

AVIATION BENEFITS BEYOND BORDERS

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

SUMMARY

ATAG 
AIR TRANSPORT ACTION GROUP

MARCH 2012

TRADE: \$5.3 TRILLION IN CARGO WORLDWIDE

PRODUCTIVITY: ENHANCING PRODUCTIVITY OF THE ENTIRE ECONOMY

TOURISM: 51% OF INTERNATIONAL TOURISTS TRAVEL BY AIR

CONNECTIVITY: 34,756 CITY-PAIR ROUTES

JOBS: 56.6 MILLION PEOPLE EMPLOYED

ENVIRONMENT: 70% REDUCTION IN FUEL PER PASSENGER KILOMETRE SINCE FIRST JET AIRCRAFT

OPPORTUNITIES: OVER 60% REDUCTION IN THE REAL COST OF TICKETS SINCE 1970

BEYOND TAKE-OFFS, LANDINGS AND PEANUTS

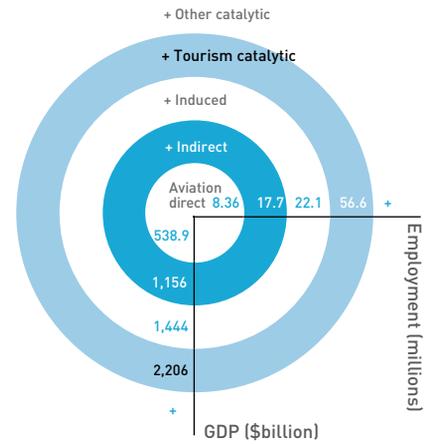
Key facts and figures from
the world of air transport

Aviation's global employment and GDP impact

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

56.6 million

Jobs supported by aviation worldwide



\$2.2 trillion

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

3.5%

Of global GDP is supported by aviation

These figures represent the benefits that aviation activities deliver to the global economy. They do not include other economic benefits of aviation, such as the jobs or economic activity that occur when companies or industries exist because air travel makes them possible, or the intrinsic values that the speed and connectivity of air travel provides. Nor do they include domestic tourism and trade. Including these would increase the employment and global economic impact numbers several-fold.

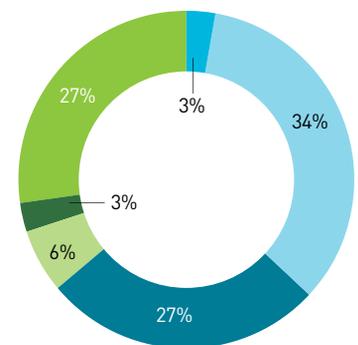
19TH

If aviation were a country, it would rank 19th in size by GDP

3.5x

Aviation jobs are, on average, 3.5 times more productive than other jobs

Regional passenger traffic split



- Africa
- Asia-Pacific
- Europe
- Latin America and Caribbean
- Middle East
- North America

34,756

City-pair routes served globally

2,681,000,000

Passengers carried by airlines
(in 2011, it was over 2.8 billion)

1,568

Commercial airlines

3,846

Airports with scheduled commercial flights

192

Air navigation service providers

23,844

Number of commercial aircraft in service

\$140 billion

Amount the world's airlines paid for fuel (in 2011, it was \$178 billion)

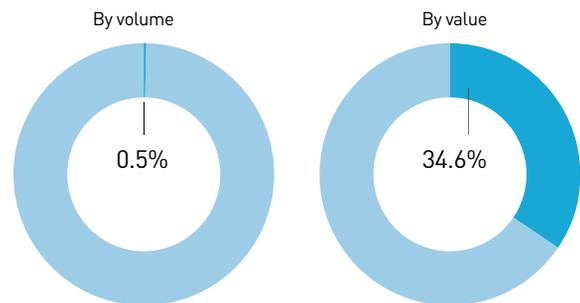
649,000,000 tonnes

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

35%

Air transport carries around 35% of world trade by value and only 0.5% by volume

Proportion of global trade transported by air



Climate targets

1.5%

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

STABILISE

From 2020, net carbon emissions from aviation will be capped through carbon-neutral growth.

50%

By 2050, net aviation carbon emissions will be half of what they were in 2005.

