UPDATED VERSION

Analyses of the European air transport market

Annual Report 2007

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EUROPEAN COMMISSION

Annual analyses of the European air transport market

Annual Report 2007

German Aerospace Center

Deutsches Zentrum für Luft- und Raumfahrt e.V.

in the Helmholtz-Association

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web: http://www.dlr.de/fw

December 2008

Document Control Information

Responsible project manager:	DG Energy and Transport
Project task:	Annual analyses of the European air transport market 2007
EC contract number:	TREN/05/MD/S07.74176
Release:	2.2
Save date:	2008-12-02
Total pages:	222

Change Log

Release	Date	Changed Pages or Chapters	Comments
1.2	2008-06-20		Final Report
2.0	2008-10-10	chapters 1,2,3	Final Report - full year 2007 draft
2.1	2008-11-20	chapters 1,2,3,5	Final updated Report
2.2	2008-12-02	all	Layout items

Content

2007 in brief

Traffic

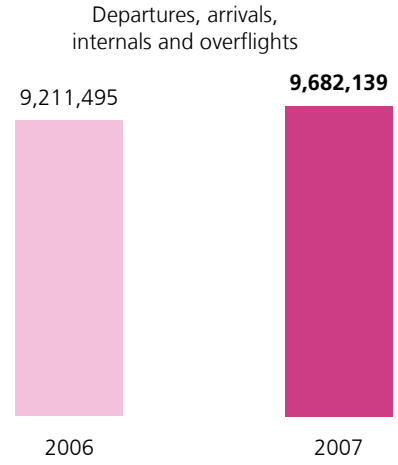
In 2007 the worldwide passenger volume grew according to ICAO data from approximately 2,128 million to more than 2,260 million. This corresponds to a growth of approximately 6.2%. During the same period the number of passenger kilometres grew slightly more than the passenger volume from 3,941 billion passenger kilometres to approximately 4,201 billion passenger kilometres. This corresponds to a growth of 6.6%.

The ICAO data also states that 41.6 million tonnes of freight were globally transported by air in 2007. This represents an increase in freight traffic volume of 4.5% compared to the previous year's result. The global tonne-kilometres rose in the same period from 149.7 to 158.4 billion, which corresponds to an increase of 5.8%.

According to EUROSTAT, a total of 792 million passengers were transported by means of air transport in the 27 EU member states (EU-27) in 2007. Compared to 2006, this corresponds to a growth of approx. 7.2%. For intercontinental traffic, the relation between the EU and North America was by far the most important one with approximately 60.1 million passengers in 2007.

In the EU-27, a total of approx. 12.6 million tonnes of freight and mail were loaded and unloaded in 2007. Compared to the large extra-EU freight flows (9.9 million tonnes), the quantity of freight carried between the individual EU member states is rather low, being only 2 million tonnes. The main linkage with regard to air freight/mail transport is seen between Europe and North America. In 2007 more than 1.4 million tonnes were carried to North America (a decline of 0.3%), and 1.3 million tonnes to Europe (7.1% growth).

With regard to the development of passenger traffic in the individual EU member states, an increase in passenger traffic is revealed in all countries in the time frame of 2006 to 2007. The growth in the new member states was above the average of EU growth in general.



Air traffic in Europe showed an increase of a good 5% in 2007

Source: Eurocontrol

Approximately 9.7 million flights were recorded in the so-called *Eurocontrol Area 1999* in 2007, with approximately one million respective arrivals and departures which crossed the border of the Eurocontrol district, 7.6 million domestic flights within the Eurocontrol district and about 0.1 million flights which crossed the Eurocontrol district. Compared to 2006, flight movement traffic increased by about 5.1%.

Airlines

European air services play an important role in worldwide air transportation. Taking one week in July 2007 as a reference for the summer period, 19% of the 582,000 movements originate in one of the 27 EU member states; taking all 46 European countries into consideration, the global share increases to 22.5%. Europe has about 146,000 intraregional flights at this time, whereas nine thousand are on the North Atlantic, and nine thousand to Asia, both being the most important interregional services worldwide. The most important route by far is Madrid – Barcelona with a frequency of 486 flights per week per direction. The top international service is Amsterdam – London Heathrow with 173 weekly take-offs per direction. The busiest intercontinental air route is London – New York with 130 one way services per week. However, the average number of seats on this route is, with 292 seats, far higher than on Barcelona – Madrid with 157 seats.

Lufthansa German Airlines was the biggest carrier in terms of the number of flights, but it has now been left far behind by Air France – KLM following the take-over. But these two airlines still operate independently on the market. The average seat capacity of the top 25 airlines is 127 per flight. The average seat capacity of the LCCs is, with 149 seats, somewhat higher. Concentrating on the top 25 carriers per business model, the market share of the LCCs increases to roughly one third. Within the LCCs, there is a somewhat higher concentration effect on the top 2 carriers Ryanair and easyJet. Also, for regional airlines, the 2 biggest carriers Wideroe's and Binter Canarias are outstanding. The average seat capacity for these airlines is only 59 seats per flight due to the high proportion of short haul regional aircraft. The concentration effect of the holiday carriers on the top level is not as obvious as for the other business models; their average seat capacity is, with 190 seats, higher than all the other models.

Worldwide there are more than 600 airline cooperation agreements, mainly code-sharing partnerships, but only three global strategic alliances: Star Alliance, SkyTeam and oneworld. With their networks, they try to cover at least the most important global traffic flows. The number of members of these alliances is still increasing though there are also some airlines withdrawing. In most cases, alliance member airlines apply the FSNC[1] business model. Some FSNCs, especially in the Middle East, are not (yet) members of strategic alliances. In some cases however, they cooperate with alliance members by means of code-sharing.

Of the worldwide 50 biggest FSNCs in terms of passenger numbers, 17 are based in Europe, 9 are US-American and 20 airlines are from the Asia-Pacific region. The North American airlines have a 27% market share in terms of carried passengers, compared to the European airlines with 27%. But this number shows the concentration and the size of the American carriers compared to their European counterparts. The average flight distance in North America is 2300

[1] Full Service Network Carriers

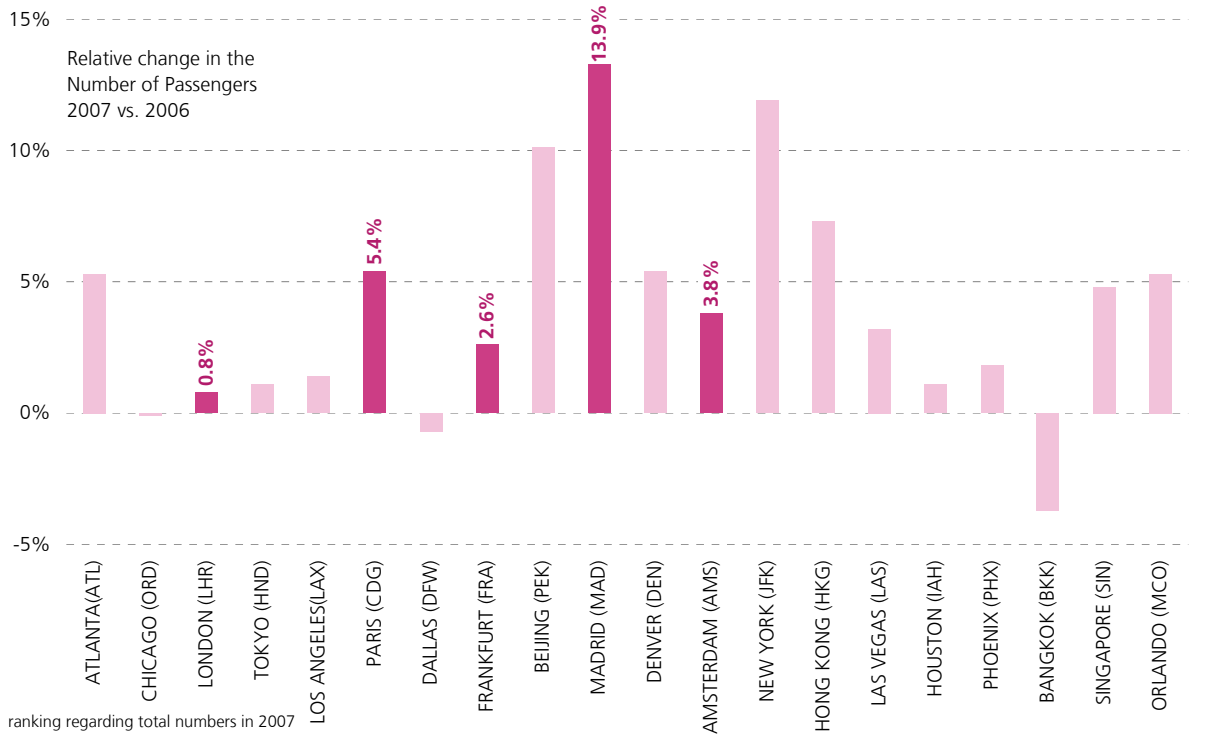
km, 100 km less than in the rest of the world. The flight distance in Europe is, with 2270 km, even shorter than in North America.

Airports

The top 20 airports worldwide account for 24% of the passengers handled worldwide. The two busiest airports are Hartsfield-Jackson in Atlanta and O'Hare International in Chicago. The top 20 airports comprise of ten airports located in the USA, five in Europe and five in Asia. The biggest European airport is London Heathrow in third place while the biggest Asian airport is Tokyo International (Haneda) in fourth place. The top 20 European airports account for 14% of the passengers handled worldwide, whereas 45% of the passengers in Europe choose one of the top 20 airports in Europe. The top three places are occupied by London Heathrow, Paris Charles de Gaulle and Frankfurt/Main, which also represent major hub airports in Europe with a high share of intercontinental travel. In 2007, total number of passengers increased by 5.6% worldwide compared to 2006.

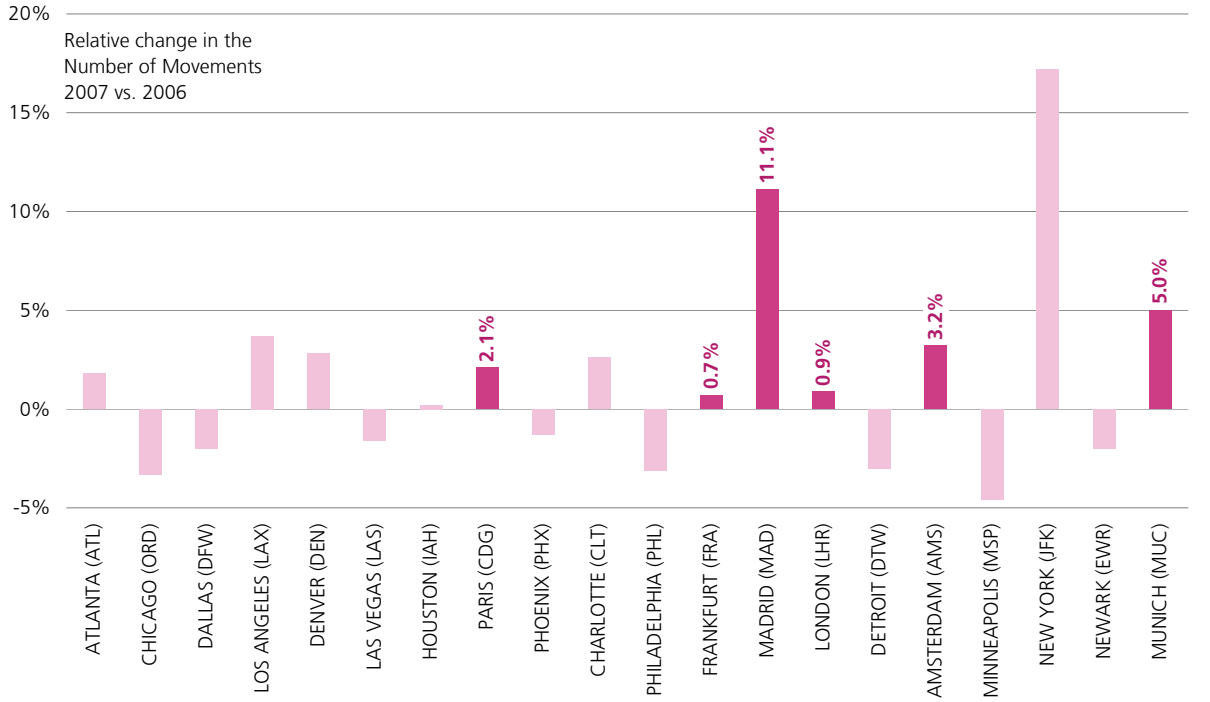
Annual growth of the 20 biggest airports in terms of commercial air passengers worldwide

Source: ACI 2008



Annual growth of the 20 biggest airports in terms of flight movements worldwide

Source: ACI 2008



ranking regarding total numbers in 2007

The top 20 airports in terms of commercial aircraft movements are located exclusively in the USA or Europe. The biggest airport is again Hartsfield-Jackson in Atlanta, closely followed by O'Hare International in Chicago. However, the difference in the number of commercial aircraft movements in relation to the subsequent airports is more distinct compared to the situation reflecting the above-described passenger numbers. This is partly due to the larger utilisation of smaller aircraft for domestic air travel at US airports. The top 20 airports account for 21% of the worldwide commercial aircraft movements, against the 12% of the worldwide aircraft movements that take place at the top 20 European airports. Their share increases to 38% when only aircraft movements at European airports are taken into account. The top 3 European airports are Paris Charles de Gaulle, Frankfurt/Main and Madrid. London Stansted is the major low cost carrier airport in Europe, having both the largest number of low cost operations and the highest share of low cost flights in relation to the total number of take-offs.

Annual growth of the 20 biggest airports in terms of commercial air freight worldwide

Source: ACI 2008

ranking regarding total numbers in 2007; ANC data includes transit freight

In 2007, total air freight increased by 3.0% compared to 2006. The largest 20 airports in terms of freight handled 48% of the total air freight worldwide. The three biggest freight airports are Memphis (USA), Hong Kong (China) and Anchorage in Alaska, USA. The biggest European freight airport is Paris in sixth place. However, the top 20 European airports account for 15% of the total freight handled worldwide, while most of the freight is handled at US or Asian airports. Freight operations in Europe are concentrated on only a few airports: 80% of the total air freight is handled at the top 20 airports.

Forecasts

Air transport forecasts published in 2007 by Boeing, JADC, Bombardier and Embraer assume an average worldwide GDP-growth rate between 3.0 and 3.2%. According to the outcome of the global air transport demand forecast, yearly average growth rates between 4.7 and 5.0% for passenger traffic and approx. 6% for freight traffic are indicated in the time horizon until 2026. In the current Airbus Market Forecast, which was published at the beginning of 2008, worldwide air traffic is forecasted to grow by approximately 4.9% until the year 2026. If we take the number of 3,720 billion revenue passenger kilometres (RPK) from ICAO in 2005 as a basis, this yearly growth will lead to approximately 10 billion RPK in 2025.

Eurocontrol published a short-term and a medium-term forecast in 2007. From 2007 to 2008, a growth of 5.5% is expected for IFR movements, allowing a forecast margin of 4.4 to 5.5%. The

expected growth considerably differs regionally, as already experienced in the past. In the medium-term forecast, three scenarios were presented: Eurocontrol assume for the forecast period from 2007 to 2013 an average annual growth in flight movements of 3.4% in the Baseline-Scenario, 4.2% in the High and 2.6% in the Low-Scenario. In the forecast-year 2013, these growth rates would lead to 11.3 million IFR movements in the Low, 11.9 million in the Baseline, and 12.6 million IFR movements in the High-Scenario.

Regulatory

Regulatory issues and legislative developments in the year 2007 will be described in chapter 5. While some aspects are mentioned in the other specific chapters concerning these topics (air passenger rights as a consumer issue, environment, safety), this part of the annual analyses of the European air transport market points out the work and cooperation between the European Commission, the Council and the European Parliament as the decisive institutions for European legislation.

Starting with the Community and its external competence besides the Member States and therefore as a new player in the international and globalising field of civil aviation, the view is focused on the internal Common Market and airline competition. The Community has influenced many developments concerning consumer protection and environmental issues. These topics play a major role in air transport, too. Air traffic management (ATM) as a technical part of the air transport market is about to integrate in Europe and raise many questions in its requirements and implementations. At the same time, the infrastructure on the ground has to keep step with the developments to ensure, besides all other sectors, a safe and efficient performance of international civil aviation. At the end, investigation of civil aviation accidents is briefly mentioned.

Environmental

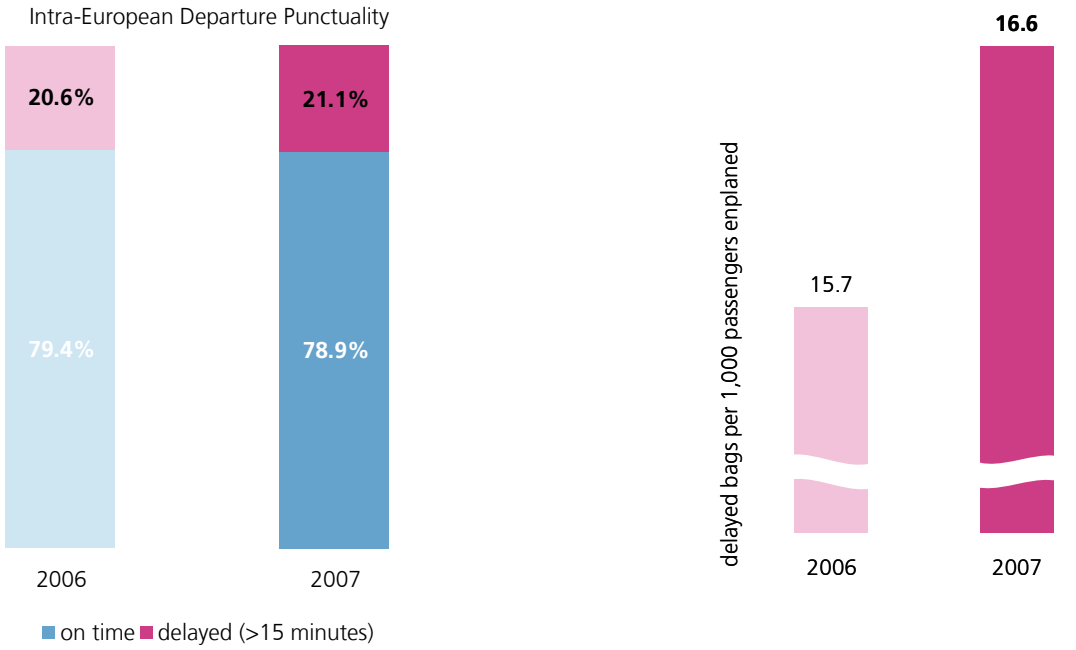
The European Commission aims to improve the quality of the environment by reducing the growing climate change impact of international aviation. Therefore, international aviation will be included in the already existing EU Emissions Trading Scheme for the limitation of CO_2 emissions by the year 2012. On December 20th, 2007, the EU Environmental Council reached a political agreement on a draft directive on this issue. The publication of a modified legislative proposal on this basis is expected for spring 2008.

Consumer Issues

In 2007, the consumer-relevant key performance parameters punctuality and baggage delivery deteriorated in comparison with results for 2006.

Punctuality slightly decreased; baggage delivery slightly worsened

Source: AEA



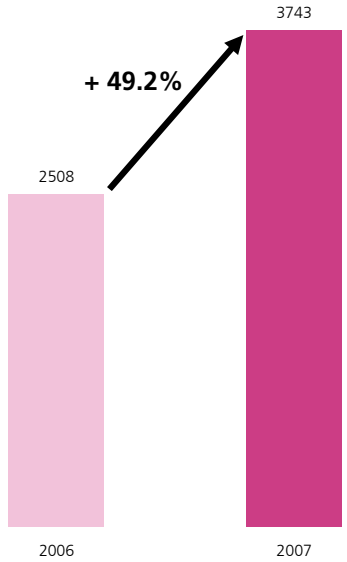
Appraising the published results of the Association of European Airlines (AEA) for its members, departure punctuality on intra-European services declined to 78.9% compared with 79.4% in 2006. On the arrival level, 77.7% of intra-European services met their schedules with no more than 15 minutes delay, which is nearly the same result as in 2006 (77.9%).

The number of bags delayed per 1000 passengers carried by AEA-airlines was 16.6, thus slightly inferior to the previous year's situation with 15.7 bags delayed per 1000 boarded persons. As per AEA, most of the change for the worse arose in the second quarter of 2007 due to problems with transfer baggage systems at several European airports, a situation occurring in December again.

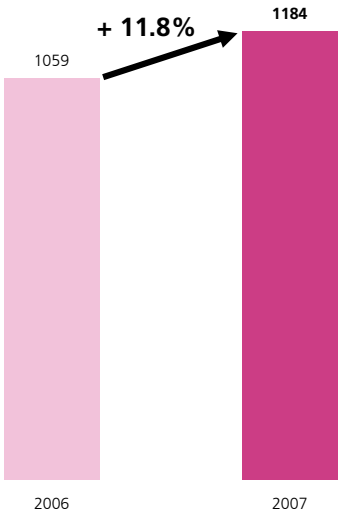
Manufacturers

Orders of Passenger and Cargo Aircraft (commercial operators only)

Source: Ascend



The number of orders for passenger and cargo aircraft by commercial operators saw a strong increase in 2007 compared to 2006. More than 3700 aircraft were ordered in 2007, almost 50% more than in 2006. The number of aircraft delivered saw a considerable increase in 2007. With almost 1200 deliveries of commercial passenger and cargo aircraft, this marks an increase of almost 12 per cent compared to the previous year. The world fleet of passenger aircraft in commercial operation with more than 20 seats has increased by more than 5 per cent in 2007 compared to the preceding year. By the end of 2007, almost 20,000 passenger aircraft were in use at airlines and other commercial operators.



Deliveries of Passenger and Cargo Aircraft (commercial operators only)

Source: Ascend

1 Air Traffic

1.1 Global Passenger and Freight Volume

Information on the development of worldwide air traffic is available in the form of traffic statistics published by the International Civil Aviation Organization (ICAO). The basis for these statistics are reports from ICAO member states on the air traffic activity of airlines based in their territory. However, some of the data published by ICAO has to be estimated, since not all of the 190 ICAO member states participate in the survey. The most significant trends are nonetheless considered to be correctly represented, since the major states in terms of air traffic, such as the USA and the Member States of the EU, regularly report to the ICAO on the traffic levels achieved by their airlines.

The ICAO distinguishes between international and national traffic. The combination of both figures is the total traffic. The essential information for the allocation of a flight to the appropriate category is the airline's country of origin and the location of the originating and destination airports. According to ICAO rules, a flight is classified as international if either the airport of origin or destination (or both) is located outside the territory of the airlines' home country. Thus, cabotage (the transportation of passengers or goods within a country) by a foreign airline is considered as international air traffic. Conversely, a flight by a French airline from Paris to one of France's overseas territories, for example, is considered to be a domestic flight, since the originating and destination airports are both located in the territory of the airline's home country. The ICAO also makes a distinction between scheduled and non-scheduled airlines. According to the ICAO, scheduled airlines are the predominant means of transportation. The following discussion only relates to flights performed by scheduled airlines.

