0.19	5.8	61.8	47.9	5.7	0.84	4.1	12.7
+ Tourism catalytic (total)	4.6	7.7	1.75	2.66	1.18	2.9	0.27	7.1	75.2	63.1	14.1	1.13	9.4	23.6

		ATT BOOM			San and			, JIP						
	A MARINE AND	STHIN'S	 Cutering 	WATT	LEN NY	0014	Co Co	20MA	Shar	Stow	Sol With	Suppose	34	4321
Aviation sector	0.08	0.17	0.64	0.09	5.4	0.6	1.1	0.44	0.42	0.23	6.5	2.5	23.9	110.3
+ Indirect	0.12	0.28	0.79	0.12	8.9	1.2	1.8	0.62	0.66	0.36	11.1	3.9	42.2	245.4
+ Induced	0.15	0.36	0.99	0.15	11.8	1.6	2.3	0.78	0.85	0.47	14.2	5.0	55.7	306.3
+ Tourism catalytic (total)	0.37	0.60	1.35	1.11	17.5	2.0	5.7	1.03	0.96	1.05	54.3	11.3	78.9	474.8

Air transport is forecast to support 11.1 million European jobs by 2030.

Air transport is working to mitigate its environmental impact

Global airline operations produced 649 million tonnes of carbon dioxide (CO₂) in 2010 (and 676 million tonnes in 2011), just under 2% of total human CO₂ emissions of over 34 billion tonnes.

The aviation industry agreed in 2008 to the world's first set of sector-specific climate change targets. The industry is already delivering on the first target - to continue to improve fleet fuel efficiency by 1.5% per year until 2020. From 2020, aviation will stabilise its net CO₂ emissions while continuing to grow to meet the needs of passengers and economies. By 2050, the industry intends to reduce its net CO₂ footprint to 50% below what it was in 2005.

Companies across the sector are collaborating to reduce emissions using a four-pillar strategy of new technology, efficient operations, improved infrastructure and economic measures to fill the remaining emissions gap.

European airports are doing their share by implementing the Airport Carbon Accreditation programme that, in the 12 months to June 2012, reduced emissions by 414,128 tonnes across the 64 member airports in Europe, representing over half of EU air passengers.

Modern jet aircraft are well over 70% more fuel efficient than the first models that entered into service and each new generation of aircraft continues this downward trend.

Over 1,500 passenger flights operating partially on sustainable biofuels have taken place so far. It is expected that savings in carbon from moving to biofuels could be up to 80% over that of traditional jet fuel. The industry has been working with research institutions and government partners across Europe to help bring about this fledgling industry.

When implemented, Europe's Single Sky programme could deliver a 10-15% reduction in environmental impact alone as it will save 300-500kgs of fuel and 948 to 1,575kgs of carbon per flight.

Industry partners are not just working with each other on emissions-saving projects. There are three key programmes which bring together European Commission institutions and industry in coordinated efforts – the Single European Sky ATM Research (SESAR), Clean Sky technology programme and European Biofuel Flightpath are excellent examples of industry and government institutions working together for positive results.

When no-one flew

Perhaps the starkest reminder of the important role aviation plays in the life of today's European citizens occurred in the week following 14 April 2010, when Iceland's Eyjafjallajokull volcano erupted with an ash plume that blew across much of Europe's airspace.

- Around 10 million passengers were disrupted and over 100,000 flights cancelled during the entire period of disruption.
- Total disruption at its peak meant just under a third of total global air traffic capacity was affected.
- » The visitor spending impact realised by destinations around the world has been estimated at €1.2 billion in lost revenues, primarily to the hospitality sector.
- » The total cost to the world economy is estimated at €3.7 billion lost GDP between 15 April and 24 May 2010.

The volcanic ash cloud not only impacted European citizens, but some parts of the world reliant on trade with EU partners. The impact on producers of flowers and fruit and vegetables in African countries such as Kenya, Zambia and Ghana was widely reported, with delays in transportation meaning large quantities of fastperishing produce rotted, leading to losses of up to \notin 48.5 million to economies in those states.

In total, €36.2 billion of electrical and machine parts and equipment were supplied to the rest of the world from European producers in 2009. As the supply of small high-tech components was interrupted, car production lines in Europe and Asia suspended production as crucial components were unable to make it to the factories and it is estimated that the impact in South Korean industry alone amounted to €84.9 million between 16 and 19 April 2010.

The contribution of the air transport industry to Europe in 20 years

It is estimated that the European air transport industry will, in 2030, contribute:

- directly, around 2.43 million jobs and
 €263 billion of GDP (at 2010 prices) to the world economy;
- » with indirect and induced contributions, around 6.6 million jobs and €729 billion in GDP (at 2010 prices).

Furthermore, if tourism is added, the total contribution of air transport industry amounts to over 11.1 million jobs and €1.1 trillion in European GDP in 2030.

The impact of lower growth

Long-term forecasts are by their nature sensitive to a number of unforeseen factors. How the economic contribution of aviation would be impacted by these potential unknowns can be explored through a sensitivity analysis of future growth in passenger and cargo traffic.

For example, should growth in passenger and cargo traffic be one percentage point lower during the period 2010-2030, than in 2030:

- > There would be nearly half a million fewer direct jobs in the air transport sector.
- » Taking into account the indirect and induced impacts, the number of jobs supported by air transport would be 1.1 million lower.
- » Adding the impact of tourism (direct, indirect and induced), the total number of jobs supported by the air transport sector would be over 1.9 million fewer than the base forecasts.

The direct, indirect and induced contribution of the air transport sector to European GDP would be €127 billion (2010 prices) lower, with an additional €64 billion lost through lower tourism activity.



*Eurostat, *EU transport in figures 2012*: http://tinyurl.com/9249cj2

- [†]Employment and GDP impact data for Bulgaria, Estonia, Lithuania, Slovakia and Slovenia are estimates by Oxford Economics.
- ¹ All passengers carried on aircraft departing from airports in the EU27, to domestic, intra-EU or extra-EU destinations in 2010. Eurostat: http://tinyurl.com/8rlk463. Due to differences in statistical methods, it is also correct to say that the total number of passengers carried by air in the European Union was 777 million, which includes international passengers on both arrival and departure in the EU, but counts each intra-EU passenger only once.
- ⁱⁱ Source: IATA. EU figures exclude Bulgaria, Lithuania, Estonia, Slovakia and Slovenia. Asia includes Hong Kong, Japan, Singapore, South Korea and Taiwan.

ⁱⁱⁱProportion of total exports represented by hightechnology industries, Eurostat, 2009

The air transport industry is the global network of commercial aircraft operators, airports, air navigation service providers and the manufacturers of aircraft and their components. It is responsible for connecting the global economy, providing millions of jobs and making modern quality of life possible. The Air Transport Action Group (ATAG), based in Geneva, Switzerland, represents the full spectrum of this global business. ATAG brings the industry together to form a strategic perspective on commercial aviation's sustainable development and the role that air transport can play in supporting the sustainability of other sectors of the economy. ATAG's Board of Directors includes: Airports Council International (ACI), Airbus, ATR, Boeing, Bombardier, Civil Air Navigation Services Organisation (CANSO), CFM International, Embraer, GE Aviation, Honeywell Aerospace, International Air Transport Association (IATA), Pratt & Whitney, and Rolls-Royce and Safran.

ATAG≻

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