48 million

Tonnes of freight handled by air in 2010 (in 2011, it was 47.6 million tonnes)

\$5.3 trillion

Value of cargo handled by air in 2010

For more information or for the full report go to:

WWW.AVIATIONBENEFITSBEYONDBORDERS.ORG

A GLOBAL INDUSTRY



The global air transport industry supports 56.6 million jobs worldwide and contributes \$2.2 trillion to global GDP, equivalent to 3.5% of GDP.

Aviation's global economic, social and environmental profile in 2010

This report 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 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 that provides jobs, trade, connectivity, tourism, vital lifelines to many remote communities and rapid disaster response.

The full report can be found at www.aviationbenefitsbeyondborders.org

Air transport is a major contributor to global economic prosperity

Aviation provides the only rapid worldwide transportation network, which makes it essential for global business and tourism. It plays a vital role in facilitating economic growth, particularly in developing countries.

Airlines transport over 2.6 billion passengers annually with revenue passenger kilometres (RPK) totalling nearly 5 trillion in 2010. The USA followed by China and then the UK were the top three countries in terms of RPK.

Nearly 48 million tonnes of freight were carried by air in 2010, amounting to 172 billion freight tonne kilometres (FTK). The USA followed by China and then Germany were the top three countries in terms of FTK.

Air transport facilitates world trade, helping countries participate in the global economy by increasing access to international markets and allowing globalisation of production. The total value of goods transported by air represents 35% of all international trade.

Aviation is indispensable for tourism, which is a major engine of economic growth, particularly in developing economies. Globally, 51% of international tourists travel by air.

Connectivity contributes to improved productivity by encouraging investment and innovation; improving business operations and efficiency; and allowing companies to attract high quality employees.

Aviation's global economic impact (direct, indirect, induced and tourism catalytic) is estimated at \$2.2 trillion, equivalent to 3.5% of world gross domestic product (GDP).

These figures do not include other economic benefits of aviation, such as the jobs or economic activity that occur when companies or industries exist because air travel makes them possible, or the intrinsic value that the speed and connectivity of air travel provides. Nor do they include domestic tourism and trade. Including these would increase the employment and global economic impact numbers several-fold.

Over 1,500 airlines operate a total fleet of nearly 24,000 aircraft. They serve almost 4,000 airports through a route network of several million kilometres managed by around 190 air navigation service providers.

Air transport is a major global employer

The air transport industry generates a total of 56.6 million jobs globally.

It provides 8.4 million direct jobs: airlines, air navigation service providers and airports directly employ 7.6 million people and the civil aerospace sector (manufacture of aircraft systems, frames and engines) employs 0.8 million people.

There are 9.3 million indirect jobs generated through purchases of goods and services from companies in its supply chain.

Industry employees support 4.4 million induced jobs through spending.

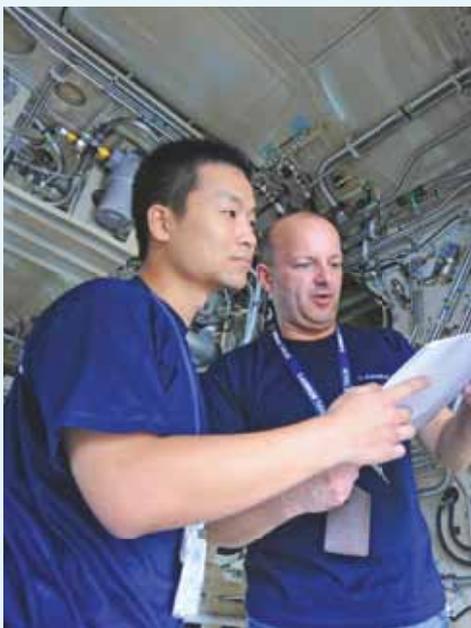
Aviation-enabled tourism generates around 34.5 million jobs globally.

Air transport invests substantially in vital infrastructure

Unlike other transport modes, the air transport industry pays for a vast majority of its own infrastructure costs (runways, airport terminals, air traffic control), rather than being financed



EK433	BRISBANE	1505	DEPARTED
NZ707	BRISBANE SIN DXB	1535	GATE CLOSED
LA800	SYDNEY	1550	GATE CLOSED
EK407	SANTIAGO	1615	CHECK IN CL
QF25	MELBOURNE DUBAI	1650	GO TO SECU
QF44	LOS ANGELES	1655	CHECK IN
AR1183	SYDNEY	1705	CHECK IN
NZ8	BUENOS AIRES	1715	CHECK IN



countries, both from an individual perspective and at a country level. In the same way, eased restrictions on the movement of goods and people across borders facilitates the development of social and economic networks that will have long-lasting effects. This improved flow of people and goods benefits both the host and the originating countries, encouraging increased social and economic integration.