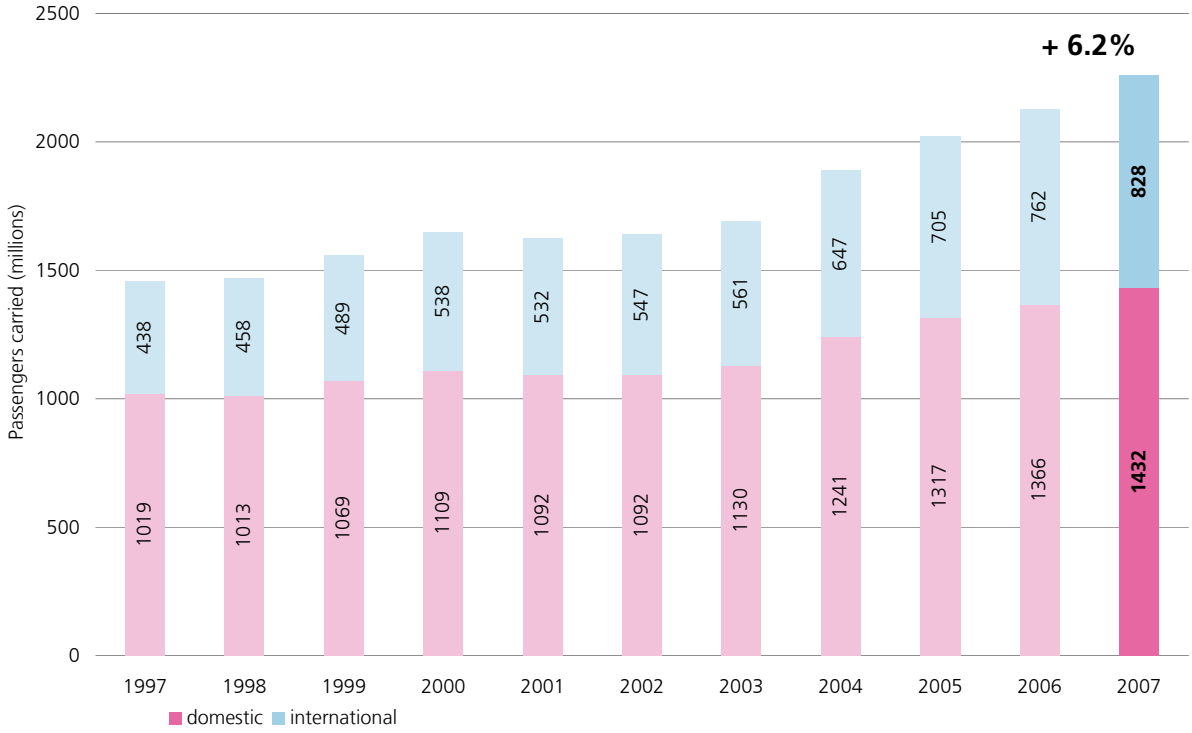
1.1.1 Global Passenger Volume

For passenger transport, the ICAO records the number of passengers carried and the number of passenger kilometres. Please note, however, that the latter measure only relates to the number of seat kilometres sold. Figure 1-1 shows the development of air traffic levels for both domestic and international scheduled airline traffic. Passengers are counted for each flight, with each flight identified by its flight number. Passengers who change flight during their journey are therefore counted multiple times.

Worldwide passenger traffic grew from approximately 1.5 billion to more than 2.3 billion passengers in the decade from 1997 to 2007. This corresponds to an average annual growth of approximately 4.5% and an overall growth of approximately 55%. It is clear that the dynamic upward trend of the period prior to the stagnation between 2001 and 2003 is now continuing.

Figure 1-1: Development of the global passenger volume

Source: ICAO 2008

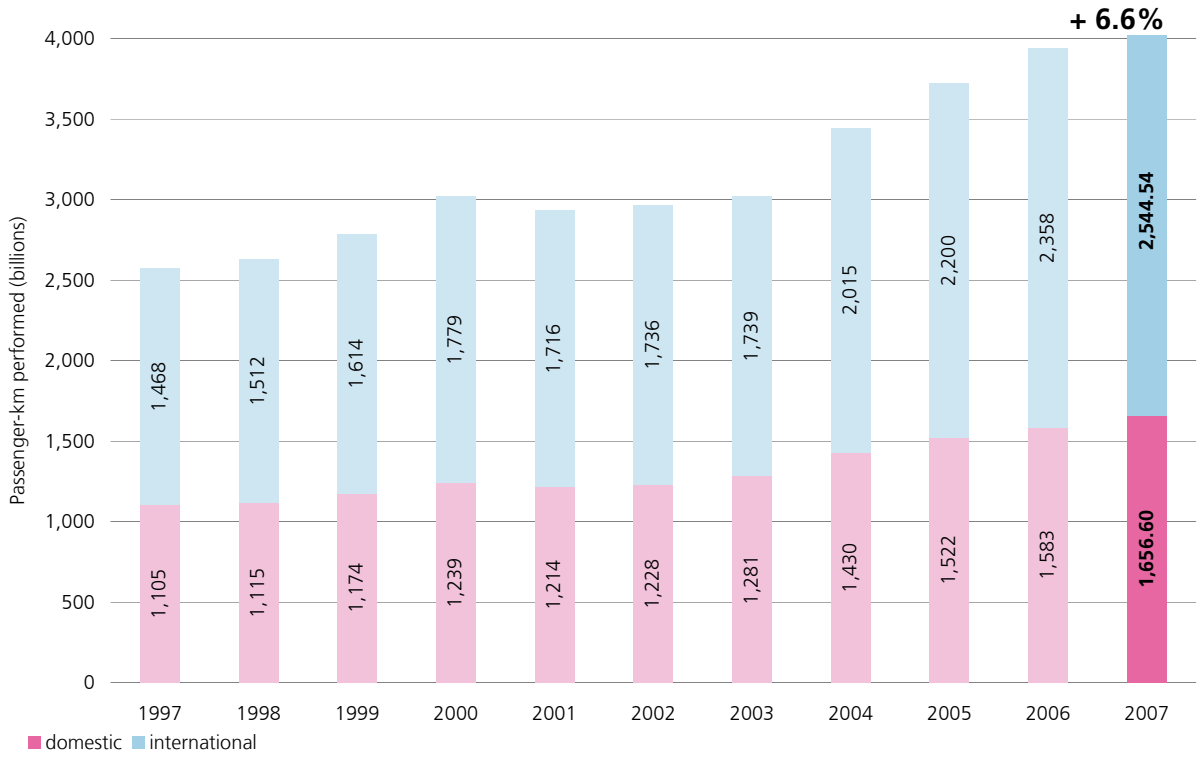


International and domestic traffic differ in the pace of their development. In the decade 1997 to 2007, the annual volume of international traffic increased from 438 million to 828 million passengers carried. This corresponds to an average annual growth rate of 6.6%. In the same period, the level of domestic traffic increased from 1019 million to 1432 million passengers carried. This corresponds to an average annual growth rate of only 3.5%. Thus, the proportion of passengers carried on international flights increased from 30.1% to 36.6%, whereas the proportion of passengers carried on domestic flights decreased from 69.9% to 63.4% in the same period.

During the period studied (1997 to 2007), the number of passenger kilometres grew more significantly than the passenger volume. Figure 1-2 shows the development of scheduled airline traffic levels worldwide in terms of passenger kilometres performed each year.

Figure 1-2: Development of the global passenger kilometres

Source: ICAO 2008



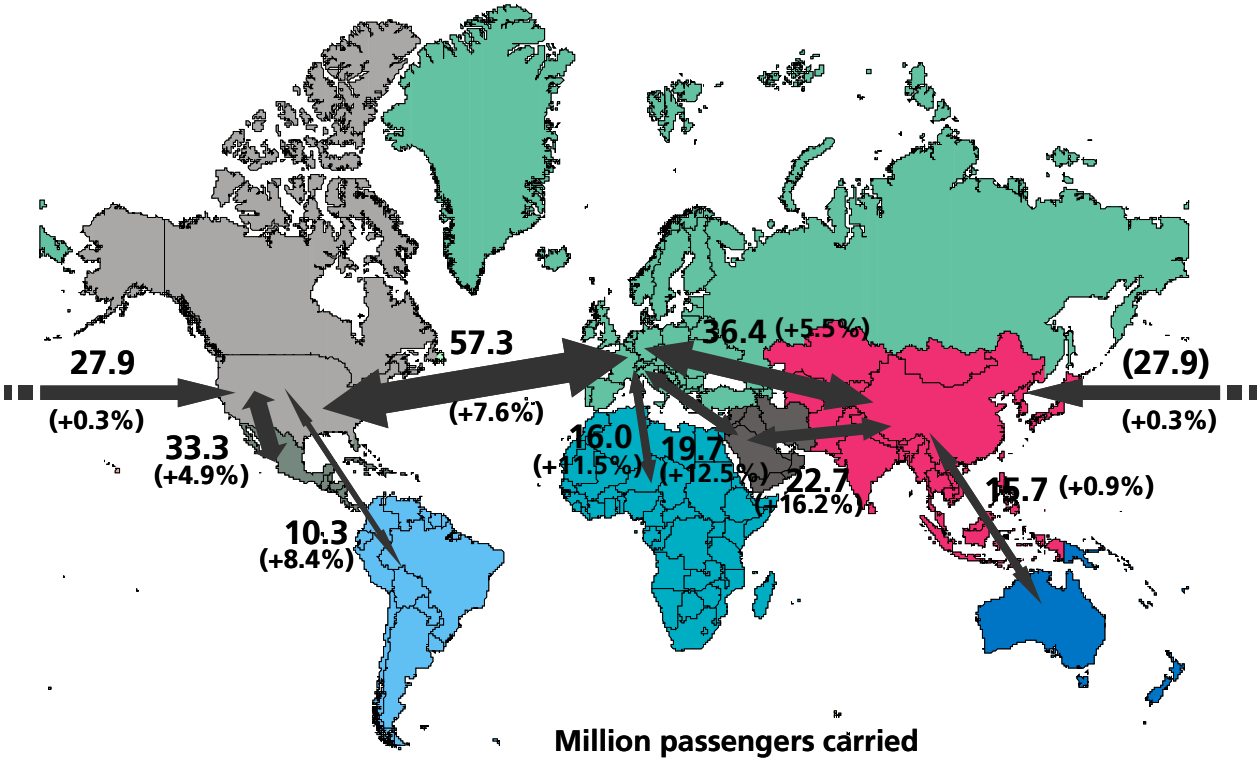
Since 1997, the level of traffic has increased from 2,573 billion passenger kilometres to approximately 4,201 billion passenger kilometres. This corresponds to a growth of 63%, compared to the growth in traffic volume of 55% discussed above.

1.1.2 Passenger Traffic Flows between the World Regions

The illustration below shows worldwide passenger flows (based on IATA data) and provides an insight into the importance of air traffic for the different world regions. It is important to note that the IATA data differs from the ICAO data. Furthermore, distortions are likely to occur with respect to some aspects of the traffic structure, since not all airlines are IATA members. According to IATA, their regional statistics on passenger traffic reflect approximately 87% of the total volume achieved by IATA members. The values shown only reflect the levels recorded by IATA. Please note also that the map only shows the main flows between the IATA-defined world regions: North America, Central America, South America, Europe (including Russia), Africa, Middle East, Asia and Oceania.

Figure 1-3: The main passenger flows between world regions (2007)

Source: IATA WATS 52nd Edition



On the "North Atlantic route" between North America and Europe, passenger traffic increased by 7.6% to 57.3 million passengers in the last year. This makes it by far the most significant traffic flow between the world regions. The route with the second largest volume, between Europe and the Far East, also saw an increase in passenger traffic over the last year. On the latter route, traffic grew by 5.5% to 36.4 million passengers. Approximately 16.0 million passengers (an increase of 11.5%) travelled between Europe and Africa using airlines that submit data to the IATA regional statistics. For the African region, traffic was mainly concentrated on a few North African countries that are preferred holiday destinations. On the Pacific routes between North America and the Far East, passenger traffic increased slightly by approximately 0.3% to 27.9 million passengers. Other significant passenger flows are seen between North America and Central America (33.3 million passengers), between North America and South America (10.3 million passengers), between Europe and the Middle East (19.7 million passengers) and between the Far East and Oceania (15.7 million passengers).

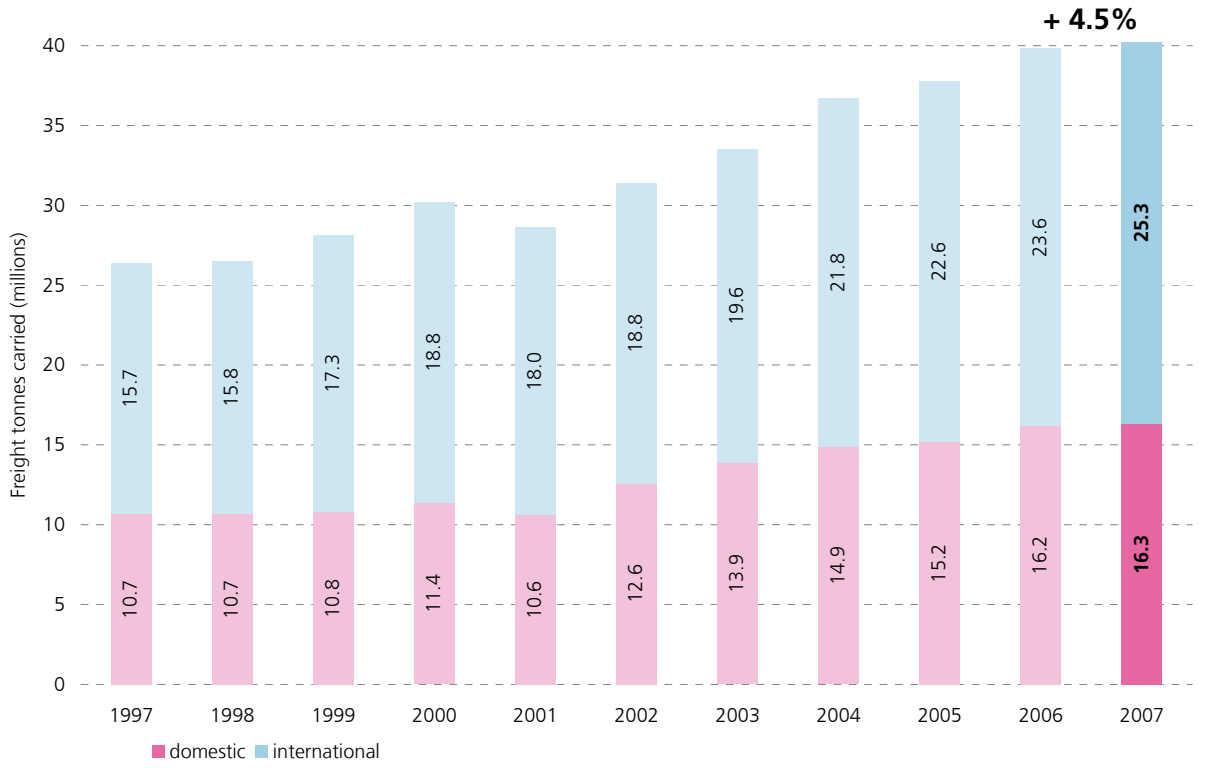
1.1.3 Global Freight Volume

In 2007, the ICAO reported worldwide freight traffic to be nearly 41.6 million tonnes. This represents an increase in freight traffic of 57.6% over the period 1997 to 2007. Figure 1-4 shows the trend over the past decade (1997 to 2007). It should be noted when attempting to interpret the data that the US Department of Transportation (DOT) changed the survey basis for

domestic freight traffic in 2003. Domestic freight carried by non-scheduled airlines was not considered until 2002, but thereafter was counted as domestic freight carried by scheduled airlines. The corresponding values are shown accordingly in the ICAO statistics. In 2003, this measure caused a 2% increase in the total recorded volume of worldwide air freight traffic.

Figure 1-4: Development of the global freight traffic volume

Source: ICAO 2008

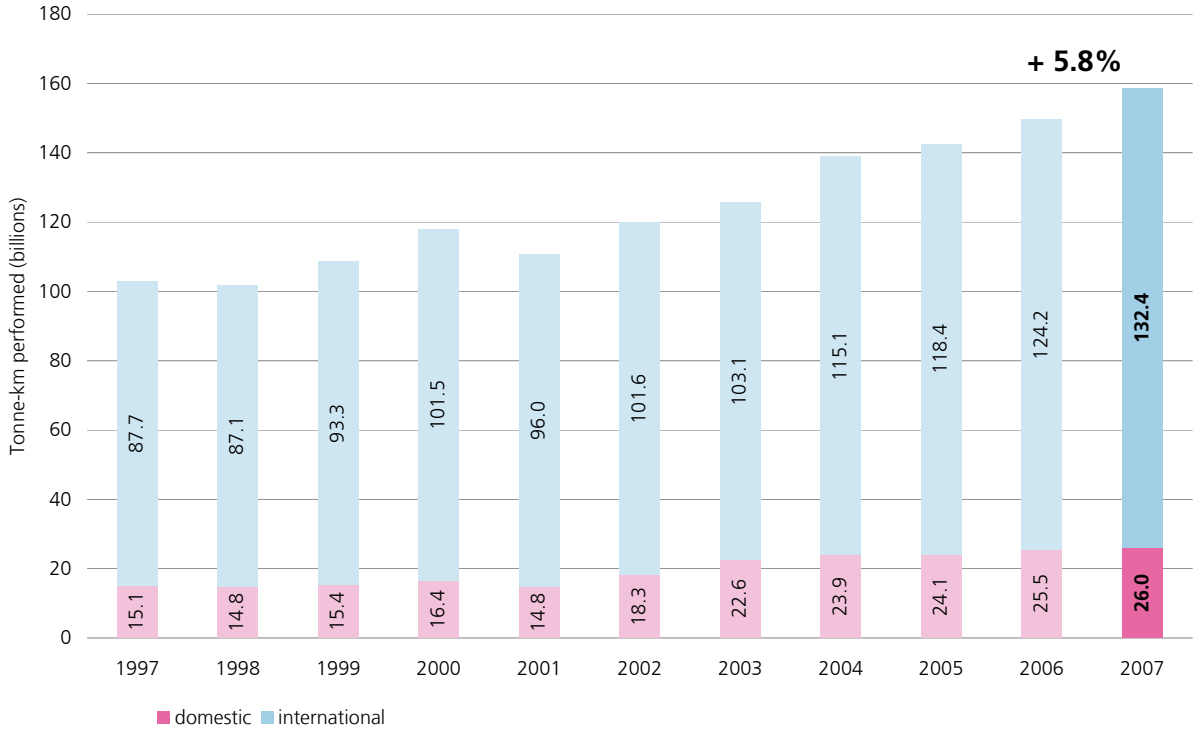


The increase in the quantity of air freight has seen different growth rates for cross-border and domestic traffic. In the decade from 1997 to 2007, the amount of international air freight increased by a total of 61.1% to the current level of 25.3 million tonnes in 2007. For domestic air freight traffic, the quantity was 16.3 million tonnes in 2007, which represents an increase of 5.6 million tonnes, or 52.3%, over the level in 1997. The proportion of international freight was approximately 61% in 2007. Whereas domestic traffic plays the more significant role for passenger transport, for the freight sector international traffic is more important.

This fact is even more apparent if one considers the performance levels shown in Figure 1-5. This measurement shows that in 2007 approximately 83% of worldwide air freight traffic was international traffic. Worldwide, total freight traffic increased from 102.9 billion freight tonne kilometres to 158.4 billion freight tonne kilometres in the decade from 1997 to 2007, which corresponds to an increase of 54%. This means that the volume of air freight traffic saw an almost identical increase when compared to passenger traffic levels over the same period.

Figure 1-5: Development of the global freight tonne-kilometres

Source: ICAO 2008



1.1.4 Freight Traffic Flows between the World Regions

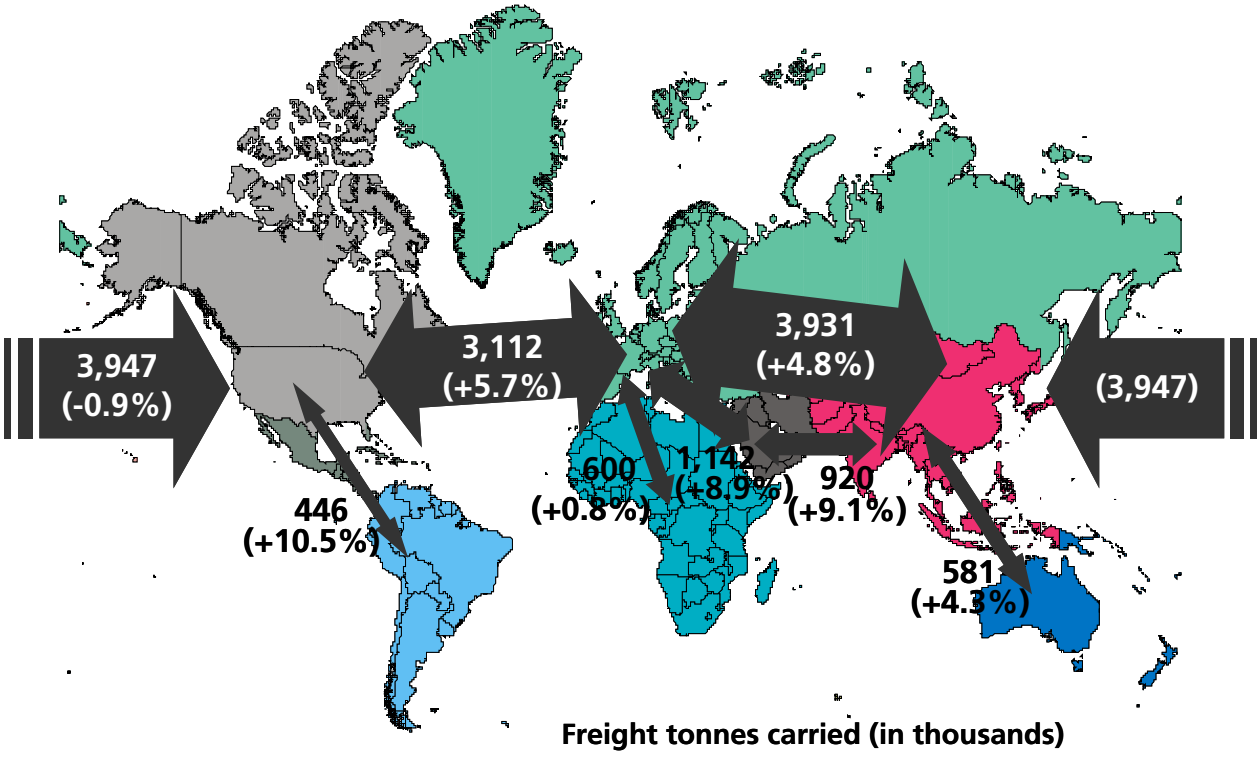
In contrast to the regional distribution of global passenger traffic, freight traffic is concentrated on just a few corridors. The majority of freight was carried on three main routes:

- Between North America and the Far East (over 3.9 million tonnes)
- Between Europe and the Far East (over 3.9 million tonnes)
- Between North America and Europe (over 3.1 million tonnes)

Further major flows of freight were seen between Europe and the Middle East (1.1 million tonnes), between the Middle East and the Far East (0.9 million tonnes in 2006), between Europe and Africa (0.6 million tonnes in 2006), between the Far East and Oceania (0.6 million tonnes in 2007) and between North America and South America (0.5 million tonnes). According to the IATA, traffic levels did not grow on the Pacific route in 2007, whereas North Atlantic traffic grew by 5.7% and the flow of freight between Europe and the Far East grew by 4.8%.

Figure 1-6: The main freight traffic flows between world regions (2007)

Source: IATA Regional Flow Statistics and IATA Origin-Destination Statistics



1.1.5 Comparison of Passenger and Freight Volume of Europe and the other World Regions

Table 1-1 shows the growth rates of selected air transport indicators, which are reported by the IATA and grouped in six different world-areas. The growth rates are based on the comparison of the period January - December 2007 versus January - December 2006. The values of each area are obtained by combining the air traffic performance of all IATA airlines resident in the respective area. Industry means all IATA-Airlines taken together.

Table 1-1: Growth rates of selected indicators

Source: IATA Monthly Traffic Analysis December 2006 and 2007

Jan-Dec 2007 vs. Jan-Dec 2006					
	RPK Growth	*ASK Growth*	*PLF*	*FTK Growth*	*ATK Growth*
Africa	8.0%	7.0%	69.2	-6.0%	5.6%
Asia/Pacific	7.3%	5.7%	76.0	6.5%	6.2%
Europe	6.0%	5.2%	77.5	2.7%	3.9%
Latin America	8.4%	9.1%	72.9	-5.4%	7.8%
Middle East	18.1%	14.5%	75.9	10.1%	13.9%
North America	5.5%	4.6%	80.9	0.7%	2.1%
Industry	7.4%	6.2%	77.0	4.3%	5.3%

Airlines based in the world areas North America, Europe, and Asia/Pacific altogether achieved approx. 90% of the world passenger kilometres in 2007. In 2007, the European IATA airlines had a lower traffic growth than the whole industry. For example, RPK growth of all IATA Airlines was 7.4%, while the RPKs performed by European IATA Airlines grew by only 6.0%. Only the

airline industry of North America had lower growth rates. Very high growth rates in 2007 are to be observed in the Middle East.

1.2 Air Traffic in EU-27

1.2.1 European Passenger Traffic

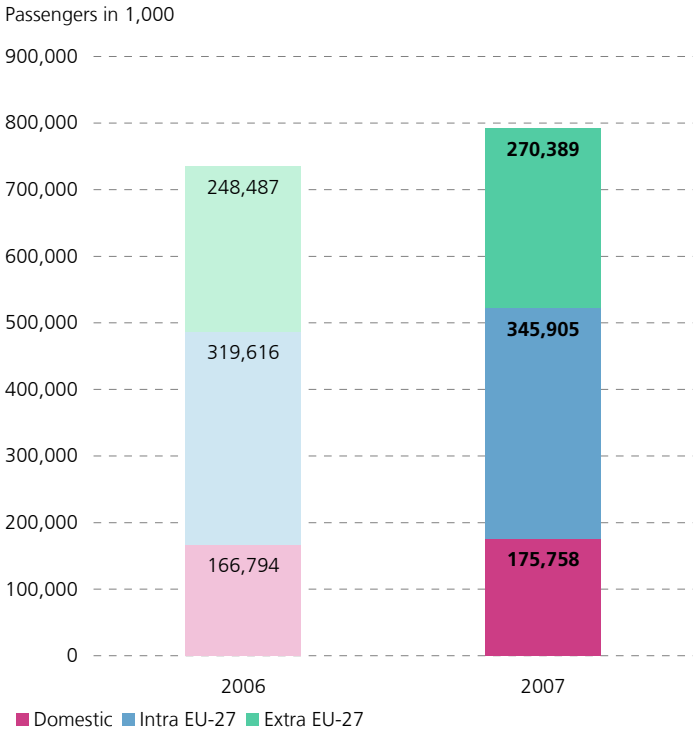


Figure 1-7: Development of Passenger Traffic in the EU-27

Source: EUROSTAT

According to the Statistical Office of the European Communities, EUROSTAT, a total of 792 million passengers were transported by air in EU Member States in 2007. Compared to the preceding year, this corresponds to a growth of approx. 7.2%. The total traffic in 2007 consists of domestic air traffic (175.8 million passengers, which corresponds to approx. 22.2% of the total traffic), intra-EU air traffic (345.9 million passengers; 43.7%) and also extra-EU air traffic (270.4 million passengers; 34.1%, see Figure1-7).

1.2.2 Passenger Traffic Flows between EU Member States

Compared to 2006, the main passenger flows remained almost unchanged in 2007 (see Table 1-2). The strongest passenger flow is seen again between the UK and Spain (almost 36 million passengers). However, passenger demand increased by only 2.0% from 2006 to 2007 on this country pair. In 2007, 22 million passengers were carried (increase of 3.9%) between Germany and Spain. Number 3 of the strongest intra-European flows (between UK and Ireland, 12.1 million passengers) shows a slight decrease of 1.3%. Extremely strong growth of the already large volume (10.2 million passengers) is shown by the flow between Italy and Spain. Here, passenger traffic increased by almost 21.4%. At the same time, passenger demand between Germany and Italy increased slightly. Poland and Cyprus appear as the only new EU Member States among the Top 25 ranking of the biggest European country pairs represented by Poland – UK, UK - Cyprus and Poland – Germany.

Passengers 2007 *in thousand*				
				change to 2006
UK	↔	Spain	35,606	2.0%
Germany	↔	Spain	22,138	3.9%
UK	↔	Ireland	12,111	-1.3%
UK	↔	France	12,036	1.7%
Germany	↔	UK	11,533	0.8%
UK	↔	Italy	11,207	6.3%
Germany	↔	Italy	10,944	3.6%
Italy	↔	Spain	10,217	21.4%
UK	↔	The Netherlands	8,358	1.2%
France	↔	Spain	8,087	19.0%
France	↔	Italy	7,748	12.1%
Germany	↔	France	7,310	6.2%
Germany	↔	Austria	5,590	13.3%
UK	↔	Greece	5,454	-1.2%
UK	↔	Portugal	5,273	11.2%
Spain	↔	The Netherlands	5,031	8.7%
Germany	↔	Greece	4,993	4.3%
UK	↔	Poland	4,108	33.6%
Spain	↔	Ireland	3,592	16.3%
Spain	↔	Belgium	3,461	1.6%
UK	↔	Cyprus	2,976	-1.3%
Spain	↔	Portugal	2,947	27.5%
Italy	↔	The Netherlands	2,859	6.0%
Germany	↔	The Netherlands	2,607	-3.4%
Germany	↔	Poland	2,600	12.2%

Table 1-2: Main Passenger Traffic Flows between EU Member States in 2007

Source: EUROSTAT

1.2.3 Passenger Traffic Flows between the EU-27 and other World Regions

The EUROSTAT air traffic statistics also provides data on passenger flows between EU-27 and non-EU countries. In total, approx. 270 million passengers were carried from and to other regions in the year 2007. Table 1-3 shows the main passenger flows between EU-27 and selected world regions.

EU27: Passenger Flows from/to selected other Regions in 2007		
	million	change to 2006
Europe exept EU	85.2	11.5%
North America	60.1	5.6%
Central America/Caribbean	11.1	-0.3%
South America	9.8	3.6%
Asian Republics of the Ex-USSR	1.4	12.0%
Near and Middle East	21.4	13.6%
Indian Sub-Continent	7.7	6.4%
Far East	26.1	4.8%
Oceania	1.8	-3.4%
North Africa	31.1	11.9%
Rest of Africa	14.1	6.1%

Table 1-3: The main passenger flows of the EU-27 from/to selected world regions in 2007

Source: EUROSTAT

The passenger flow between EU-27 and non-EU-27 countries (85 million passengers) consisted mainly of the passenger traffic between the EU and Switzerland and the EU-27 and Turkey. The flight routes between the EU-27 and Norway, the South East European region (the states of the former Yugoslavia) and the Commonwealth of Independent States contributed much less to the traffic of non-EU Europe. For intercontinental traffic, the relation between the EU and North America was by far the most important one. More than 60

million passengers (5.6% growth) were carried. Another significant intercontinental flow is the one between Europe and Far East with the countries Japan, China, and Korea. Between the EU and the Indian Sub-Continent, the demand grew by 6.4% up to 7.7 million passengers. In 2007, further important passenger flows were seen between the EU-27 and North Africa with 31 million passengers (almost 12% growth), the Near and Middle East (21.4 million passengers) and the rest of Africa (14 million passengers).

Figure 1-8: Share of world regions in extra-EU-27 traffic

Source: EUROSTAT

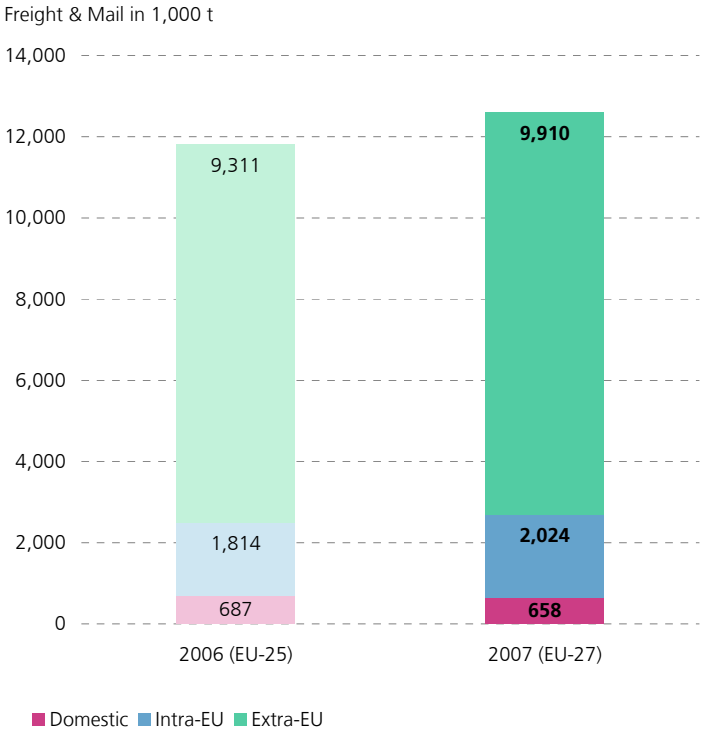
Figure 1-8 shows the share of different world regions in the extra-EU-27 traffic. The European non-EU (31.6% of the total traffic of extra-EU-27), North American (22.3%) and North African (approx. 11.5%) regions dominate the demand, accounting for more than 65% of all extra-EU-27 passenger traffic. The Near & Middle East with almost 8%, the Far East with nearly 10% and South Africa with 3.6% had lower shares. The smallest flow appeared to be Australia, the South Sea Islands and Antarctica with barely 0.67%. One reason could be the fact that those passengers who either stop-over or change planes will not be allocated to the country of their final destination.

1.2.4 European Air Freight Traffic Volume

Besides the data on passenger traffic in the EU Member States, EUROSTAT also collects and publishes information on the transportation of mail and goods. In contrary to passenger transport, where in most cases journeys form a round trip, freight and mail are usually just carried from the point of origin to the point of destination. Therefore, so-called „unpairs" are likely to occur on the individual traffic relation, which for example means that between two countries more goods are carried in one direction than in the other one. Furthermore it should be noted that the declared destination airport is not necessarily the final destination airport of the shipment.

Figure 1-9: Freight and Mail carried in the EU in 2006 and 2007

Source: EUROSTAT



To, from and within the EU-27, a total of approx. 12.6 million tonnes of freight and mail were handled in the year 2007. This comprises of shipments loaded and unloaded at airports in EU Member States. The mentioned total of 12.6 million tonnes consists of 0.66 million tonnes of freight and mail carried on domestic routes, 2.0 million tonnes of shipment carried on routes between EU Member States and nearly 10 million tonnes of shipment carried on routes to non-EU countries (see Figure 1-9). Compared to 2006, the total freight of 11.8 million tonnes increased by 6.6%. Whereas domestic traffic decreased considerably (-4.2%), intra-EU traffic increased significantly by 11.6% and extra-EU traffic by 6.4%.

1.2.5 Freight Traffic Flows between EU-27 Member States

As already mentioned, freight traffic "unpairs" are likely to occur on individual traffic relations. Consequently, the main freight and mail flows between individual EU Member States are displayed in a destination-oriented way (see Table 1-4 on the next page).

Compared to the large intercontinental freight flows, the quantity of freight carried between the individual EU Member States is rather low. The freight flow from Germany to UK shows the highest volume (approx. 73,100 tonnes). However, in the opposite direction only approx. 52,100 tonnes were transported. From Belgium to the UK there is a similar, large freight flow. Belgium plays – considering its economic power – an outstanding role with respect to the individual intra-European freight relations due to the already mentioned operation of handling points for big express-forwarding companies. Thus, besides the already mentioned flow from Belgium to the UK, also the flows from the UK to Belgium (40,600 tonnes), from Germany (39,900 tonnes) and from Italy (34,800 tonnes) to Belgium and also from Belgium to Spain (35,100 tonnes) and Italy (31,700 tonnes), show a considerably high volume. Strong freight and mail flows originate from Germany and target France (52,700 tonnes), Spain (46,600 tonnes), Italy (37,100 tonnes), and Sweden (32,100 tonnes). To Germany, a relatively high volume of

shipments is carried from France (46,300 tonnes), Italy (35,100 tonnes) and Belgium (33,100 tonnes).

Table 1-4: Important Freight Traffic Flows between EU Member States in 2007

Source: EUROSTAT

Freight flows in 2007				
origin		**destination**	thousand tonnes	change to 2006
Germany	→	UK	73.1	4.3%
Germany	→	France	52.7	12.8%
UK	→	Germany	52.1	7.9%
Belgium	→	UK	50.4	4.1%
Germany	→	Spain	46.6	3.8%
France	→	Germany	46.3	18.1%
UK	→	Belgium	40.6	-4.7%
Germany	→	Belgium	39.9	5.3%
Germany	→	Italy	37.1	1.4%
Belgium	→	Spain	35.1	-4.6%
Italy	→	Germany	35.1	16.1%
Italy	→	Belgium	34.8	-5.5%
Belgium	→	Germany	33.1	24.9%
Germany	→	Sweden	32.1	6.3%
Belgium	→	Italy	31.7	0.3%
Belgium	→	France	29.7	3.5%
Spain	→	Germany	23.1	-0.4%
France	→	UK	22.5	14.8%
UK	→	Ireland	22.0	0.5%
Belgium	→	Sweden	21.9	1.9%
Italy	→	UK	21.9	14.9%

1.2.6 Freight Traffic Flows between the EU-27 and other World Regions

Table 1-5 shows the main linkages between the EU-27 and selected world regions. It should be noted – as already described before – that the flights' origins and destinations are not necessarily identical with the regions of origin and destination of the goods carried. Thus, the relations to the region Middle East show the third highest volume of freight and mail carried compared to all relations considered. In 2007, more than 724,000 tonnes were carried from the EU-27 to the Middle East region (7.2% increase) and more than 690,000 tonnes were received from this region (0.9% increase). However, the major part of these shipments were probably not originally from or destined for the region Middle East, but other parts of Asia and were only transhipped in the Middle East. For example, big transhipment facilities operate at the airports in Dubai and Doha (Emirate Qatar). The main linkage with regard to air freight/mail transport is seen between Europe and North America. 1.4 million tonnes were carried towards the West (-0.3% growth), and more than 1.3 million tonnes towards the East (7.1% growth). Furthermore, the corridor EU-27 – East Asia (among others China, Japan and Korea) shows a large transport volume. 1,210,000 tonnes (9.1% growth) were carried from the EU-27 directly to East Asia, whereas more than 1.6 million tonnes have been received from this region by direct flights.

Further linkages occurred between the EU-27 and the Commonwealth of Independent States (CIS; including Russia) and also the South Asia region including countries such as India, Pakistan, Bangladesh and Nepal.

Table 1-5: Important Air Freight Traffic Flows between the EU-27 and other countries and regions of the world in 2007

Source: EUROSTAT

EU-27: loaded and unloaded Freight in 2007 *in tonnes*				
	unloaded from	+/- to 2006	**loaded to**	+/- to 2006
Norway	5909	12.7%	9731	-1.9%
Iceland	12260	-15.9%	15242	2.4%
Switzerland	31905	5.4%	25428	-2.3%
Turkey	98672	9.2%	98173	13.8%
Southeast Europe	3169	23.3%	7542	49.0%
CIS	250099	1.9%	191169	8.9%
East Africa	177054	6.7%	59167	-1.7%
North Africa	152760	55.9%	140256	26.3%
Central Africa	8793	1.5%	18841	8.0%
Africa South	142587	3.9%	153382	17.6%
West Africa	61608	-6.1%	148391	32.4%
North America	1323105	7.1%	1412281	-0.3%
Central America/Caribbean	76070	5.0%	108549	-1.3%
South America	217813	4.4%	217579	15.5%
East Asia	1672242	7.9%	1210581	9.1%
South Asia	239085	5.0%	201101	22.5%
Middle East	690033	0.9%	724376	7.2%
Oceania	39607	-5.2%	38730	-4.3%

1.3 Air Traffic in EU Member States

1.3.1 Passenger Volume

An increase of passenger traffic in the individual EU Member States (see Fig. 1-10 and 1-11) is revealed in all cases in the time frame 2005 to 2007. Among the former EU-15 Member States, in the time from 2006 to 2007, Portugal (10.4%), Austria (10.1%), Spain (8.6%) as well as Finland, Belgium, Ireland and Italy all show above average growth rates (approx. 7.2%). Leading members of the high traffic group are the United Kingdom (217 million passengers, 2.9% growth), ahead of Germany (164 million passengers, 6.3% growth) and Spain (163 million passengers). Strong growth can also be seen in most new EU Member States. Romania (41%), Latvia (26.8%), Poland (24.6%) and Lithuania (22.8%) showed the highest passenger growth figures.

Figure 1-10: Passenger Traffic of the former EU-15 Member States

Source: EUROSTAT

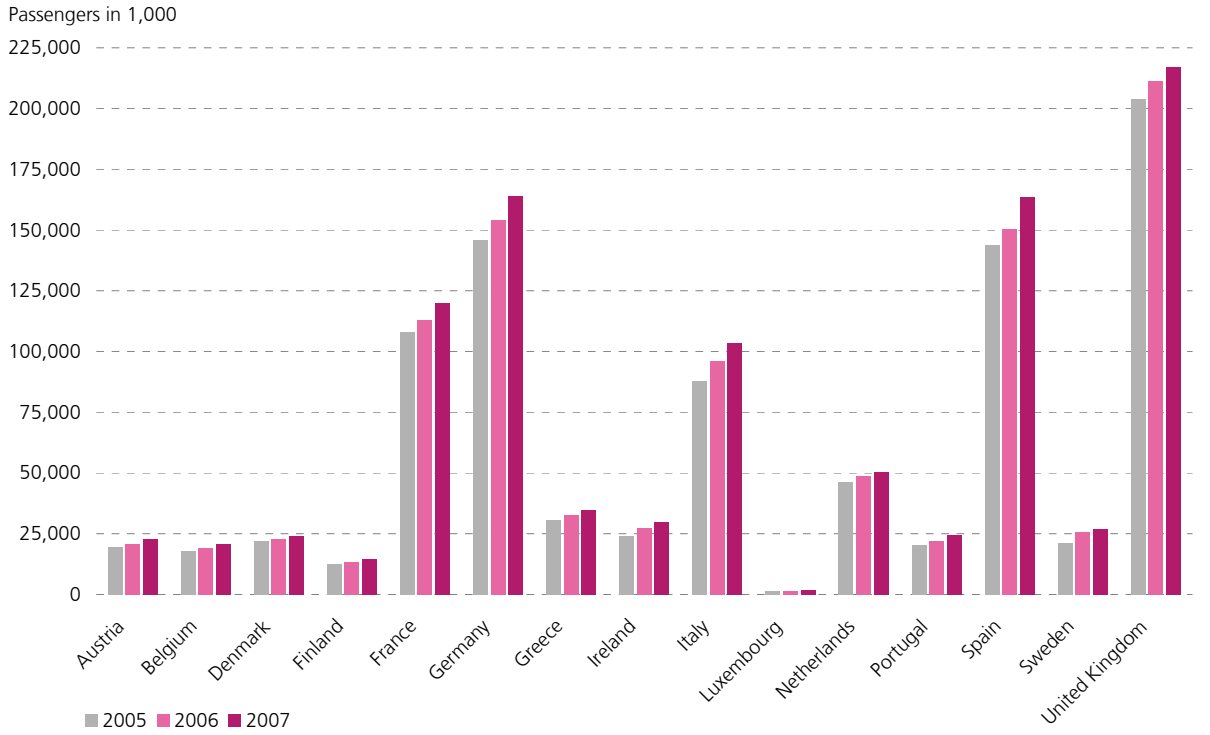
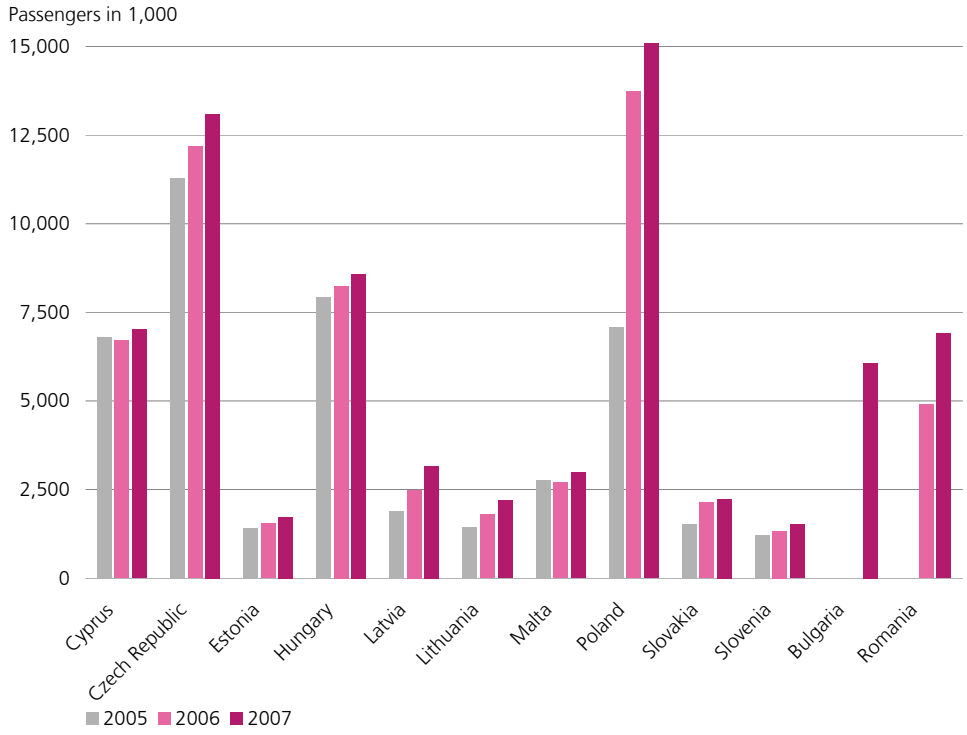


Figure 1-11: Passenger Traffic of the 12 new EU Member States

Source: EUROSTAT



1.3.2 Freight volume

It can be seen that there is a high quantity of freight and mail carried in those individual EU Member States which are also outstanding with respect to passenger traffic such as Germany (3.6 million tonnes) and the UK (2.4 million tonnes) in the year 2007. However, smaller countries like Luxemburg (0.7 million tonnes), the Netherlands (1.5 million tonnes) and Belgium (1.4 million tonnes) also have a relatively high freight and mail traffic. A country's traffic is determined by its economic activities and the corresponding freight and mail flows. Thus, Germany is an important country of origin and destination for shipments carried by air. Furthermore, high handling volume, due to the country's relevance with respect to logistic cycles of air transport, is likely to occur. Amsterdam Airport is an important international hub for passenger traffic. Since a lot of air freight and air mail are carried on passenger flights, the airport is considered to be of similar importance for the handling of cargo shipments. Although there is no mega-hub for passenger traffic in Belgium, the airports of Brussels and Liège operate as important points for air freight handled by large express/forwarding companies.