Air transport offers a vital lifeline to communities that lack adequate road or rail networks. In many remote communities and small islands, access to the rest of the world – and to essential services such as health care – is often only possible by air.

Aviation's speed and reliability are perhaps most immediately apparent in the delivery of urgently needed assistance during emergencies caused by natural disaster, famine and war. Air services are particularly important in situations where physical access is problematic.

Air transport is working to mitigate its environmental impact

Airline operations produced 649 million tonnes of carbon dioxide (CO₂) in 2010 (and 676 million tonnes in 2011), just under 2% of the total human carbon 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 cap its net carbon emissions while continuing to grow to meet the needs of passengers and economies. By 2050, the industry has committed to reduce its net carbon 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.

Modern jet aircraft are 75% quieter 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 the carbon reduction due to introduction of biofuels could be up to 80% compared with traditional jet fuel.

When implemented, Europe's Single Sky programme can deliver a 10-15% reduction in environmental impact alone as it will save 300-500 kilograms of fuel and 948 to 1,575 kilograms of CO₂ per flight. Similarly NextGen in the USA is expected to yield significant benefits in terms of reducing delays, fuel savings, additional capacity, improved access, enhanced safety, and reduced environmental impact.



through taxation and public investment or subsidy (as is typically the case for road and railways).

In 2010, airports invested \$26 billion in construction projects, creating jobs and building new infrastructure.

The benefits to society of research and development spending by the aerospace industry are estimated to be much higher than in manufacturing as a whole – every \$100 million of spending on research eventually generates additional GDP benefits of \$70 million year-after-year.

Air transport provides significant social benefits

Air transport contributes to sustainable development. By facilitating tourism and trade, it generates economic growth, provides jobs, improves living standards, alleviates poverty and increases revenues from taxes.

Increasing cross-border travel is a reflection of the closer relationships developing between

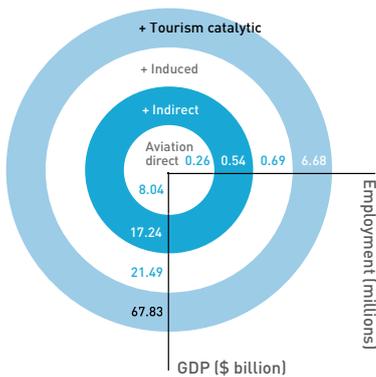
REGIONAL AND GROUP ANALYSIS



AFRICA

Air transport supports 6.7 million jobs and \$67.8 billion in GDP in Africa.

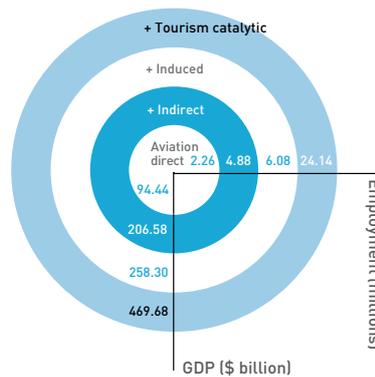
Africa's jobs and GDP generated by air transport, 2010



ASIA-PACIFIC

Air transport supports 24.1 million jobs and \$470 billion in GDP in Asia-Pacific.

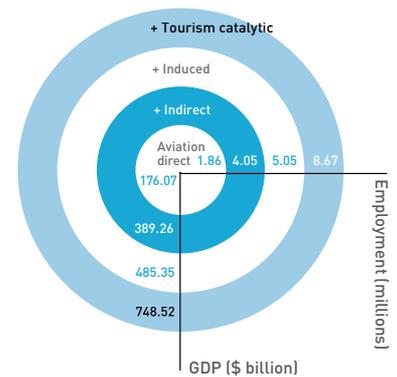
Asia-Pacific's jobs and GDP generated by air transport, 2010



EUROPE

Air transport supports 8.7 million jobs and \$749 billion in GDP in Europe.