Figure 1-12: Freight Traffic of the former EU-15 Member States

Source: EUROSTAT

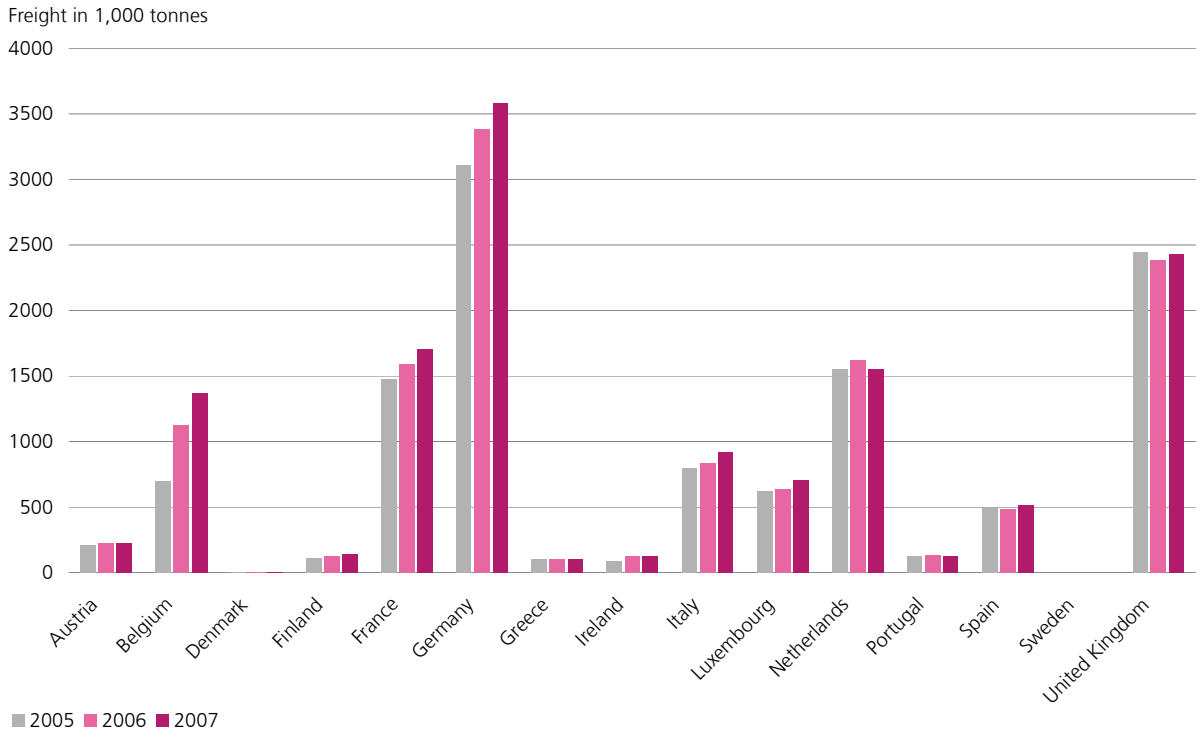
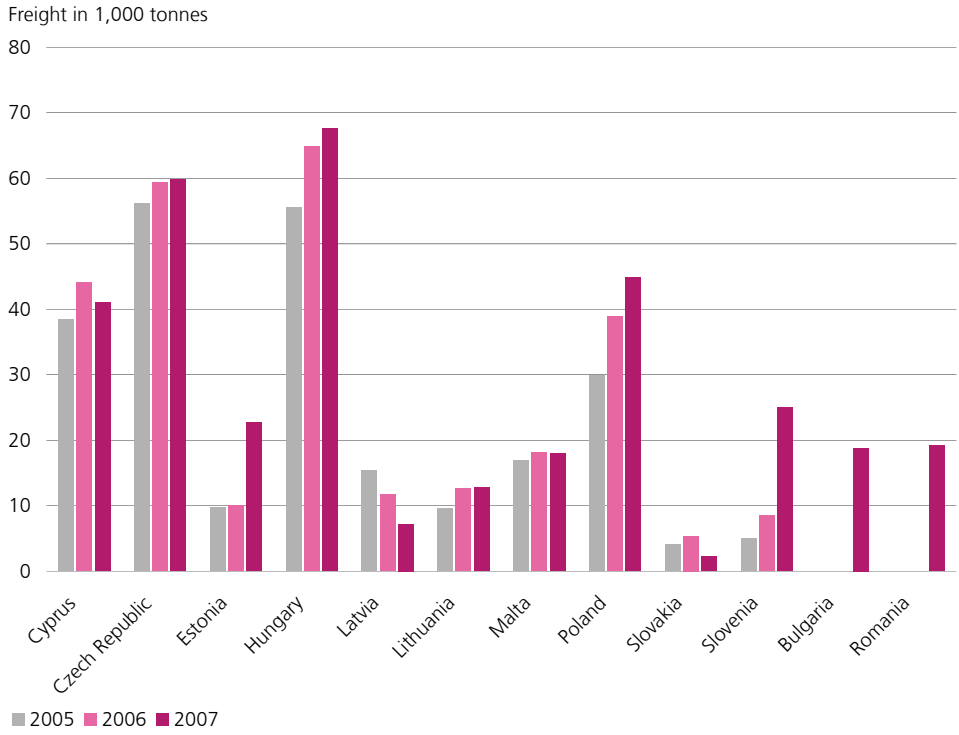


Figure 1-13: Freight Traffic of the 12 new EU Member States

Source: EUROSTAT



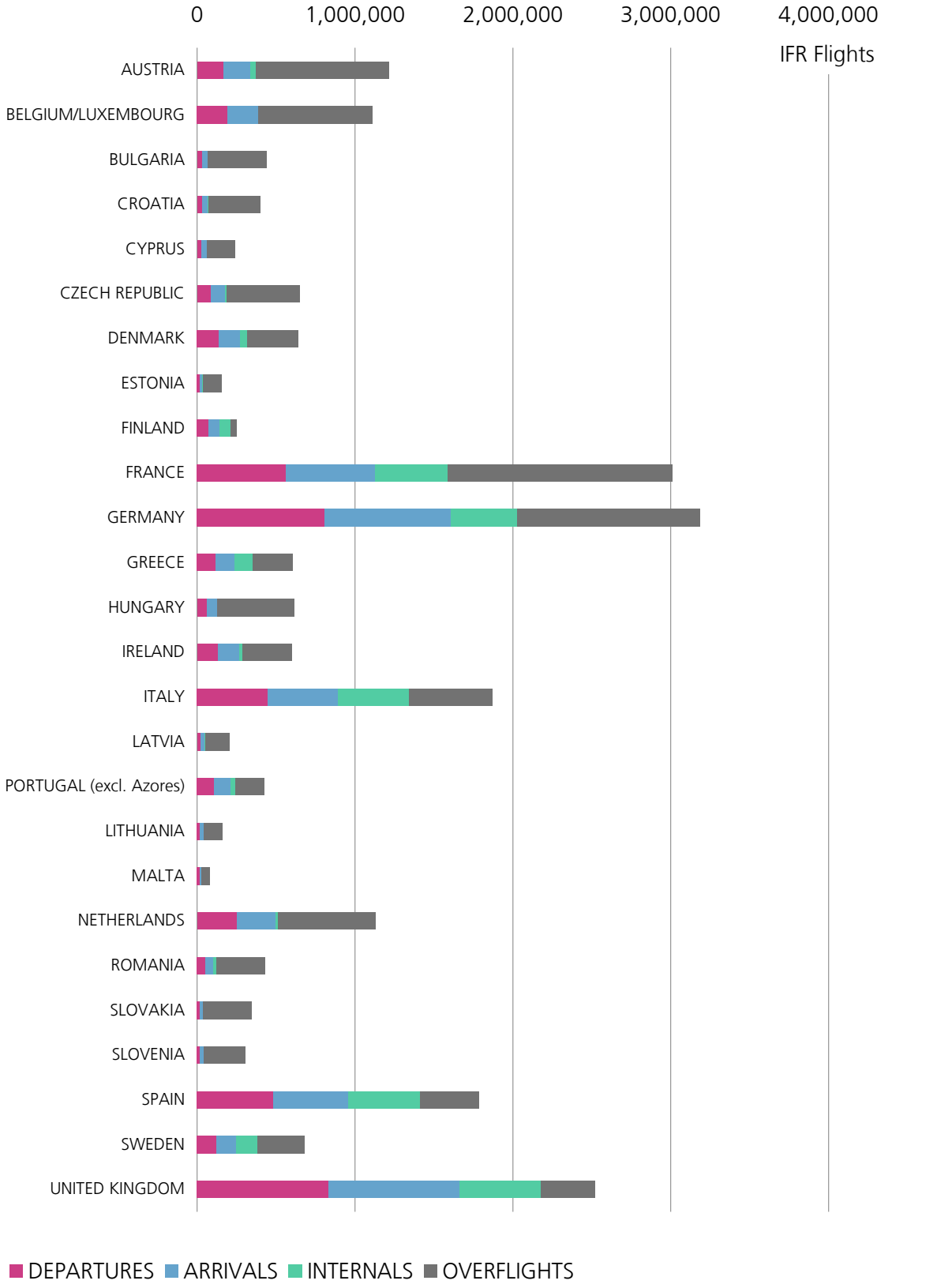
1.3.3 Flight Volumes in EU Member States

Besides the traffic measured by the number of passengers and the amount of goods handled in each country – the demand side of air transport – also the number of flights performed constitutes an essential metric for air traffic. Figure 1-13 shows flight movements performed in European countries in 2007. Whereas the statements on European traffic development, as given in the preceding chapters, are based on data provided by EUROSTAT, data provided by the European Organisation for the Safety of Air Navigation, EUROCONTROL, is now used. This data is not directly comparable with that provided by EUROSTAT. On the one hand it does not only refer to EU Member States, on the other hand it includes all flights performed according to Instrument Flight Rules (IFR). IFR flights are not identical to those indicated by EUROSTAT in the air traffic statistics. However, the flights indicated in the EUROSTAT air traffic statistics constitute the major part of IFR flights recorded by EUROCONTROL. Besides airplanes departing from or arriving in a country, overflights are also relevant for the evaluation and planning of en-route airspace capacity. Overflights are performed by airplanes only crossing a country's territory in the air and thus do not take-off or land there.

Figure 1-14 shows the respective flights of each EU-member country, broken down by departures, arrivals, domestic flights (here each flight includes the take-off and landing procedure), as well as overflights. The number of overflights in a country does not necessarily account for the importance of a country in terms of traffic, but its size as well as its position in Europe. Thus, for example, the Netherlands show a high number of overflights compared to the number of arrivals and departures. The same is true for Austria and Belgium/Luxemburg. Flights departing from and arriving at airports located in the same country are called domestic flights. For this parameter, the size of a country (in terms of both geographical size and population) matters. European countries showing a distinct number of domestic flights are France, Germany, Italy, Spain and the UK. For these countries, a high number of overflights is also indicated. For the parameter departures and arrivals, major European countries are the UK, Germany, France, Spain and Italy. When considering the totals of all categories, Germany is number one (about 3.2 million flight movements in 2007), followed by France (3.0 million) and the UK (2.5 million). In total, approx. 9.7 million flights were recorded in Europe (including non-EU members) in 2007, with approx. 1 million arrivals and departures each, which crossed the border of the Eurocontrol district, 7.6 million domestic flights within the Eurocontrol district and about 0.1 million flights which crossed the Eurocontrol district. Compared to 2006, flight movements increased by about 5.1%. When considering flight movement growth in each country, high growth rates in Central and East European countries are revealed. For example, flight movement traffic in Lithuania grew by approx. 16.9% and in Latvia by 15.6%. However, when looking at the absolute figures, these countries show only moderate traffic. Major countries in terms of flight movement traffic show comparatively average growth (Germany 4.7%, France 5.9%, Italy 8.6%, Spain 8.5% and the UK 3.5%). According to Eurocontrol, August 31st, 2007 was the busiest day ever. The states of the European Civil Aviation Conference recorded 33,506 IFR flights on this day.

Figure 1-14: IFR Flights in EU Member States in 2007

Source: Eurocontrol



1.4 Flight Efficiency

Flight efficiency is determined by the relationship between the optimal flight distance (in terms of energy, cost and capacity) and the distance actually flown. For air traffic in Europe, Eurocontrol calculates this flight efficiency by means of radar data collected and model calculations of the optimal flight distances. The determination of flight efficiency requires distinction between horizontal and vertical flight efficiency. The horizontal flight efficiency refers to discrepancies from – as a rule – the shortest distance between the airports of departure and destination. The vertical efficiency describes negative discrepancies with respect to the optimal flight altitude, for example, in the case that an airplane has to be flown higher than required from an operational point of view, due to the weather conditions. Just recently, Eurocontrol have also emphasized the aspects of vertical flight efficiency.

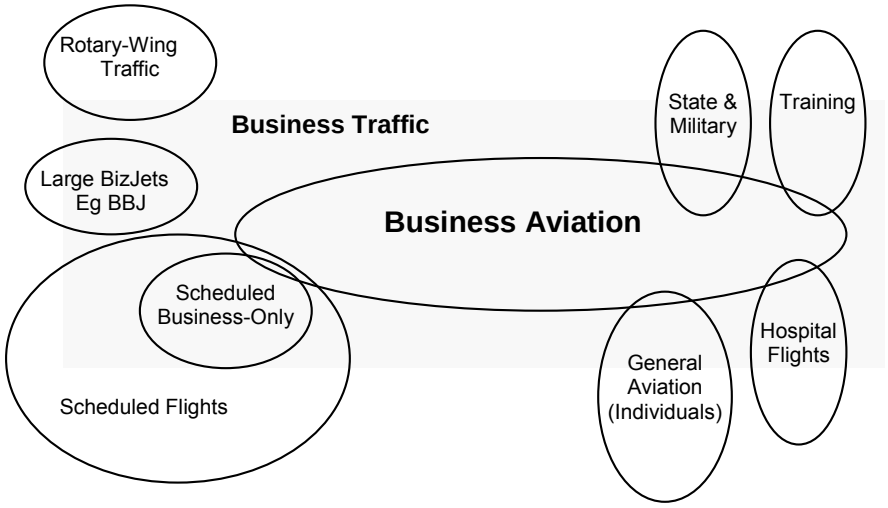
Eurocontrol has published final data on flight efficiency for 2007 in its "Performance Review Report 2007". In the European airspace, monitored by Eurocontrol, the average distance of all flights is approx. 5.8% longer than the flight route covering the shortest distance between departure and destination airport (the so-called Great Circle Distance). The mentioned 5.8% corresponds to a circuitous distance of 48.9 km per flight, on the basis of all flights recorded. As a strategic objective, the "Performance Review Commission" (a consultancy board for Eurocontrol in the field of efficiency enhancement) specifies an optimisation of the circuitous route distance by 2 km per year. This optimisation target was clearly not reached in 2007; instead there was an increase in detours performed by airlines in Europe (+0.7 km per flight on average). As to the flight efficiency of the individual European states, it becomes evident that countries showing high flight traffic, such as the UK, France, Italy and Germany, simultaneously show the longest average circuitous routes. The analysis of vertical flight efficiency performed by Eurocontrol indicates a kerosene consumption increase of 0.6% compared to the consumption on an optimal vertical flight route. The mentioned relative figure corresponds to an average quantity of 23 kg kerosene per flight. According to Eurocontrol statements, further efforts will be made to improve flight efficiency.

1.5 General Aviation

The general aviation spectrum is rather broad and comprises general aviation for individuals, e.g. for leisure purposes, non-scheduled business aviation, but also hospital flights and rotary-wing traffic. Figure 1-15 gives a review of the different elements of general aviation with their relationship to each other and commercial scheduled flights. The focus in this chapter is on non-scheduled business aviation as interest in business aviation has grown considerably in recent years. It is one of the largest and fastest growing segments of general aviation and is growing faster than the market for scheduled passenger flights. However, data is difficult to obtain.

Figure 1-15: General aviation and business aviation

Source: Eurocontrol 2006



In this report, general aviation is defined similarly to the definition used by Eurocontrol (2006) for business aviation, i.e. by aircraft type, as this captures the essence of this market segment best. This means that all aircraft (piston, turboprop and jet) of a size below e.g. the Boeing Business Jet or B747 conversion are included in the definition; however VFR flights are excluded, as data is difficult to obtain. However, Eurocontrol further excludes aircraft types from the definition of business aviation which are not employed mainly for business purposes. One case is the Piper 34, which is used more by training operators than in the business segment.

Business operators can be subdivided into three classes (Eurocontrol 2006):

- Commercial: Aircraft flown for business purposes by a commercial operator. These are typically on-demand charters and fractional operators.
- Corporate: Non-commercial operations with professional crews employed (e.g. corporate fleets).
- Owner operated: Aircraft flown for business purposes by the owner.

Table 1-6 displays the classification of business jets broken down into seven categories according to maximum take-off weight (MTOW), number of seats for passengers, cruising range and price.

Table 1-6: Classification of business jets

Source: HSH Nordbank 2005, Rolls Royce

Segment	MTOW (lbs)	Seats	Cruising range	Price
Entry	10 K - 13 K	4 - 7 seats	1300 - 2500 NM	2.4 - 6 Mio. USD
Light	13 K - 20 K	6 - 8 seats	1450 - 1970 NM	6 - 8 Mio. USD
Light Medium	20 K - 33 K	7 - 9 seats	1940 - 2700 NM	9 - 14 Mio. USD
Medium	33 K - 50 K	8 - 12 seats	2000 - 3400 NM	13 - 24 Mio. USD
Long Range	50 K - 80 K	5 - 19 seats	3100 - 4500 NM	21 - 34 Mio. USD
Very Long Range	80 K - 100 K	8 - 19 seats	4800 - 6750 NM	32 - 46 Mio. USD
Bizliner	> 100 K	8 - 120 seats	Up to 6300 NM	40 - 55 Mio. USD

The entry class of jets is based on small and efficient engines like for example the FJ44 from Rolls Royce or Williams FJ33 and thus form an alternative to pistons and turboprops. A popular member of this class is the Cessna Mustang with a price of 2.6 Mio. USD (HSH Nordbank 2005). The light class of business jets is the largest market segment which offers flexible capabilities, as they only need a short runway for take-off.

However, there is a strong growth in the development of cheaper entry class jets which are able to take off from short runways. One example is the Eclipse 500 for 1.5 Mio. USD, which needs less than 1 000m of runway and is thus able to approach small airfields, offering great flexibility to business travellers. In Germany, 154 airfields are potentially suited for such aircraft, compared to about 5000 for the USA. However, the demand for entry class jets in Europe is currently at an early development stage and still rather small. Eurocontrol expects the fleet in Europe to increase by around 700 units by 2015. According to the FAA, the forecasted worldwide supply of very light jets is around 500 aircraft per year by 2020 (Stern 2008).

Figure 1-16 depicts the fleet distribution among the different classes of business jets. In 2002, the light and light medium class accounted for nearly two thirds of the whole business jet fleet.

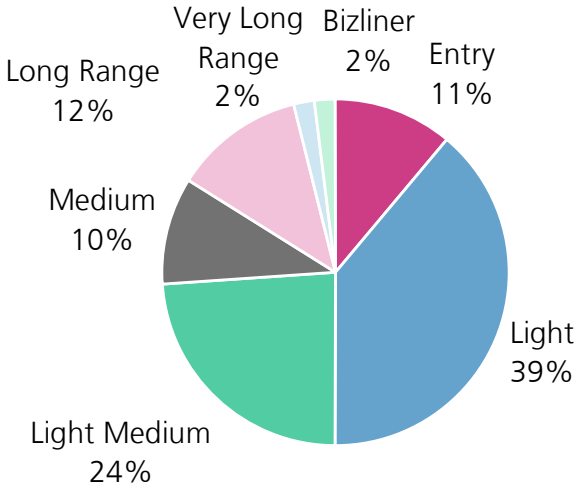


Figure 1-16: Worldwide fleet distribution in 2002

Source: HSH Nordbank 2005, Rolls Royce

Table 1-7 shows the forecasted worldwide fleet development until 2022. The forecast shows a clear trend to larger business jets in the future. In 2002, the largest segment was the light class with 4 550 jets, followed by 2 744 light medium jets. For 2022, a fleet of 5 242 light medium jets is expected compared to 4 625 light business jets. This is only an average increase of 0.1% per year, against which the light medium business jets fleet increases by 3.3% on average per year. The largest increase in relative numbers is forecasted for very long range jets. In 2002, there were 241 very long range jets. For 2022, a fleet of 1 274 very long range jets is forecasted, which equals an average annual increase of 8.7%. Overall, the fleet of business jets is expected to increase by 3.0% per year on average from 11 510 jets in 2002 to 20 875 jets in 2022.

Table 1-7: Worldwide fleet development until 2022

Source: HSH Nordbank 2005, Rolls Royce

	Fleet 2002	Supply 2003 - 2012	Supply 2003 - 2022	Jets out of service until 2002	Fleet 2022	Average growth p.a.
Entry	1,222	1,103	2,001 (14%)	530	2,693	4.0%
Light	4,550	857	1,976 (14%)	1,901	4,625	0.1%
Light Medium	2,744	1,706	3,759 (28%)	1,261	5,242	3.3%
Medium	1,152	1,325	3,109 (22%)	330	3,931	6.3%
Long Range	1,397	944	1,849 (13%)	528	2,718	3.4%
Very Long Range	241	485	1,052 (8%)	19	1,274	8.7%
Bizliner	204	102	202 (1%)	14	392	3.3%
Total	**11,510**	**6,521**	**13,948 (100%)**	**4,583**	**20,875**	**3.0%**

Figure 1-17 displays the number of business jets by country. In 2005, 1 217 business jets were in use in Europe, of which the five largest markets (Germany, United Kingdom, France, Italy and Switzerland) covered 68% of the jets. Generally, the number of business jets in a country is strongly positively correlated with country size; however, Switzerland is an exception having a disproportionally high number of business jets compared to its country size.

Figure 1-17: Business jets per country

Source: HSH Nordbank 2005, Jetnet

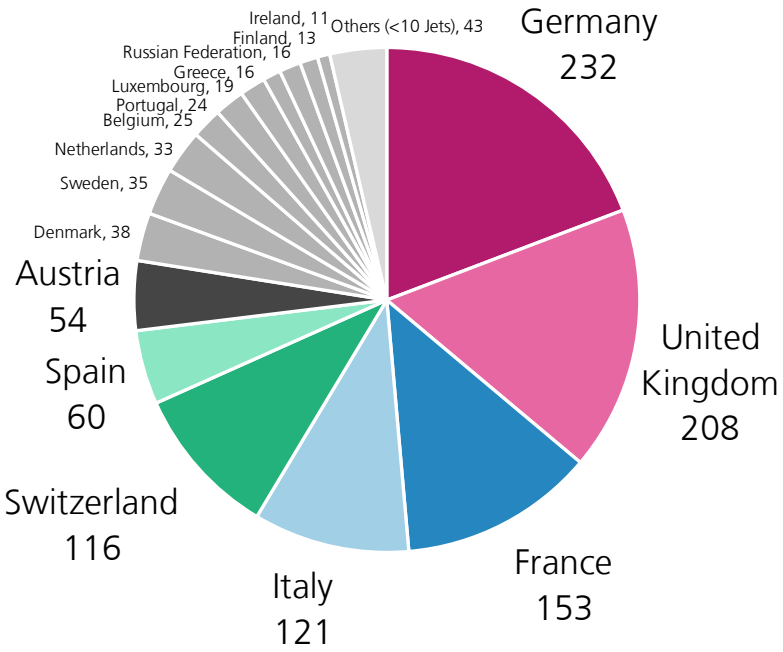


Table 1-8 shows the ownership structure of business jets in the aforementioned five largest markets. Most business jets are operated by private companies and therefore the share of business jets owned by private persons or the government is rather low. However, 26% of the business jets in France are operated by the French state. In other countries, between 2% to 7% of the business jets are owned by a government. The share of business jets operated by private persons ranges from 1% for France, Italy and Switzerland to 6% and 7% for the United

Kingdom and Germany respectively. In Europe, business jets are predominantly a matter for companies.

Country	Private	Government	Company	Not specified
Germany	7%	3%	84%	6%
United Kingdom	6%	7%	86%	1%
France	1%	26%	71%	2%
Italy	1%	7%	90%	2%
Switzerland	1%	2%	97%	0%

Table 1-8: Ownership structure of business jets

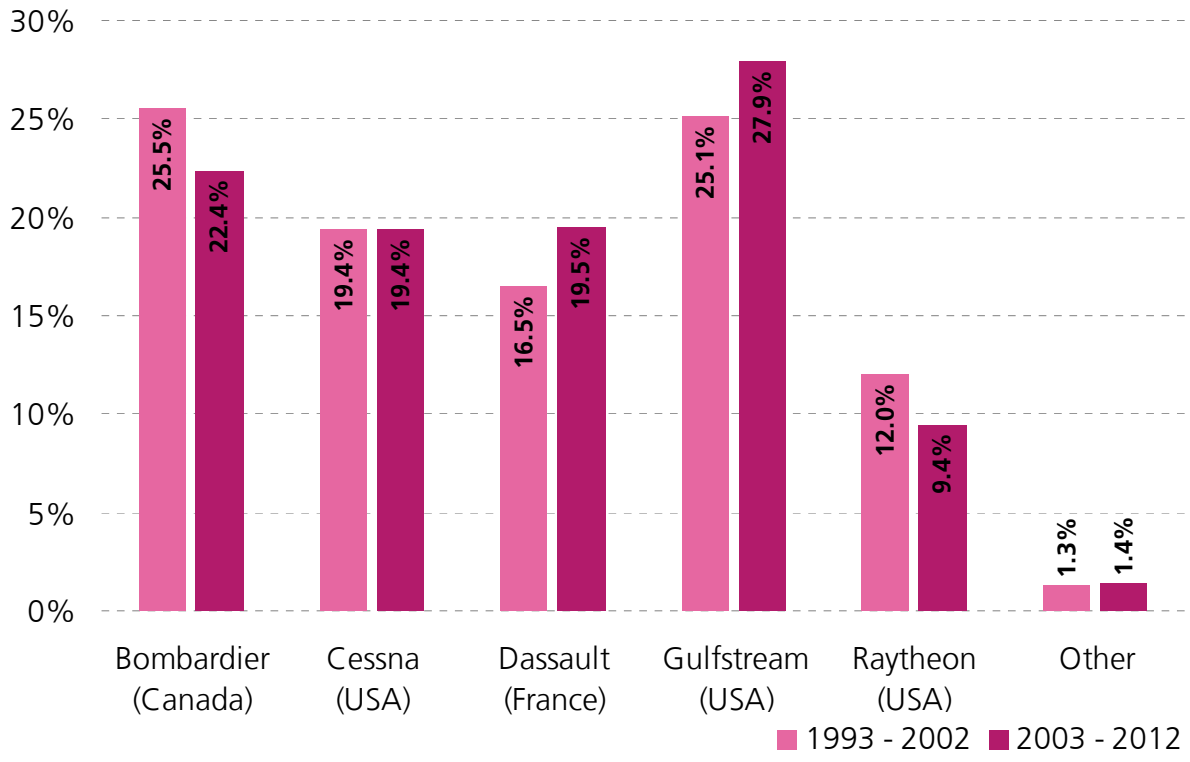
Source: HSH Nordbank 2005, Jetnet

While Airbus and Boeing are the main manufacturers of airliners, the market for business jets is rather fragmented. Figure 1-18 displays the market shares in terms of the number of aircraft sold by the five biggest business jet manufacturers for the period 1993 to 2002 and a forecast up to 2012.

The biggest business jet manufacturers are Bombardier (Canada) and Gulfstream (USA).

Figure 1-18: The biggest manufacturers of business jets in terms of the number of aircrafts sold

Source: HSH Nordbank 2005, Teal Group



In 2006, about 9% of all aircraft movements measured by Eurocontrol originated from general aviation. Since 2003, the number of aircraft movements due to general aviation has risen nearly twice as fast as commercial aircraft movements. Movements by general aviation, as registered by

Eurocontrol, went up by 22% from 2003 to 2006, whereas commercial aircraft movements rose only by 14% (European Commission 2008). However, aircraft movements of general aviation are more widespread across air routes than commercial aviation. The top 500 bi-directional business aviation routes in 2005 carried only 29% of business aviation, whereas the top 500 bi-directional scheduled aviation routes in 2005 carried 41% of the commercial flights (Eurocontrol 2005). The market for business aviation is spread thinly: The top 100 airports in business aviation handle only about 60% of the business aviation traffic, whereas this number increases to 75%, if we look at the air traffic as a whole (Eurocontrol 2005).

Figure 1-19: Distribution of traffic

Source: Eurocontrol 2005

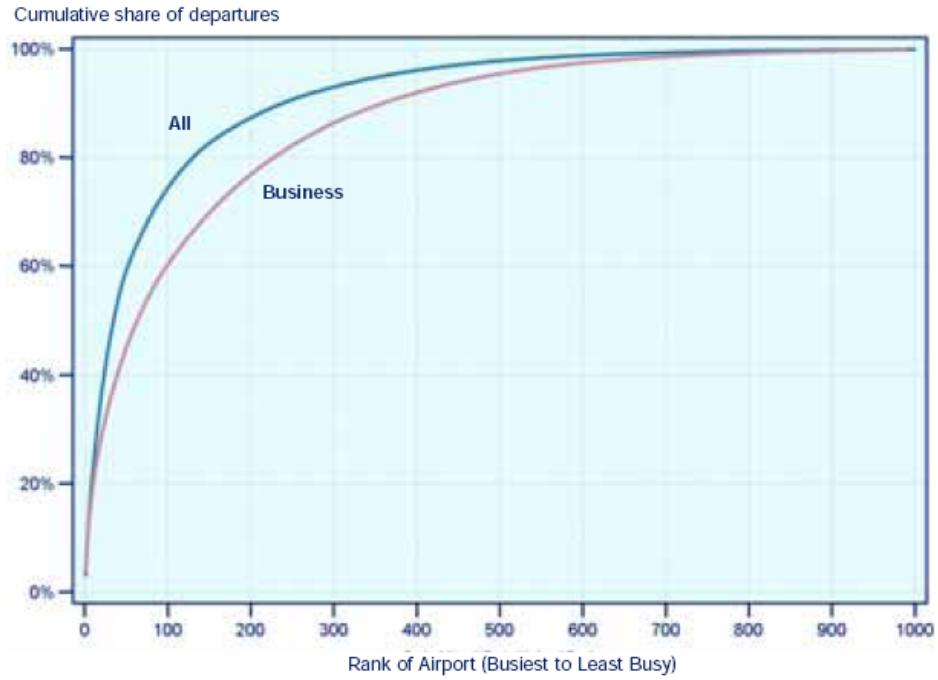


Table 1-9 shows the top 25 business aviation airports in Europe in terms of business aviation departures. The busiest airport is Paris Le Bourget with an average of around 66 business aviation departures per day in 2005. Paris Le Bourget is well ahead of the second placed airport Geneva Cointrin with an average of 41 business aviation departures per day. The share of business aviation at typical airports such as Paris Le Bourget, Cannes Mandelieu or Biggin Hill exceeds 80% of all departures, whereas business aviation only accounts for less than 10% of the departures at international airports such as Frankfurt/Main, Cologne-Bonn or Düsseldorf.

Table 1-9: Airports with the most business aviation departures

Source: Eurocontrol 2005

Rank	Prev. Rank	IATA Code	Airport	Business Deps/Day 2005	2004	Business Growth	% Business	Busiest Business Day
1	1	LBG	Paris Le Bourget	65.6	64.9	1.0%	87.0%	115
2	2	GVA	Geneva Cointrin	40.9	38.7	5.7%	20.0%	123
3	3	CIA	Roma Ciampino	36.1	32.3	11.8%	39.0%	72
4	4	LIN	Milano Linate	35.8	32.1	11.6%	21.0%	83
5	5	LTN	London/Luton	31	27.7	11.8%	22.0%	68
6	7	NCF	Nice	26.9	23.3	15.6%	15.0%	107
7	6	ZRH	Zurich	26.7	26.8	-0.7%	7.6%	66
8	8	FAB	Fanborough	20.8	19.2	8.6%	87.0%	44
9	12	VIE	Wien Schwechat	20.3	17.6	15.5%	5.9%	48
10	9	MUC	München 2	20.2	18.8	7.4%	3.7%	48
11	11	TOJ	Madrid Torrejon	20.1	17.8	12.8%	69.0%	43
12	10	STR	Stuttgart	17.7	17.9	-0.6%	8.8%	38
13	13	CEQ	Cannes Mandelieu	16.1	15.1	7.0%	87.0%	46
14	14	CGN	Cologne-Bonn	13.9	14.2	-2.6%	6.6%	30
15	18	BCN	Barcelona	13.8	12.1	14.4%	3.3%	49
16	15	PMI	Palma De Mallorca	13.5	12.9	5.0%	5.4%	34
17	20	BRU	Brussels National	13.1	11.1	0.186	3.9%	41
18	17	DUS	Düsseldorf	13	12.3	5.2%	4.7%	31
19	16	THF	Tempelhof-Berlin	12.8	12.8	0.0%	35.0%	42
20	22	AMS	Schiphol Amsterdam	12.5	11	14.0%	2.2%	34
21	31	LCY	London/City	12.5	8.9	40.1%	13.0%	32
22	19	FRA	Frankfurt Main	12	12.1	-0.3%	1.7%	41
23	24	BQH	Biggin Hill	11.6	10	15.2%	86.0%	28
24	25	OLB	Olbia Costa Smeralda	11.2	9.6	16.5%	30.0%	69
25	23	OSL	Oslo/Gardenmoen	11.1	11	1.5%	4.0%	24

Business aviation is point-to-point air travel. Most of the traffic takes place at small airports: more than 50% of the traffic is from airports with fewer than 50 departures per day and only 30% of business aviation departures are from airports with more than 100 IFR departures per day (Eurocontrol 2005). Table 1-10 shows the top 25 airports in Europe with the highest proportion of business aviation departures. The share of business aviation departures ranges from 90% for Wiesbaden to 51% for Braunschweig. Business departures per day lie in a range from 1.2 to 65.5; however, the high value of 65.5 business departures per day on average for Paris Le Bourget is rather the exception than the rule. There are on average about 8 business departures per day at the top 25 airports in Table 1-10. The number of departures per day for purposes other than business aviation lies between 0.4 and 9.5. However, Paris Le Bourget is again rather the exception than the rule, as the average number of departures for purposes other than business aviation is about two per day. The number of departures per day at small airports with mainly business aviation traffic is very sensitive to supraregional events. For example, the average number of business aviation departures per day at Samedan was 3.6 in 2005; however, when the World Economic Forum in Davos took place, a maximum number of

16 departures per day were recorded. The smaller the airport, the higher the volatility of daily departures due to supra-regional events near the airport tends to be.

Table 1-10: Airport with the highest proportion of business aviation departures

Source: Eurocontrol 2005

Rank	Prev. Rank	IATA Code	Airport	Business Deps/Day	Other Deps/Day	Proportion Business	Business Growth	Busiest Day
1	3	WIE	Wiesbaden	3.9	0.4	90%	4.5%	16
2	4	SMV	Samedan	3.6	0.4	90%	9.0%	36
3	1	NHT	Northolt	10.6	1.2	89%	-3.8%	32
4	2	ZQC	Speyer	2.6	0.3	89%	6.4%	12
5	5	LBG	Paris Le Bourget	65.5	9.5	87%	0.9%	115
6	6	CEQ	Cannes Mandelieu	16.1	2.4	87%	7.0%	46
7	7	FAB	Farnborough	20.8	3.1	87%	8.5%	44
8	9	BQH	Biggin Hill	11.6	1.8	86%	15.0%	28
9	10	SIR	Sion	4.2	0.7	86%	15.0%	14
10	8	LTT	La Mole	2.9	0.6	82%	-1.1%	15
11	12	OBF	Oberpfaffenhofen	2.5	0.8	75%	30.0%	12
12	11		Schwäb. Hall-Hessent	2.9	1.1	73%	44.0%	11
13	17	TOJ	Madrid Torrejon	20.1	8.9	69%	13.0%	43
14	15	LYN	Lyon Bron	6	3	67%	14.0%	18
15	13		Villacoublay	5.6	2.8	67%	-18.0%	18
16	14	SNR	Saint Nazaire	2.3	1.3	63%	-1.5%	12
17	23		Pratica Di Mare	4.8	3.1	61%	5.9%	14
18	22	GLO	Gloucestershire	1.5	1	61%	9.5%	12
19	18	LME	Le Mans Arnage	1.2	0.8	58%	4.6%	20
20	21	CBG	Cambridge	2.3	1.8	57%	0.9%	11
21	20	NVS	Nevers Fourchambault	0.7	0.5	56%	-4.9%	28
22	19	DOL	Deauville	2.3	1.8	56%	-15.0%	13
23	16	LHA	Lahr	1.4	1.1	54%	13.0%	10
24	26		Ljungbyhed	2	1.7	54%	2.0%	14
25	24	BWE	Braunschweig	6.4	6.2	51%	-5.0%	18

Consultations on General Aviation in the European Community

With the Discussion Paper on General Aviation in the European Community[2] published in February 2007, the European Commission attempted to look at relevant developments and challenges that are taking place in this important segment of civil aviation. The aim of this paper is to identify certain issues for the sole purpose of discussion with interested stakeholders. It does not prejudge on any decision that the European Commission may take in future. A total of 74 contributions have been submitted. This includes: 10 contributions from Member States, Norway and ECAC; 50 contributions from different organisations and associations; and 14 contributions from individuals.

[2] http://ec.europa.eu/transport/air_portal/internal_market/general_aviation/consultation_en.htm

2 Airlines

2.1 Passenger Airlines

Worldwide Departures

Figure 2-1 shows the total number of aircraft departures worldwide in the third week of July 2007, of which 19% originate in the Member States of the EU 27 and 22.5% in the 46 countries of Europe. 22.5% of the worldwide aircraft departures sum up to about 161 000, of which 159 000 are passenger flights. 153 000 of these passenger flights are non-stop. These are examined from different perspectives in more detail below.

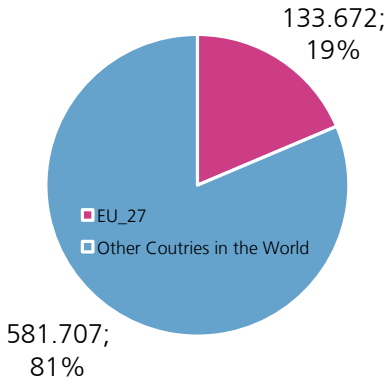


Figure 2-1: Global departures of commercial aircraft in the world in the third week of July 2007

Source: OAG 2007

Figure 2-2: Worldwide departures in the third week of July 2007

Source: OAG 2007

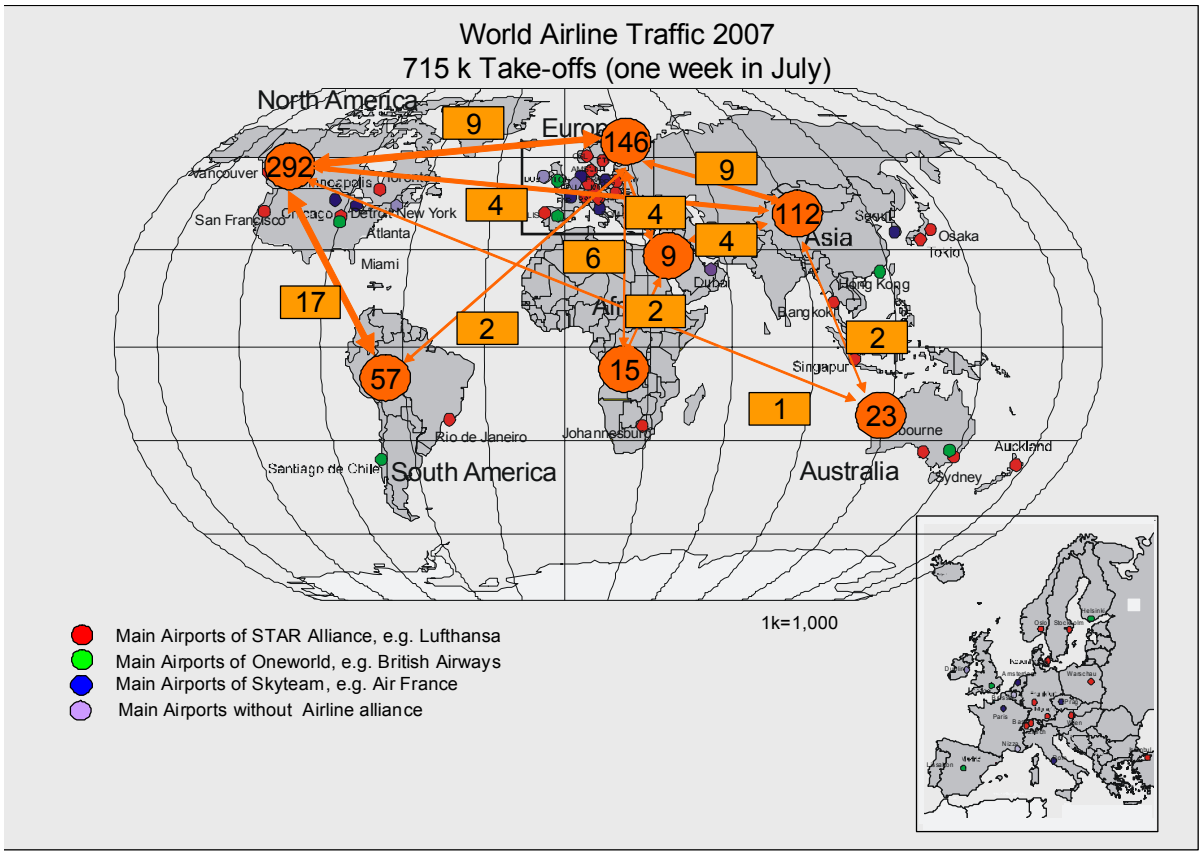


Figure 2-2 illustrates the distribution of the worldwide departures in the third week of July 2007. A circled number displays the number of take-offs in thousands within a region, e.g. North America or Europe, and a boxed number denotes the number of flights in thousands between two regions, e.g. North America and Europe. Additionally, important airports are marked in terms of the main airline alliance operating there.

North America is the region with the highest number of intraregional flight movements, summing up to 292 000, while the route between North America and Europe has the highest number of interregional flights, amounting to 9 000 in the third week of July 2007. The number of intraregional flights clearly exceeds the number of interregional flights in most cases as illustrated by Figure 2-2.

European Departures and Routes

In the Figures 2-3 and 2-4, which are extracts from Figure 2-2, air routes in Europe with a high traffic volume regarding frequencies and seats offered, both on a weekly basis, are depicted. The larger the arrow, the higher the corresponding number of take-offs and seats offered.

Figure 2-3: Main air routes in Europe in terms of flight frequency

Source: OAG 2007

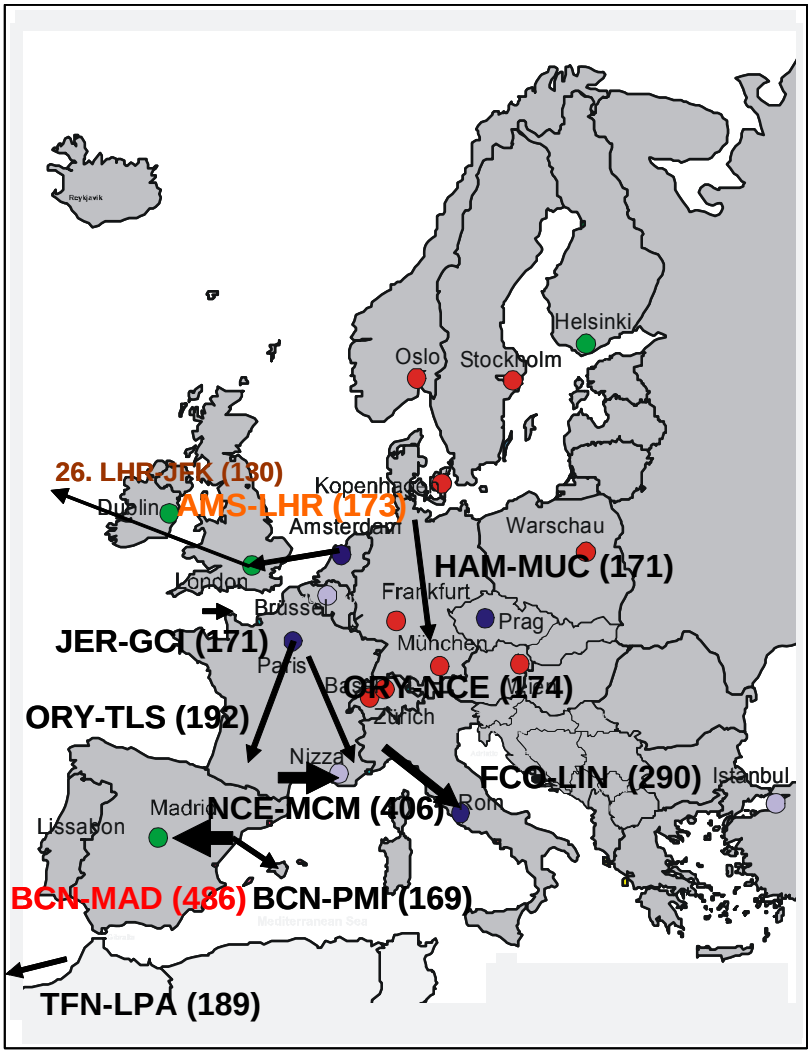


Figure 2-3 illustrates the air routes with the highest flight frequencies per week. The top three air routes are Barcelona – Madrid, Monaco – Nice and Milan – Rome with 486, 406 and 290 weekly take-offs in one direction respectively. Yet air traffic on the route Monaco – Nice is solely a helicopter service with a very limited seat capacity. Top routes in northern Europe are Amsterdam – London Heathrow, Hamburg – Munich and Guernsey – Jersey (both in the UK) with 173, 171 and 171 weekly take-offs in one direction respectively. London Heathrow –

Amsterdam is the top international air route within Europe. However, most air routes serve domestic markets or travel to and from islands. The busiest intercontinental air route departing from a European airport is London Heathrow – New York JFK with 130 take-offs per week.