Europe's jobs and GDP generated by air transport, 2010



SMALL ISLAND STATES

Air transport supports 1.4 million jobs and \$22 billion to small island states combined GDP.



DEVELOPING COUNTRIES

Air transport supports 35.9 million jobs and \$490 billion in GDP in the developing world.



DEVELOPED COUNTRIES

Air transport supports 20.7 million jobs and \$1.7 trillion in GDP in the developed world.

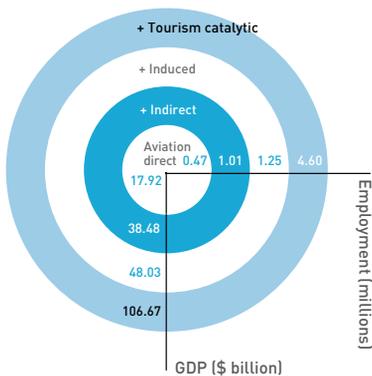




LATIN AMERICA AND THE CARIBBEAN

Air transport supports 4.6 million jobs and \$107 billion in GDP in Latin America and the Caribbean.

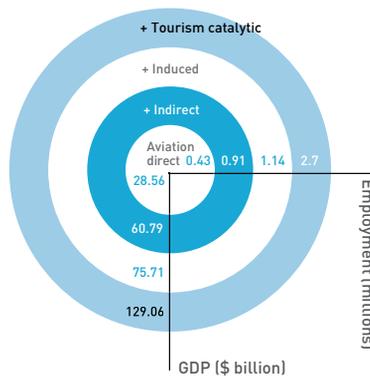
Latin America and the Caribbean's jobs and GDP generated by air transport, 2010



MIDDLE EAST

Air transport supports 2.7 million jobs and \$129 billion in GDP in the Middle East.

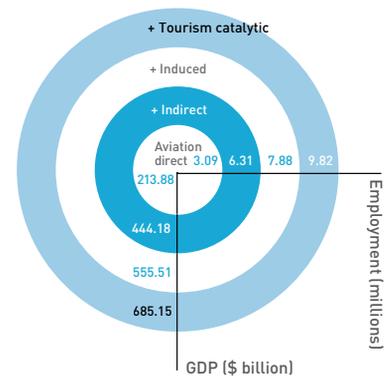
Middle East's jobs and GDP generated by air transport, 2010



NORTH AMERICA

Air transport supports around 9.8 million jobs and nearly \$685 billion in GDP in North America.

North America's jobs and GDP generated by air transport, 2010



WHEN THE SYSTEM STOPS WORKING

The 2010 Icelandic volcano caused a week-long disruption of air traffic in Europe, and resulted in 10 million passengers being affected, and a cost to the global economy of \$5 billion.

On 14 April 2010, Iceland's Eyjafjallajökull volcano erupted with an ash plume that rose over three kilometres and, with the help of winds, blew across much of Europe's airspace. It provides a useful study of how modern life might be impacted without aviation.

» 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 \$1.6 billion in lost revenues, primarily to the hospitality sector.
- » International trade was also severely disrupted as a result of the flight restrictions – particularly for perishable goods and for just-in-time production processes (e.g. high-value items which are also low-weight such as electronic parts and machine components).

Following the massive airspace shutdown in the first week, another 5,000 flights were sporadically cancelled. This added an additional 5% to the first week's impacts, bringing the total cost to \$5 billion lost GDP between 15 April and 24 May 2010.

International trade was severely disrupted as a result of the flight restrictions. While some of the disrupted trade can be deferred, that is not the case for products that are either fast-perishing (fresh-cut flowers, vegetables such as

green beans, exotic fruit) or crucial for just-in-time production processes (high-value items which are also low-weight such as electronic parts and machine components).

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 fast-perishing produce rotted, leading to losses for producers. World Bank president Robert Zoellick stated that African countries lost \$65 million due to the effect of the airspace shutdown on perishable exports. Exports of flowers to Europe are also important to South America, costing producers around \$3 million due to the destruction.

In total, \$48 billion of electrical and machine parts and equipment were supplied to the rest of the world from European producers in 2009. For example, the Korea International Trade Association has stated that losses for domestic industries between April 16 and 19 were an estimated \$112 million, with suppliers of mobile phones and semi-conductors the hardest hit. Car production lines in Europe and Asia suspended production as crucial components were unable to make it to the factories.