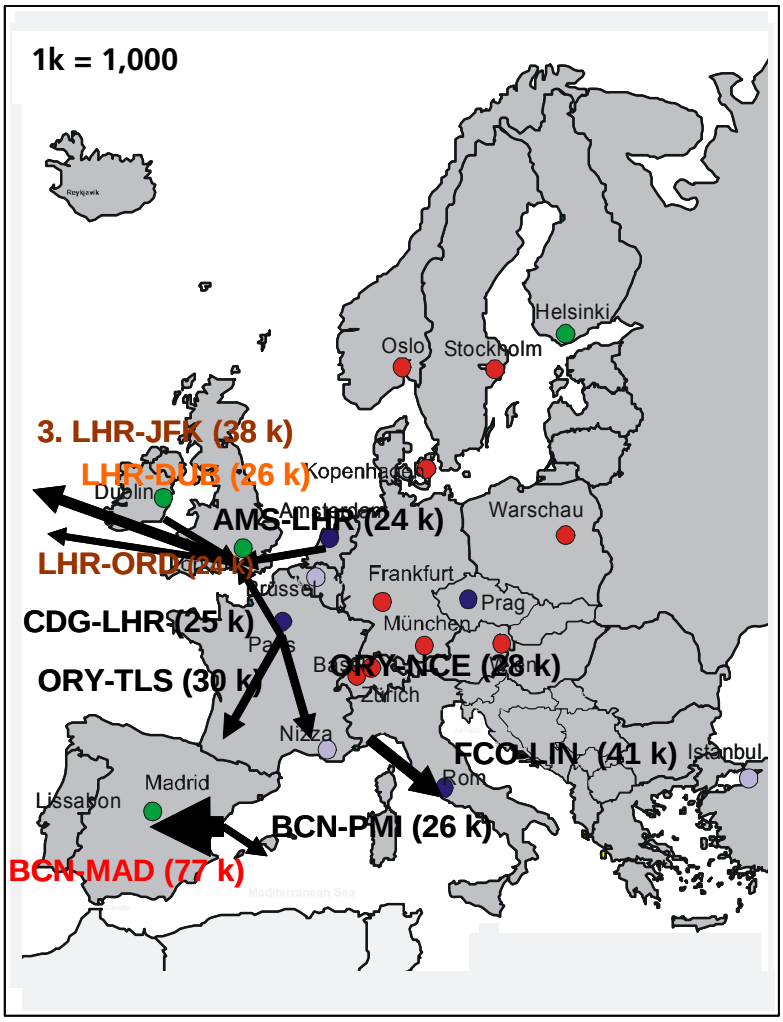


Figure 2-4: Main air routes in Europe in terms of seats offered

Source: OAG 2007

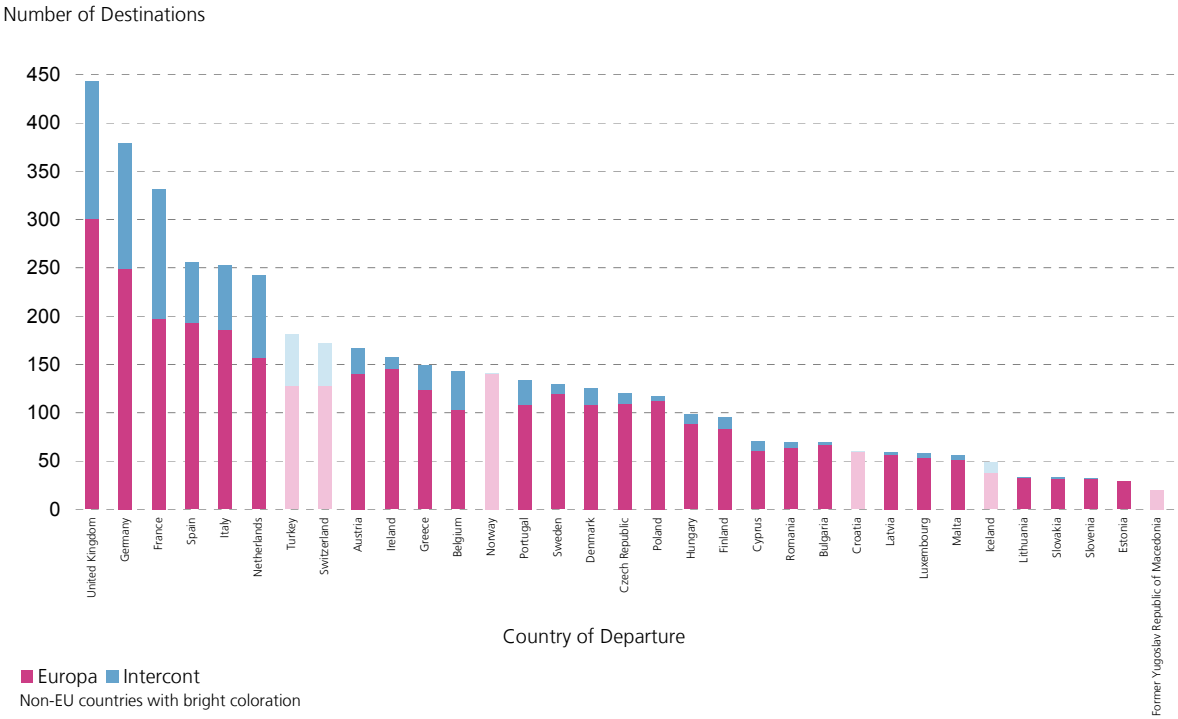
Figure 2-4 illustrates the air routes with the highest number of seats offered per week. The top three are Barcelona – Madrid, Milan – Rome and London Heathrow – New York JFK with 77 000, 41 000 and 38 000 seats offered per week in one direction. London Heathrow – Dublin is the international air route within Europe with the highest number of seats, summing up to 51 000 seats offered in one direction. Altogether, there are five international routes within the top ten. Because of the intercontinental nature of the route London Heathrow – New York JFK, being third, the demand is served by flights with high seat capacity per aircraft although the weekly flight frequency is comparatively low. The average capacity per flight is 292 seats on the route London Heathrow – New York JFK, whereas on the route Barcelona – Madrid the offered capacity is only 157 seats per take-off on average.

Figure 2-5 shows the number of routes per country in Europe, subdivided by European or intercontinental route. There is a strong positive correlation between the size of a country and the number of destinations served by its airports. The share of intercontinental routes increases with country size as well. The top three nations in this ranking are the UK, Germany and France, which have both the highest number of destinations and the highest share of intercontinental destinations. A total number of 444 different destinations are served from the UK, of which 143 are intercontinental. 379 destinations are served from German airports, of which 130 are

outside Europe. A total of 331 destinations are served from France, of which 134 are intercontinental.

Figure 2-5: Number of destinations per country

Source: OAG 2007



2.1.1 Supply by Airline Type

For further analysis regarding airline types, flights are distinguished by those of (abbreviation in brackets):

- Full Service Network Carriers ("FSNCs")
- Low Cost Carriers ("LCCs")
- Regional Carriers ("Regionals")
- Holiday / Charter Carriers ("Charters")

Full Service Network Carriers are scheduled airlines with a business model that focuses on providing a diverse and extensive service. These are typically international operating companies with a network-oriented system (normally with one or more hubs), covering a wide geographical area and providing transportation in several different classes.

The Low Cost Carriers category comprises those airlines that offer low prices for the majority of flights and which mainly operate on short and medium-distance routes with low overheads and a relatively high load factor; these airlines use a no-frills business model.

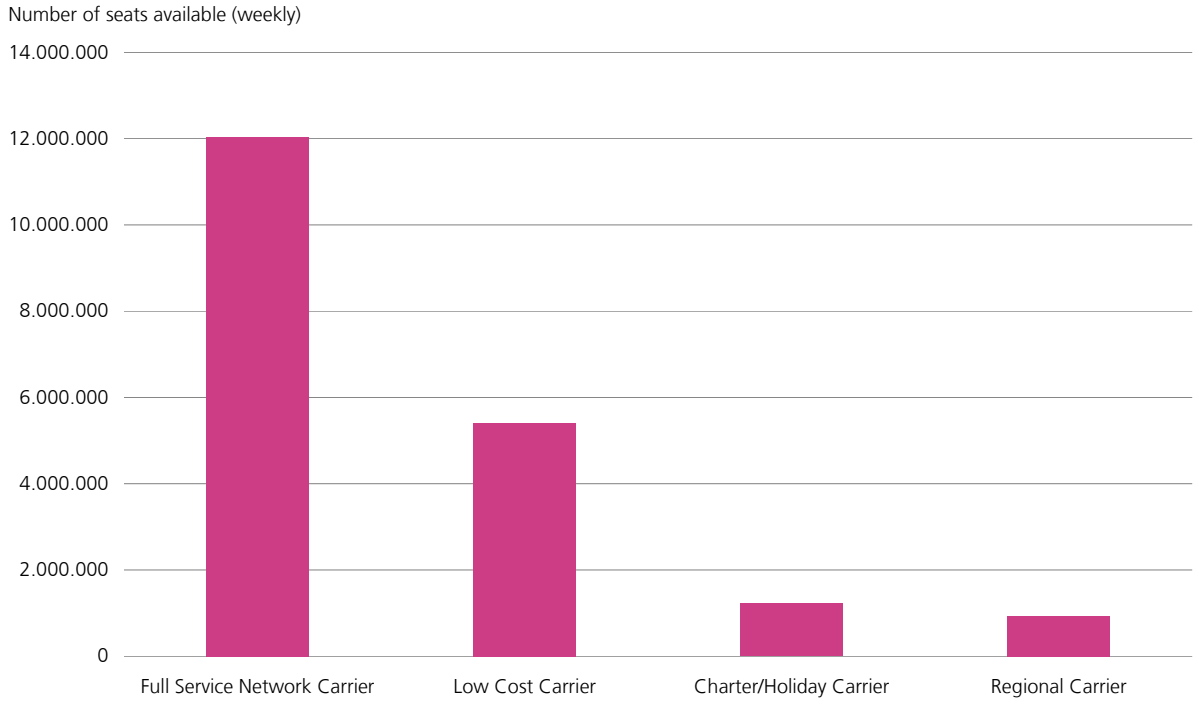
In most cases, Regional Carriers restrict their flight routes to a geographically limited area and provide connecting flights for international airlines between regional and international airports. They also provide decentralised connections between regional and national airports. Because of the need to use smaller airports, these companies mostly operate small-scale aircraft suitable for shorter travelling distances.

Holiday or charter airlines are categorised as being part of the non-scheduled traffic class, since all-inclusive tour flights and travel-on-demand also belong to this category. Holiday airlines do not generally sell tickets directly to their customers, but instead through ticket offices and travel agencies as part of package tours. The number of airlines in this group is smaller than in the others, since the role of package tour flights has continuously decreased during recent years, with ever more seats being sold individually. The elimination of the distinction between charter and scheduled airline traffic in the EU has led to an increasing number of holiday flights being classified as scheduled traffic. Furthermore, more and more destinations now overlap with those served by Low Cost Carriers.

FSNCs supply 61.4% of the weekly seats available at European airports in 2007, followed by LCCs offering 27.6% of the total capacity. In contrast, Charter carriers and Regionals have respective shares of only 6.3% and 4.7%. Figure 2-6 illustrates these relations in absolute figures (FSNCs: 12,032,451 seats, LCCs: 5,406,246 seats, Charter/Holiday: 1,227,401 seats, Regionals: 928,447 seats).

Figure 2-6: Distribution of European air transport by carrier type

Source: OAG 2007



If we look at each airline type in more detail regarding market concentration, the top 25 European FSNCs cover 86.0% of the flights in this category. Concentration is even higher for charter carriers: the top 25 charter carriers cover 97.0% of the charter market, which is comparable with the low cost market, in which the top 25 LCCs provide 94.1% of the flights. Market concentration is comparatively low for regional carriers: the top 25 in this category cover only 70.0% of their market. If we extend the scope to the top 40 airlines in each category, the general picture does not change much. Almost the whole market is served by the top 40 FSNCs, Charters and LCCs (93.1%, 99.9% and 99.4% respectively), whereas only 83.7% of the Regional market is covered by its top 40 airlines.

The top 25 airlines in each of the aforementioned four categories are studied in more detail below, as most of each market is covered by its top 25 airlines.

2.1.1.1 Full Service Network Carriers ("FSNCs")

Figure 2-7 displays the top 25 FSNCs in Europe for 2007 regarding weekly flights. The top 2 airlines are Lufthansa and Air France with 13 000 flights and 11 000 flights per week respectively. Iberia and British Airways follow with 7 000 and 6 000 flights per week. As Figure 2-7 shows, the FSNC market is rather concentrated on around seven big airlines. Total market volume is about 95 000 flights with 12 000 000 seats offered per week. Average seat capacity per flight is 127.

Figure 2-7: Top 25 FSNCs in Europe in terms of flights per week

Source: OAG 2007

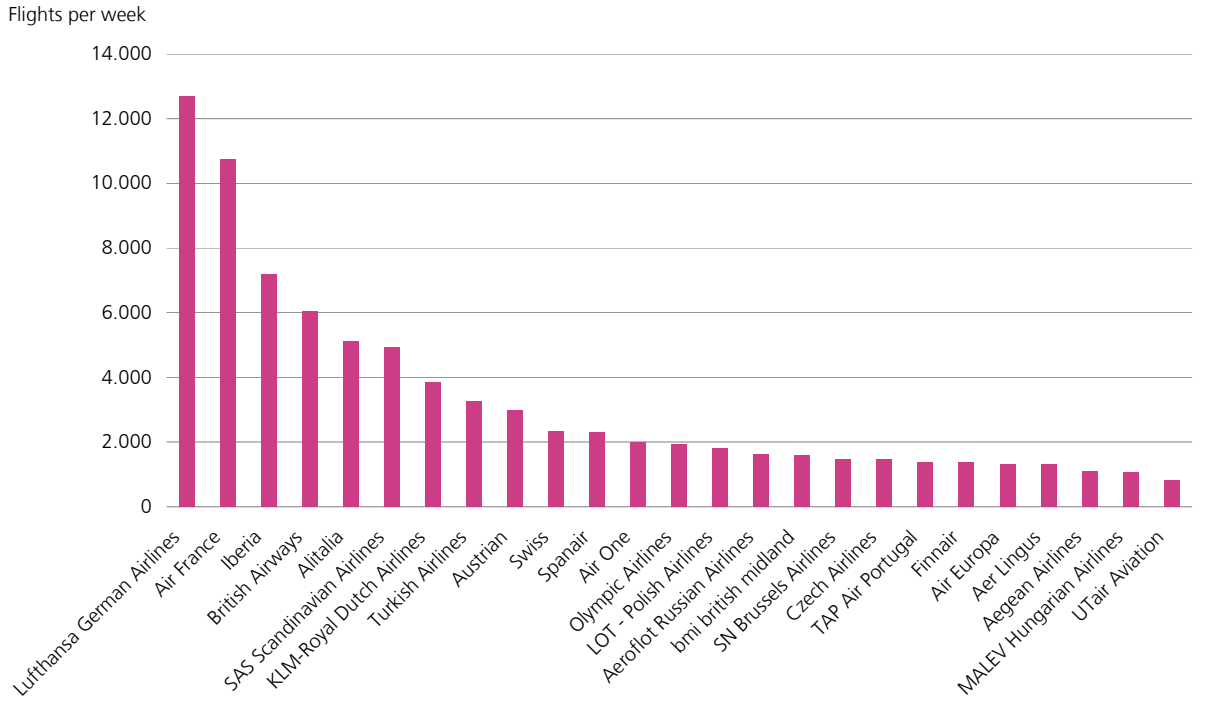
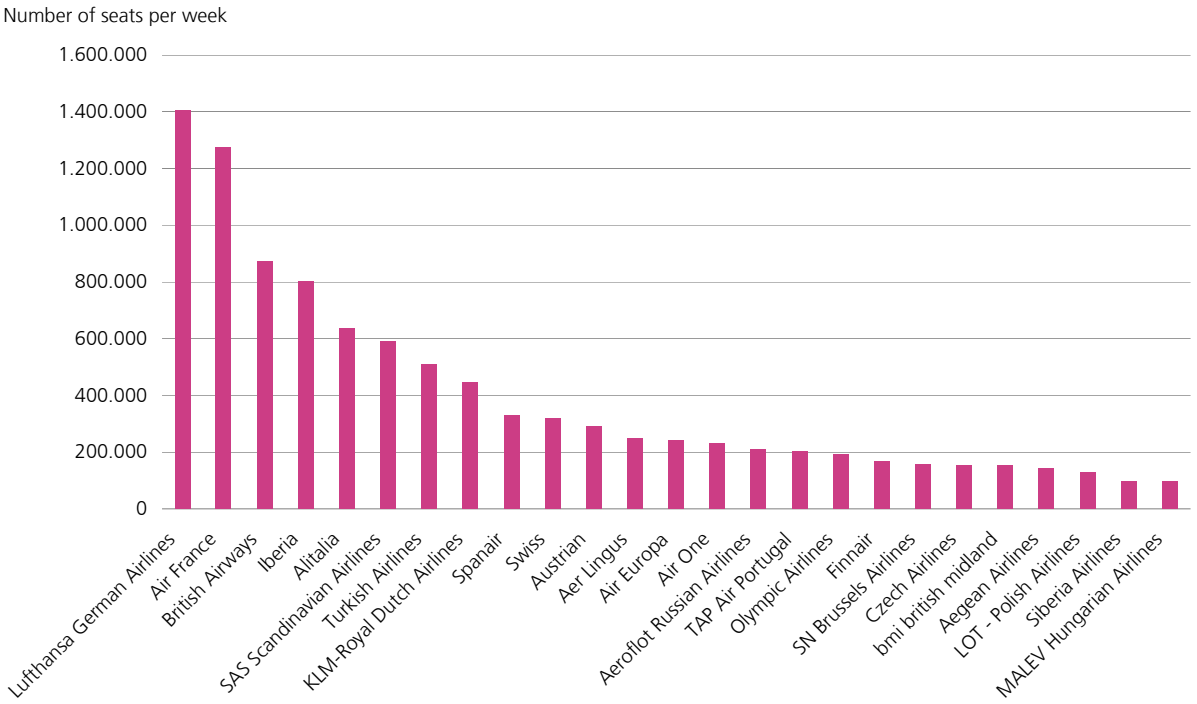


Figure 2-8 shows the top 25 FSNCs in Europe in terms of seats offered per week. The ranking is unchanged within the top rankings, except for British Airways and Iberia switching places. Lufthansa, Air France, British Airways and Iberia still occupy the first four places.

Figure 2-8: Top 25 FSNCs in Europe in terms of seats per week

Source: OAG 2007



2.1.1.2 Low Cost Carriers ("LCCs")

Figure 2-9 shows the top 25 LCCs in Europe for 2007 in terms of weekly flights. The four biggest LCCs are Ryanair, easyJet, Air Berlin and Flybe with 6 348, 6 117, 3 850 and 3 102 flights per week respectively. Flights per week decline sharply among the first six carriers and then rather gradually down to 25th place with Air Southwest offering only 242 flights per week. The market volume regarding flights per week is about 36 000 flights per week and roughly a third of the FSNC market. Average seat capacity per flight is 149 seats - 22 seats more than FSNCs offer on average. Figure 2-10 shows the top 25 LCCs in Europe in terms of seats offered. The top rankings are largely unchanged. However, Ryanair extended its lead compared to the number of seats offered by the following carriers. flybe switched places with TUIfly and Meridiana with Vueling Airlines. The number of seats offered range from 1 200 000 for Ryanair to 23 600 for Volare S.p.a.

Figure 2-9: Top 25 LCCs in Europe in terms of flights per week

Source: OAG 2007

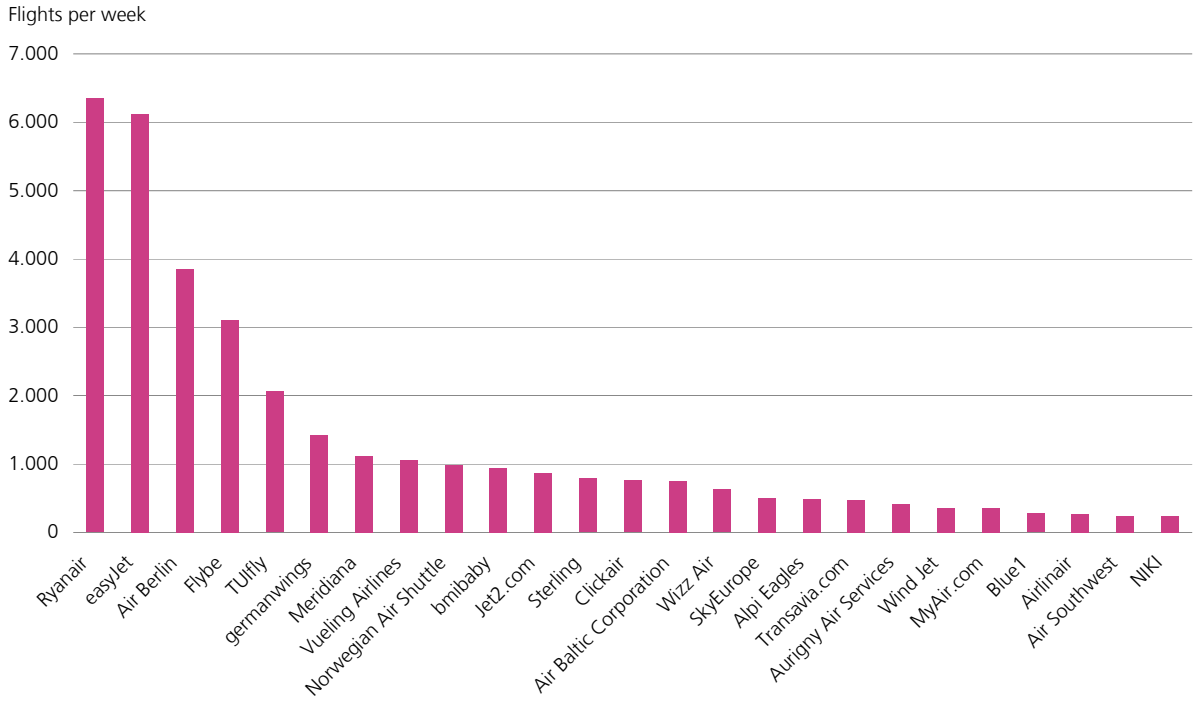
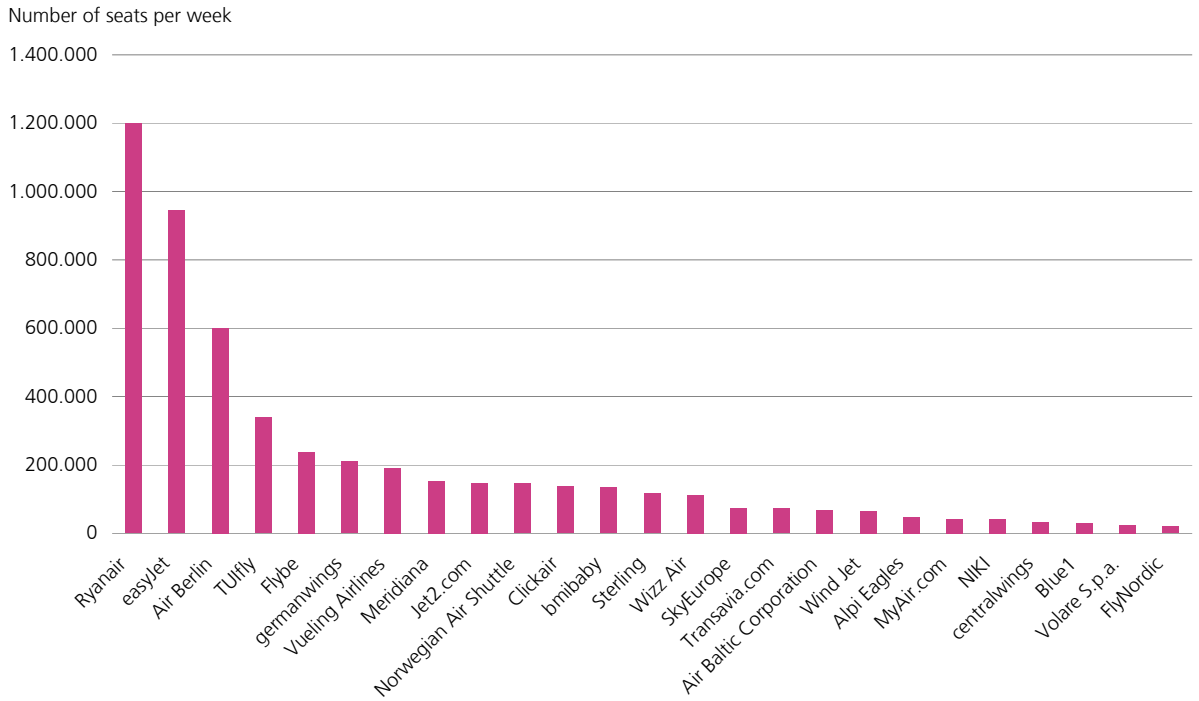


Figure 2-10: Top 25 LCCs in Europe in terms of seats per week

Source: OAG 2007



2.1.1.3 Regional Carriers ("Regionals")

Figure 2-11: Top 25 Regionals in Europe in terms of flights per week

Source: OAG 2007

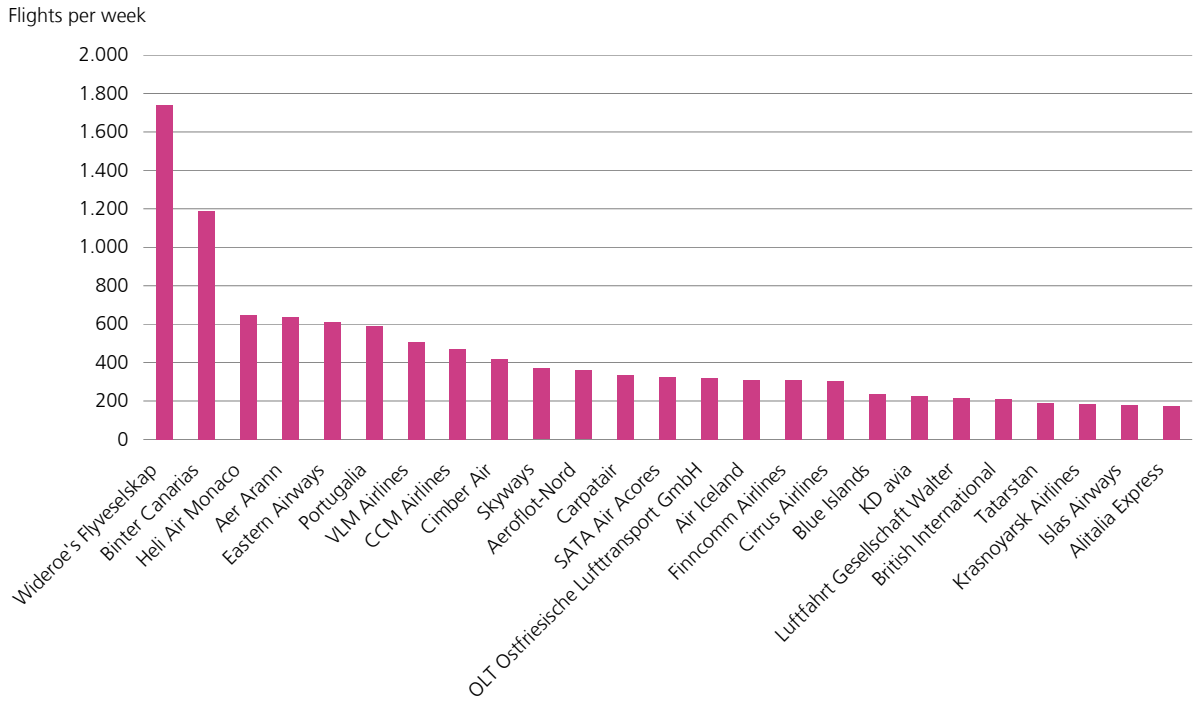
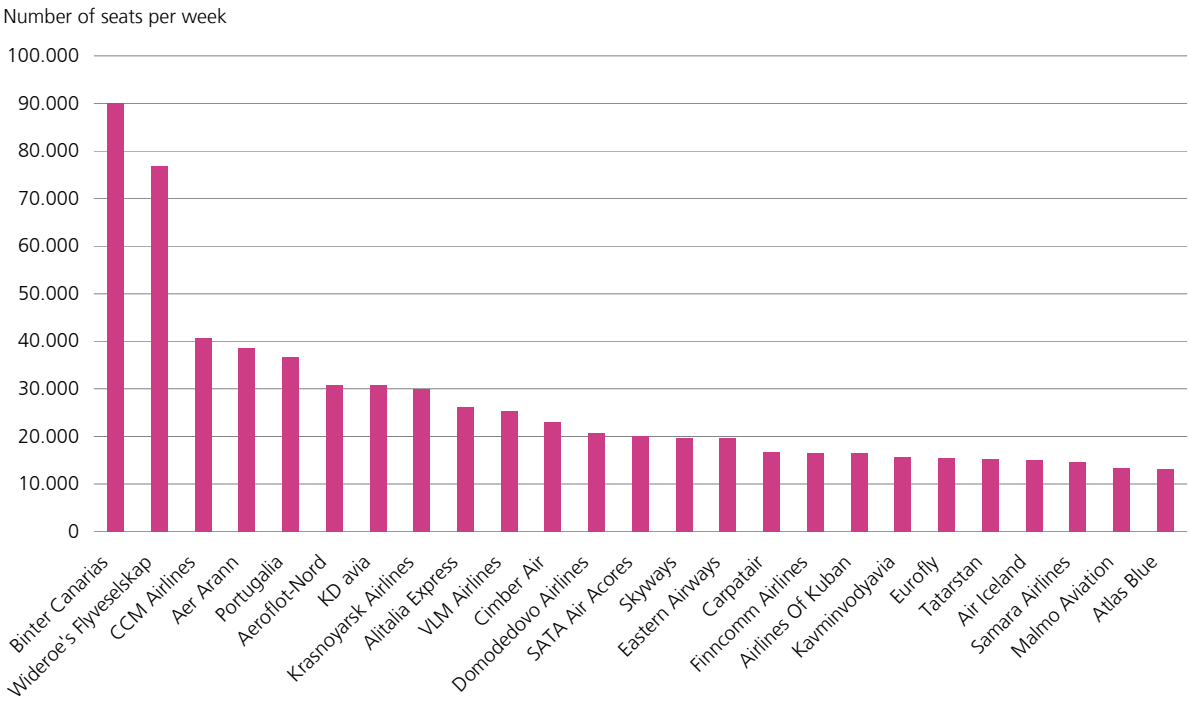


Figure 2-11 shows the top 25 Regionals in Europe for 2007 in terms of weekly flights. The 2 biggest Regionals are Widerøe's Flyveselskap and Binter Canarias with 1 700 and 1 200 flights per week respectively. The subsequent regional carriers only offer between around 600 and 200 flights per week. The third ranked Regional, Heli Air Monaco, offers 646 flights per week (operated by helicopters only), the decline thereafter down to 25th place is rather slight. Market volume is 16 000 flights and 939 240 seats per week, which is again only a fraction of the FSNC market. The average seat capacity per flight of 59 is rather low, caused by the high share of short haul and feeder flights with regional aircraft such as ATR 42 and Canadair Regional Jet.

Figure 2-12 shows the top 25 Regionals in Europe in terms of seats offered. The ranking differs significantly from the flights per week ranking. Widerøe's Flyveselskap and Binter Canarias again occupy the first two places; however, rankings have changed due to the higher average seat capacity per flight of 76 for Binter Canarias and only 44 for Widerøe's Flyveselskap. However, both Regionals again offer far more seats than the remaining top 25 Regionals. Rankings in terms of weekly flights and seats differ significantly, one reason being the wide range of average seat capacity per flight of each airline. Average seat capacity per flight ranges from five for Heli Air Monaco, which is a helicopter service, to 181 for Domodedovo Airlines, which is not in the top 25 ranking in terms of flights per week. However, Domodedovo Airlines is placed 12th in terms of seats offered per week due to the comparatively high average seat capacity offered. The market of Regionals is very heterogeneous, as a result of the majority of the airlines being rather small.

Figure 2-12: Top 25 Regionals in Europe in terms of seats per week

Source: OAG 2007



2.1.1.4 Holiday / Charter Carriers ("Charters")

Figure 2-13 shows the top 25 charter airlines in Europe for 2007 in terms of weekly flights. The 3 biggest charter airlines are Condor, First Choice Airways and Thomsonfly with 807, 751 and 740 flights per week respectively. Thereafter, charter airlines become rapidly smaller in terms of flights per week. Market volume is 6 431 flights and about 1 200 000 seats per week, which is only a fraction of the FSNC market. However, the market is concentrated on around eight airlines again. The average seat capacity per flight of 190 seats is significantly higher than the corresponding value of other airline types, one reason being the need to keep the seat-km costs low and the airlines' operational possibility of limiting flight frequencies.

Figure 2-13: Top 25 charter airlines in Europe in terms of flights per week

Source: OAG 2007

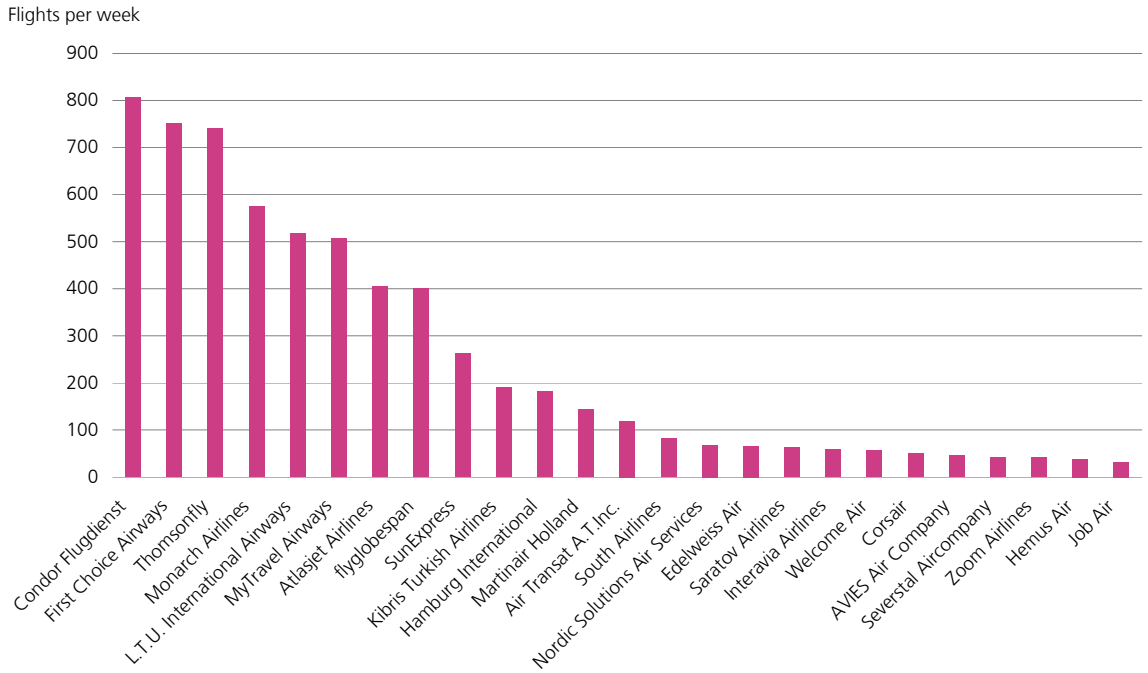
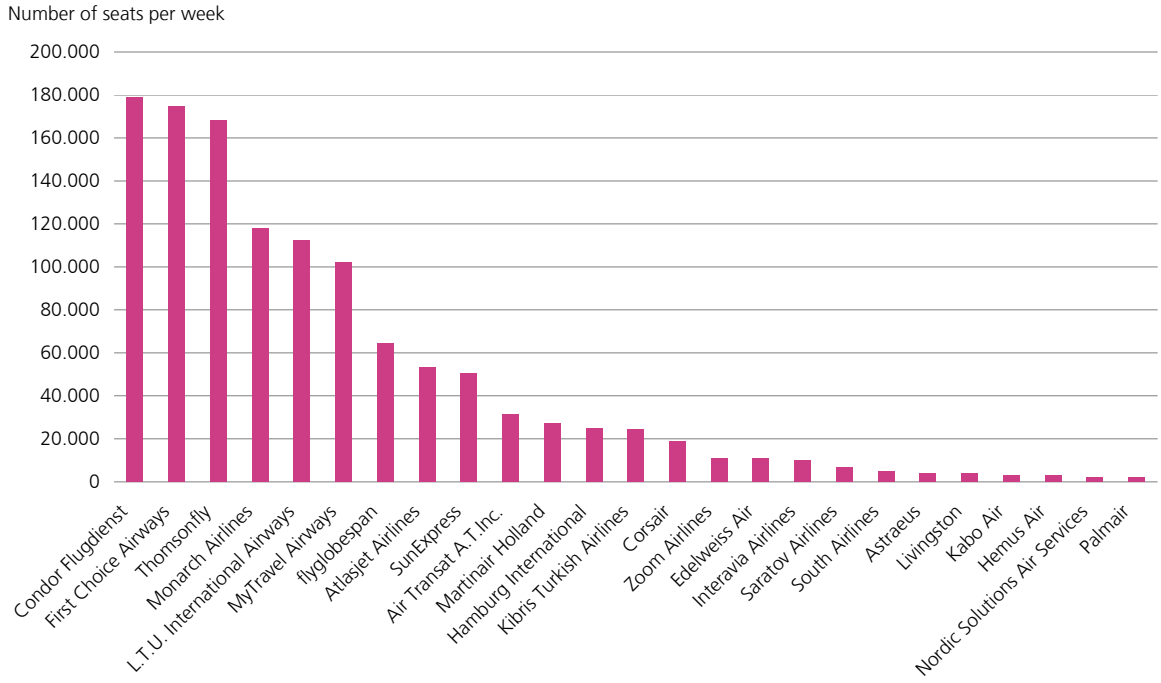


Figure 2-14 shows the top 25 charter airlines in Europe in terms of seats offered. The ranking is largely unchanged within the top rankings with Condor, First Choice Airways and Thomsonfly occupying the first three places.

Figure 2-14: Top 25 charter airlines in Europe in terms of seats per week

Source: OAG 2007



2.1.2 Air Transport Demand

The total number of airlines worldwide is not known exactly and is constantly changing due to companies entering and exiting the market. This analysis therefore includes only a sub-total of the number of airlines. In order to give a comprehensive overview of the world's major airlines, the data used in this chapter is based on data provided by Airline Business magazine as it shows the yearly performance figures for 200 major airlines, as well as monthly updates of current performance figures. Airlines mentioned in the category "Europe" contain airlines from EU-27 and candidate countries. Financial reports from certain companies have also been taken into account. All estimated figures have been indicated individually where they appear.

All figures are presented using the same format. This shows not only the type of airline and geographical region, but also the 2007 traffic data and airline ranking (based on revenue passenger kilometres). To aid comparison, each airline is given both a ranking for its class and an overall ranking based on all categories analysed. In order to give a comprehensive overview of the airline situation, the analysis is mainly based on the number of passengers carried and the revenue passenger kilometres as well as the average airline load factor. Other aspects, such as transport distance per passenger, are also taken into account. The airline ranking of 2006 is shown as well.

The classification of airlines follows a model used by the DLR's Air Transport and Airport Research Unit in other publications. In several cases, this classification differs from the one used by the magazine Airline Business. Therefore, a direct comparison with statistics published in recent issues of the magazine is only possible to a limited extent. Because other chapters of this report use the DLR classification, it was decided also to use this system in this chapter so that the data can be compared as easily as possible with other topics in this report.

2.1.2.1 Full Service Network Carriers ("FSNC")

The following Table 2-1 gives an overview of the 50 leading Full Service Network Carriers in 2007 and ranks the airlines according to individual performance.

As was the case in the preceding year, American Airlines led both the Full Service Network Carrier rankings and the overall airline rankings. American Airlines is a member of the oneworld Alliance operating from its major hubs at Dallas/Fort Worth and Chicago O'Hare. In total, 6 of the top 10 carriers in this class originate from North America, which illustrates the importance of this mode of transport in the United States. Number 2 in this ranking is (as in the preceding year) a major European airline, the Air France-KLM Group.

Table 2-1: The top 50 Full Service Network Carriers worldwide

Source: Airline Business

Top 50 FSNC AIRLINES								
2007 RPK class	Rank 2006 RPK class	Rank 2007 RPK total	Airline	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	1	1	**American Airlines**	North America	98.20	222,719	273,307	81.5
2	2	2	**Air France-KLM Group**	Europe	74.80	207,227	256,314	80.8
3	4	3	**Delta Air Lines**	North America	109.20	196,403	244,188	80.4
4	3	4	**United Airlines**	North America	68.40	188,857	228,201	82.8
5	5	5	**Continental Airlines**	North America	51.00	135,655	165,951	81.7
6	8	6	**Lufthansa**	Europe	56.40	117,656	158,881	77.0
7	6	7	**Northwest Airlines**	North America	53.70	117,335	138,603	84.7
8	7	9	**British Airways**	Europe	33.10	112,946	149,488	75.6
9	18	10	**US Airways [1]**	North America	57.90	98,571	122,030	80.8
10	10	11	**Qantas**	Asia-Pacific	36.40	97,622	122,119	79.9
11	12	12	**Emirates**	Middle East	21.20	94,346	118,290	79.8
12	11	13	**Singapore Airlines**	Asia-Pacific	19.10	91,485	113,919	80.3
13	9	14	**Japan Airlines**	Asia-Pacific	47.20	85,888	124,383	69.1
14	14	15	**Cathay Pacific**	Asia-Pacific	23.30	81,801	102,462	79.8
15	15	16	**China Southern Airlines**	Asia-Pacific	56.90	81,172	109,733	74.0
16	13	17	**Air Canada**	North America	33.00	74,601	91,835	81.2
17	17	18	**Air China**	Asia-Pacific	34.80	66,986	85,257	78.6
18	16	19	**All Nippon Airways**	Asia-Pacific	50.40	61,224	90,937	67.3
19	19	20	**Thai Airways**	Asia-Pacific	19.60	60,305	76,830	78.5
20	22	21	**China Eastern Airlines**	Asia-Pacific	39.20	57,180	77,713	73.6
21	21	22	**Korean Air**	Asia-Pacific	22.80	55,354	76,181	72.7
22	20	23	**Iberia**	Europe	26.90	54,229	66,454	81.6
23	26	27	**Virgin Atlantic Airways**	Europe	5.60	40,546	53,046	76.4
24	23	28	**Malaysia Airlines**	Asia-Pacific	14.00	40,096	56,104	71.5
25	24	29	**Alitalia**	Europe	24.60	38,832	52,253	74.3
26	27	31	**China Airlines**	Asia-Pacific	10.30	33,793	43,591	77.5
27	31	32	**TAM Linhas Aéreas**	Latin America	27.90	33,500	47,599	70.4
28	36	33	**Qatar Airways**	Middle East	8.90	32,438	41,933	77.4
29	28	34	**Saudi Arabian Airlines**	Middle East	18.20	30,604	48,166	63.5
30	29	35	**Alaska Airlines**	North America	17.60	29,688	38,951	76.2
31	34	36	**THY Turkish Airlines**	Europe	19.00	26,874	39,384	73.6
32	32	39	**Air New Zealand**	Asia-Pacific	12.50	13,760	35,113	76.5
33	39	40	**Swiss**	Europe	12.70	25,852	32,186	80.3
34	38	41	**Aeroflot Russian Airlines**	Asia-Pacific	8.20	24,675	35,119	70.3
35	33	42	**South African Airways**	Africa	7.40	24,349	33,150	73.5
36	35	43	**EVA Air**	Asia-Pacific	6.20	24,226	29,785	81.3
37	44	44	**LAN Airlines**	Latin America	11.10	24,001	31,556	76.1
38	40	45	**Asiana Airlines**	Asia-Pacific	13.90	23,482	31,827	73.8
39	41	48	**Hainan Airlines**	Asia-Pacific	15.00	21,691	27,072	80.1
40	45	49	**Finnair**	Europe	8.70	20,304	26,878	75.5
41	43	50	**Austrian Airlines**	Europe	10.80	20,050	26,552	75.5
42	46	52	**TAP Portugal**	Europe	7.80	19,224	26,943	71.4
43	42	54	**Air India**	Asia-Pacific	4.10	18,710	30,114	62.1
44	65	56	**Etihad Airways**	Middle East	4.60	17,733	25,788	68.8
45	48	58	**Philippine Airlines**	Asia-Pacific	7.50	17,276	21,828	79.1
46	47	59	**El Al**	Middle East	3.70	17,068	19,750	86.4
47	57	60	**Jet Airways**	Asia-Pacific	11.40	16,914	24,447	69.2
48	49	62	**Garuda Indonesia**	Asia-Pacific	9.90	16,283	22,439	72.6
49	50	65	**Aeroméxico**	Latin America	8.40	15,650	22,670	69.0
50	54	69	**Aer Lingus**	Europe	9.30	14,807	19,633	75.4

[1] 2007 and 2006 annual traffic is for combined US Airways and America West

A comparison ranked by the number of passengers lifts another US airline, Delta Airlines, to the number one spot ahead of American Airlines and the Air France-KLM Group.

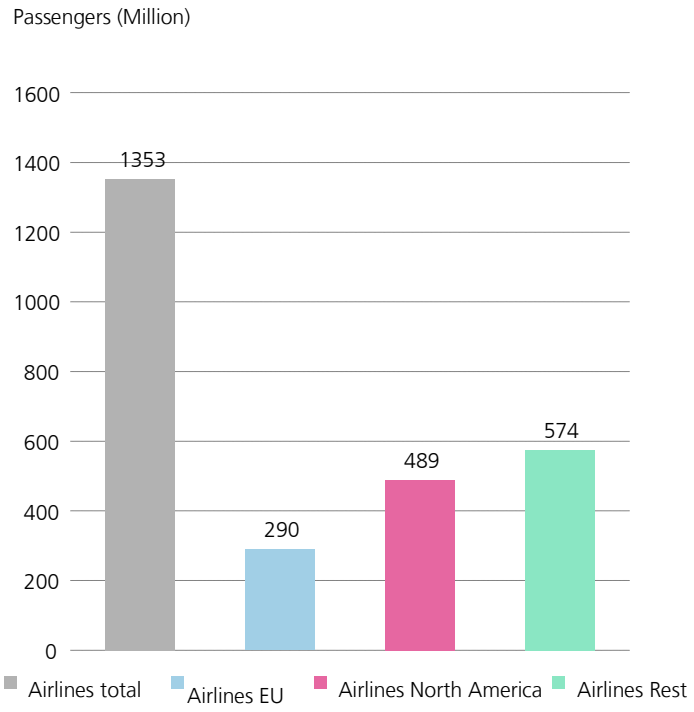
In 2007, 12 European airlines, 8 North-American airlines, 21 airlines originating from the Asia-Pacific region and 9 from Latin America, the Middle East and Africa are to be found among the top 50 FSN Carriers.

The Figure 2-15 shows airline passenger numbers for 2007, both as a total and split according to region. The regions Asia-Pacific, Middle East, Africa and Latin America are grouped under "Airlines Rest of World".

North American airlines account for the largest proportion, with a total of 489 million passengers (36.1%) in the year 2007, compared to 290 million for European airlines (21.4%). Given the limited number of North American carriers in the data set, these figures again highlight the size of these airlines compared to their European counterparts.

Figure 2-15: Number of passengers carried by the top 50 FSNCs in 2007,

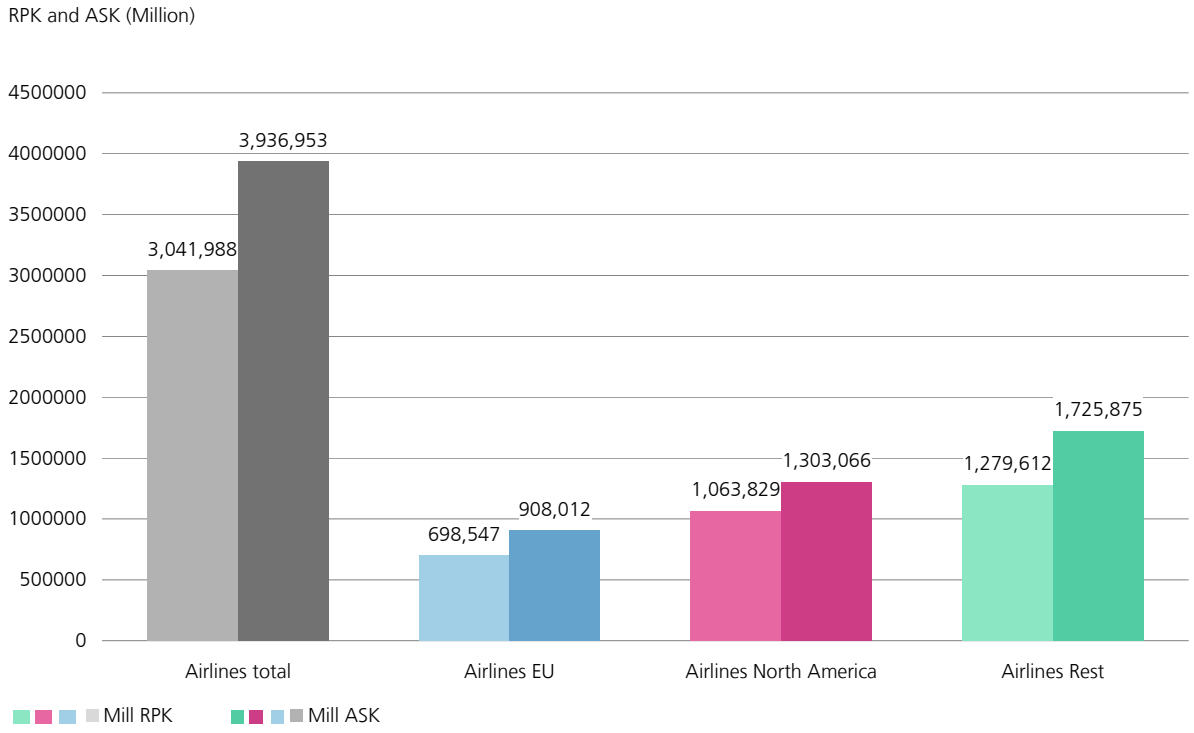
Source: DLR calculations based on Airline Business data



Revenue Passenger Kilometres and Available Seat Kilometres for Full Service Network Carriers are shown in Figure 2-16.