BEYOND TODAY

A comparison of aviation's global reach in 1990 and 2010 and forecast to 2030

Passengers

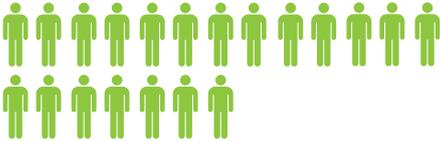
1990: 1.2 billion



2010: 2.7 billion



2030: 5.9 billion



Aircraft movements

1990:
14.8 million

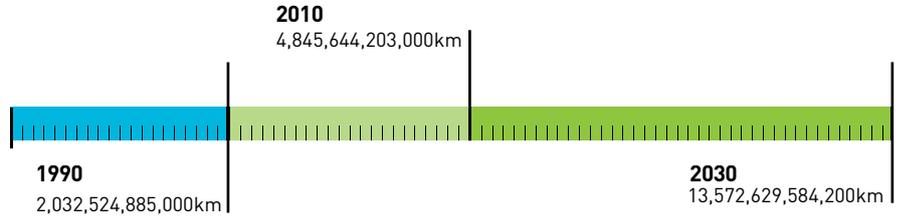


2010:
26 million

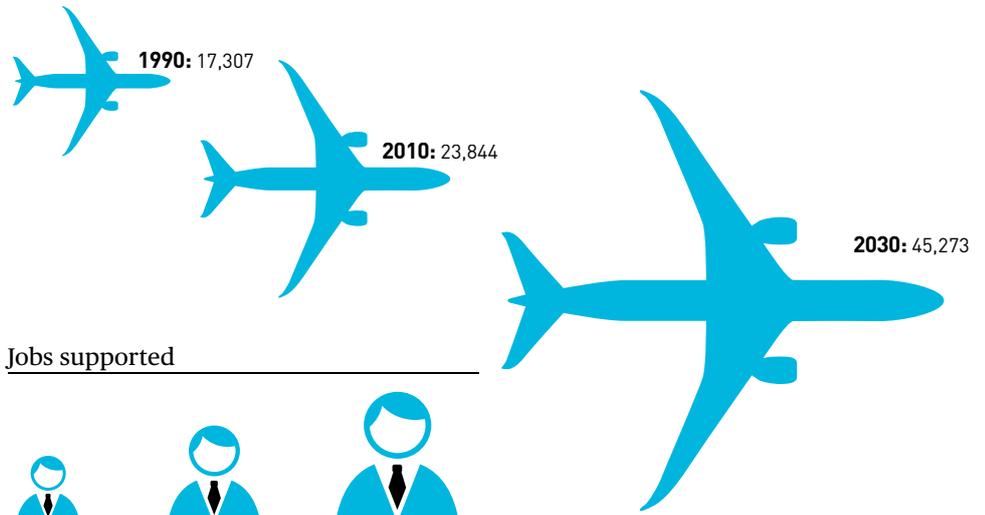


2030:
48.7 million

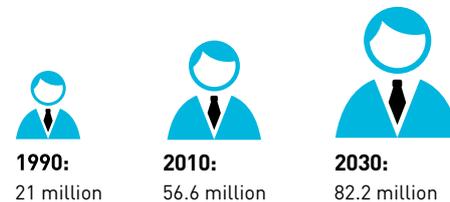
Passenger kilometres flown



Aircraft in service



Jobs supported



The contribution of the air transport industry in 20 years

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

- » directly, around 12.1 million jobs and \$1.4 trillion of GDP (at 2010 prices) to the world economy;
- » with indirect and induced contributions, around 32 million jobs and \$3.7 trillion in GDP (at 2010 prices).

Furthermore, if tourism is added, the total contribution of air transport industry amounts to over 82 million jobs and \$6.9 trillion in GDP in 2030.

Air transport is forecast to support 82 million jobs by 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, then in 2030:

- » There would be nearly 2.1 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 5.6 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 14 million lower than the base forecasts.
- » The direct, indirect and induced contribution of the air transport sector to world GDP would be \$646 billion (2010 prices) lower, with an additional \$542 billion lost through lower tourism activity.

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.



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