Figure 2-16: RPK and ASK for the top 50 FSNCs in 2007

Source: DLR calculations based on Airline Business data



North American airlines represent the largest share of revenue passenger kilometres (1063 billion of 3041 billion in total). Their average length of passenger haul is 2395 km, which is about 100 km less than the average distance travelled on airlines in the "Rest-of-World" group. In this group the Asian airlines show significantly longer distances travelled per passenger than the average. Conversely, the European airlines fall with 2230 km per passenger below the overall average of 2308 km per passenger.

In 2006, US airlines were subject to debt restructuring measures ("Chapter 11"), which for some airlines led to a stagnation of passenger numbers. The available seat kilometres were also significantly reduced due to the airlines taking advantage of the special insolvency situation, for example through the premature termination of leasing contracts and reductions in staff numbers. As a result, Delta Air Lines decreased its ASK from 6.7% in 2005 to 5.6% in 2006. Delta Air Lines emerged from its Chapter 11 restructuring process in April 2007, meaning that no further decrease is to be expected. Restructuring measures in accordance with Chapter 11 may however be required again in future from time to time in the airline business.

The ratio of available seat kilometres to revenue passenger kilometres determines the load factor. The average values are shown in the Figure 2-17.

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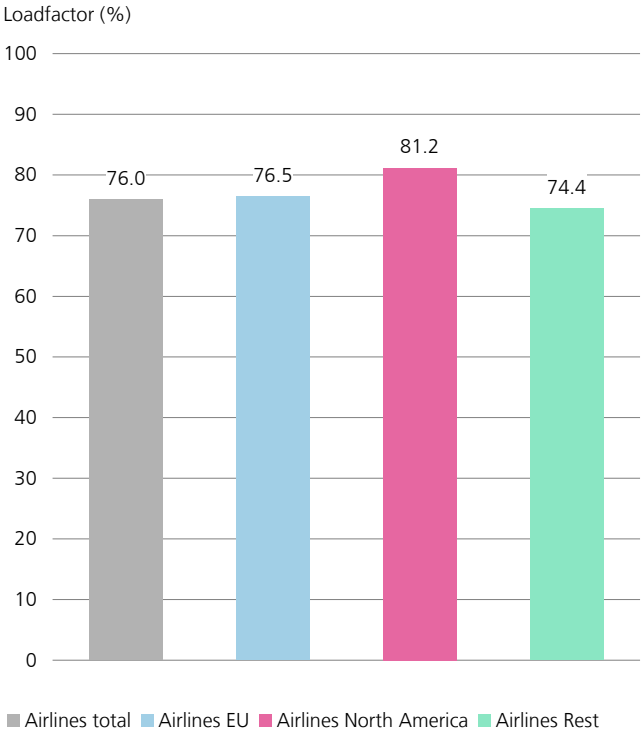
Figure 2-17: Average load factor of the top 50 FSNCs in 2007

Source: DLR calculations based on Airline Business data



Taking an average for all top-50 airlines gives a load factor of 76.0%. It is mainly those in the "Rest of World" group (74.4%) that come in below this value. In contrast, North-American airlines show a fairly high load factor of 81.2%. Their load factor also exceeded 80% in the preceding year. In Europe, five airlines (Air France-KLM, Iberia, Lufthansa, Swiss and Virgin Atlantic) score above average, while only three (Air France-KLM, Iberia and Swiss) reach values of more than 80%.

2.1.2.2 Low Cost Carriers

The following Table 2-2 shows the top 25 low cost airlines in 2007, ranked according to revenue passenger kilometres.

Of the top 25 Low Cost Carriers, 11 are European and 5 are from North America. The leading North-American LCCs are generally significantly bigger than their European equivalents, with two US carriers featuring in the top 5. The largest company, Southwest Airlines, which originates from the USA, even ranks among the world's overall top 10 airlines. By contrast, there are numerous relatively small Low Cost Carriers in Europe.

Table 2-2: The top 25 Low Cost Carriers worldwide

Source: Airline Business

Top 25 LCC AIRLINES **2007**

Rank 2007 RPK class	Rank 2006 RPK class	Rank 2007 RPK total	Airline	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	1	8	**Southwest Airlines**	North America	88.70	116,361	160,314	72.6
2	2	24	**Ryanair**	Europe	50.90	50,859	66,534	82.0
3	5	25	**Air Berlin**	Europe	28.20	46,070	59,380	77.3
4	3	26	**JetBlue Airways**	North America	21.40	41,411	51,334	80.7
5	4	30	**easyJet**	Europe	37.20	36,976	43,501	83.7
6	6	38	**AirTran Airways**	North America	23.80	27,832	36,512	76.2
7	9	51	**Gol Transportes Aereos**	Latin America	22.40	19,966	29,196	68.4
8	8	53	**WestJet Airlines**	North America	13.00	18,888	23,403	80.7
9	-	55	**TUIfly**	Europe	9.80	18,080	21,244	85.1
10	7	57	**Virgin Blue**	Asia-Pacific	15.30	17,563	21,642	81.2
11	10	64	**Frontier Airlines**	Asia-Pacific	10.40	15,806	20,095	78.7
12	12	87	**Spirit Airlines**	North America	7.00	11,023	13,615	81.0
13	13	91	**Jetstar**	Asia-Pacific	7.60	10,697	14,217	75.2
14	11	93	**Transavia Airlines**	Europe	5.40	10,486	13,288	78.8
15	24	96	**AirAsia**	Asia-Pacific	8.60	9863	12,391	79.6
16	15	115	**germanwings**	Europe	7.90	7075	8692	81.4
17	14	122	**Lion Airlines**	Asia-Pacific	6.60	6698	7500	89.3
18	16	124	**GB Airways**	Europe	3.00	6294	7703	81.7
19	17	125	**Air Deccan**	Asia-Pacific	7.30	6283	8234	76.3
20	19	130	**Jet2.com**	Europe	3.90	5665	7697	73.6
21	18	131	**Norwegian**	Europe	6.40	5586	6956	80.3
22	22	134	**Vueling Airlines**	Europe	6.20	5501	7536	73.0
23	26	149	**Cebu Pacific Air**	Asia-Pacific	5.40	4603	5753	80.0
24	28	164	**spiceJet**	Asia-Pacific	3.30	3749	5769	65.0
25	23	178	**SkyEurope Airlines**	Europe	3.6	3680	4617	79.7

Unlike with the FSNCs, the highest number of passengers is seen for the European LCCs. However, the contribution of the North American LCCs is greater than that of the "Rest-of-World" group of airlines, which are mainly of Asian origin. The Figure 2-18 shows the total number of passengers carried by LCCs worldwide and by region.

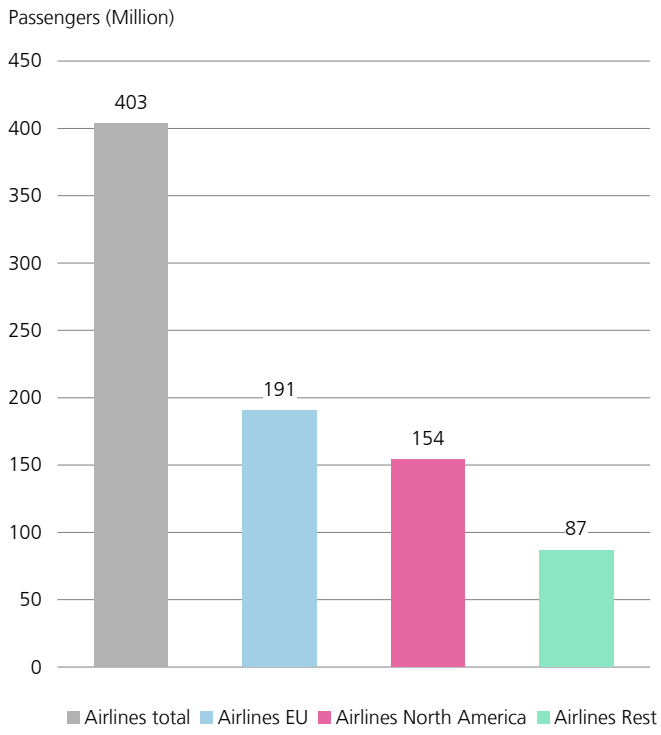


Figure 2-18: Number of passengers carried by the top 25 LCCs in 2007

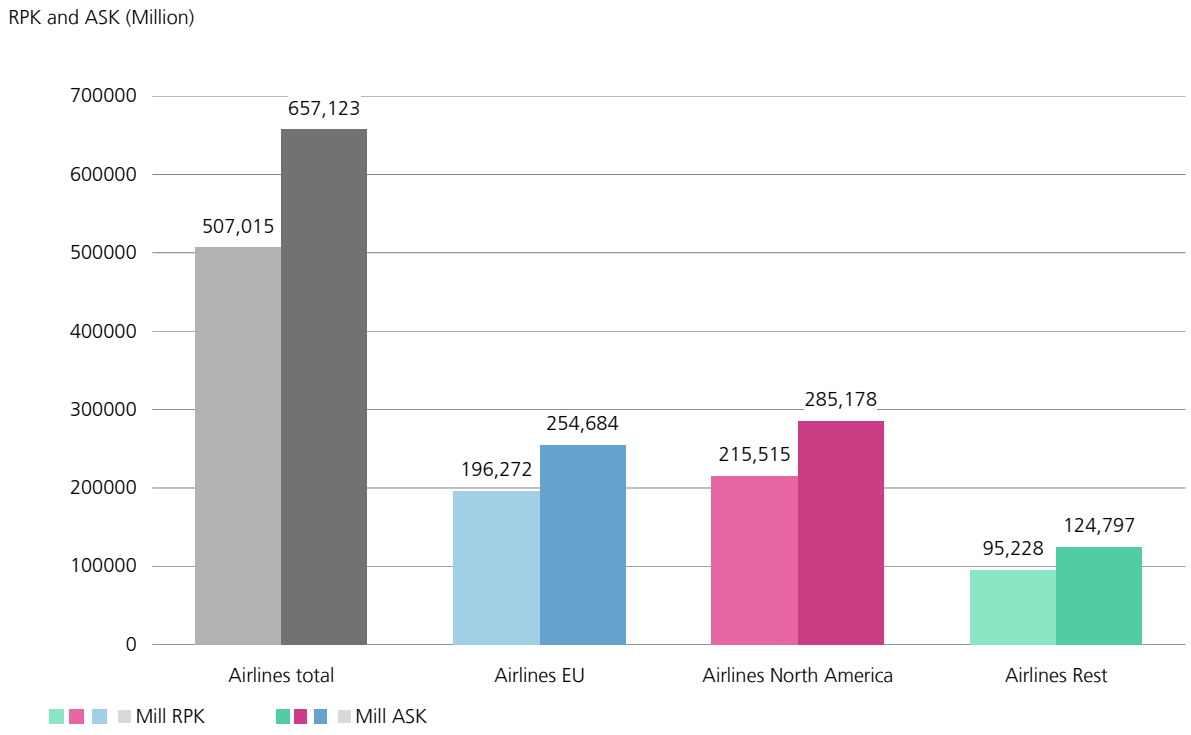
Source:
DLR calculations based on Airline Business data

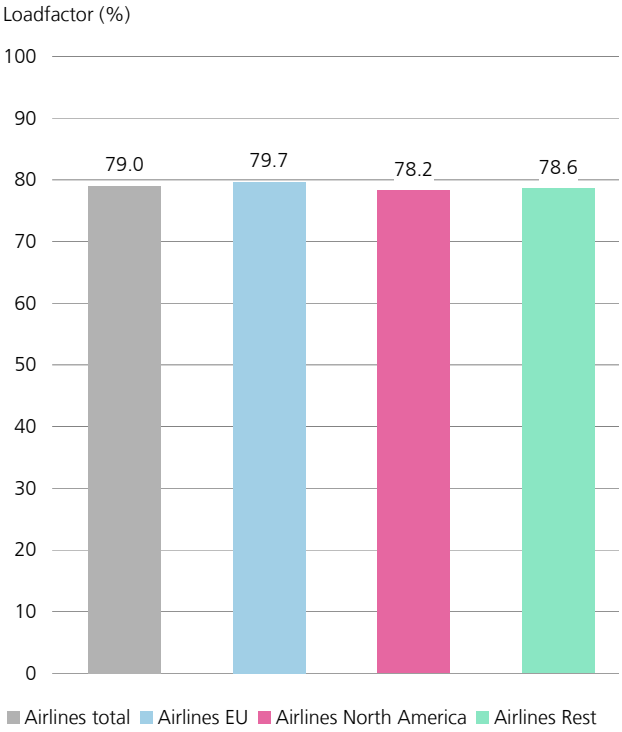
Southwest Airlines has a considerable share (22.0%) of the total number of passengers carried by all of the top 25 carriers. They are followed by JetBlue Airways (5.31%) and the European airlines Ryanair (12.62%) and easyJet (9.22%), meaning that nearly 50% of all passengers carried by the top 25 LCCs can be attributed to these four airlines.

The mean distances travelled in Europe are only about 1000 km per passenger, compared to a global average of 1300 km. In North America, distances per passenger amount to approximately 1500 km; for Asia-Pacific and Latin America the figure is 1400 km. Due to Europe's geographical structure, shorter city pairs are more often offered here than in other regions such as North America.

Figure 2-19: RPK and ASK for the top 25 LCCs in 2007

Source: DLR calculations based on Airline Business data





For the LCCs, the average seat load factor is 75.9%. European airlines show an above-average load factor of 79.7%, while the North American airlines' level is significantly lower at 78.2%. The following Figure 2-20 shows the load factor by airline group in 2007.

Figure 2-20: Average seat load factor for the top 25 LCCs in 2007

Source:
DLR calculations based on Airline Business data

A noticeable difference here is the seat load factor achieved by Low Cost Carriers compared to that of Full Service Network Carriers. Whereas the European LCCs have an average load factor approximately 3.2 percentage points above that of European FSNCs, the reverse is true for the North American airlines (FSNC load factor of 81.2% versus 78.2% for LCCs). European Low Cost Carriers still differ from the traditional airlines in respect of their business concept (low overheads, high load factor), although the situation in North America has now changed significantly, mainly in the last year, due to the restructuring measures undertaken by several traditional airlines. In the course of internal restructuring under Chapter 11 discussed above, several major airlines removed capacity from the market in order to lower costs and increase efficiency. The improved business strategies have resulted in a visible increase in load factor levels.

2.1.2.3 Regional Carriers

Airlines have been grouped in this class according to the classification system discussed in the chapter titled "Airlines – Supply", which means that the data here can only be compared indirectly to the data on "Regional Carriers" published by Airline Business.

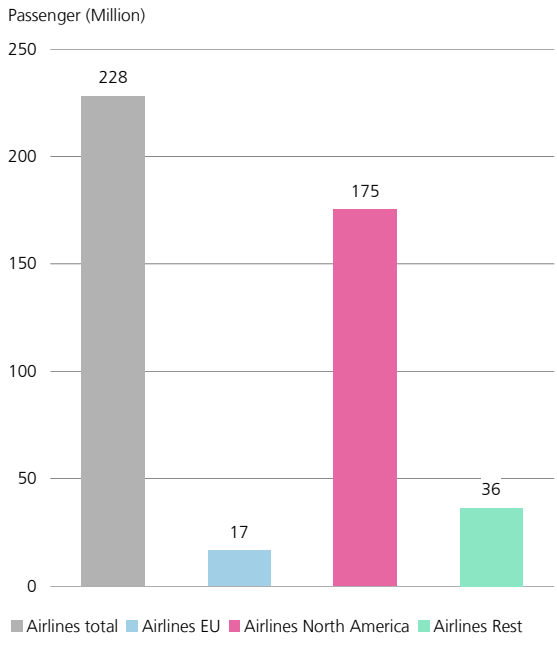
The dominance of North American airlines is obvious: 16 of the top 25 regional airlines are from this region, compared to only two airlines from Europe and only five airlines originating from Asia-Pacific. SkyWest Airlines tops this group in terms of revenue passenger kilometres. This airline also ranks at number 37 in the top 50 for all classes. SkyWest Airlines is also the leading airline in terms of the number of passengers carried. More than 34 million passengers were carried; which is twice the number of passengers carried by the second largest company, Express Jet. The following Table 2-3 gives an overview of the top 25 regional airlines in 2007.

Table 2-3: The top 25 Regional Carriers worldwide

Source: Airline Business

2007

Rank 2007 RPK class	Rank 2006 RPK class	Rank 2007 RPK total	Airlines	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	1	37	**SkyWest Airlines**	North America	34.40	28,789	36,957	77.9
2	2	63	**ExpressJet**	North America	17.40	16,204	21,842	74.2
3	3	76	**American Eagle Airlines**	North America	18.50	13,422	18,044	74.4
4	6	77	**Shenzhen Airlines**	Asia-Pacific	9.50	13,346	17,161	77.8
5	5	80	**Hawaiian Airlines**	North America	7.10	12,759	9,076	87.4
6	7	88	**Xiamen Airlines**	Asia-Pacific	9.20	10,974	14,912	73.6
7	4	89	**Mesa Airlines**	North America	16.10	10,944	14,451	75.7
8	8	95	**Atlantic Southeast Airlines**	North America	12.00	9949	12,988	76.6
9	11	101	**Sichuan Airlines**	Asia-Pacific	6.80	8524	10,817	78.8
10	12	104	**Pinnacle Airlines**	North America	11.50	7883	10,624	74.2
11	10	108	**Comair**	North America	9.30	7414	9872	75.1
12	14	181	**Air Canada Jazz**	North America	9.70	6861	9234	74.3
13	9	119	**SAS Norge**	Europe	9.70	6846	9836	69.6
14	13	120	**Midwest Airlines**	North America	3.80	6786	8733	77.7
15	16	133	**Chautauqua Airlines**	North America	7.80	5516	7335	75.2
16	24	136	**VIM Airlines**	Asia-Pacific	2.10	5295	7021	75.4
17	25	140	**Allegiant Air**	North America	3.30	5054	6216	81.3
18	17	147	**Horizon Air**	North America	7.60	4695	6396	73.4
19	20	150	**Lufthansa CityLine**	Europe	6.80	4538	6653	68.2
20	21	162	**Air Jamaica**	Latin America	1.70	4345	6432	67.6
21	19	156	**Shuttle America**	North America	4.00	4295	5841	73.6
22	22	169	**Aviacsa**	Latin America	3.40	4096	6301	65.0
23	33	163	**Republic Airlines**	North America	4.50	3973	5203	76.4
24	18	172	**US Airways Express**	North America	8.20	3676	5316	69.2
25	29	174	**Skymark Airlines**	Asia-Pacific	3.70	3358	4471	75.1



The dominance of North American airlines in this class is also illustrated by the following chart.

Figure 2-21: Number of passengers carried by the top 25 Regional Carriers

Source: DLR calculations based on Airline Business data

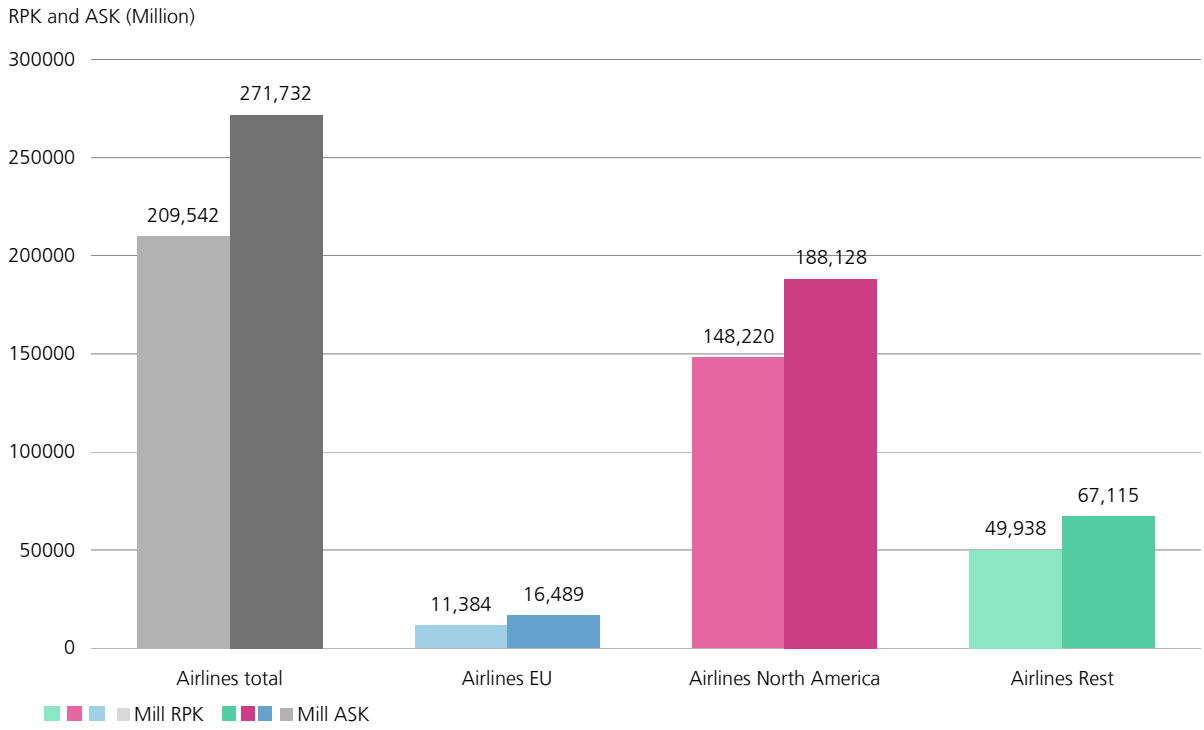
Regional Carriers have much greater importance in the USA than they do in Europe or Asia due to the geographical situation on the North American continent and in the USA in particular. Although the USA is much less densely populated than Europe, long distances are mostly covered by plane. Small airports are used

mainly by regional jets, which provide connectivity to the main hubs. In Europe, the outsourcing of regional services is less common than in the USA. Often, FSNCs cover short-distance city pairs themselves. Also, an increasing level of cooperation between airlines and railway operators can be observed, in order to offer trains as feeder services.

The above analysis of passenger kilometres achieved has already demonstrated the dominance of North American airlines in the rankings. Figure 2-22 shows the regional distribution of the total RPKs and ASKs achieved by airlines within this class. It can be seen that in 2007 more than 70% of the total RPKs and ASKs (by the top 25 airlines) were attributable to North American airlines.

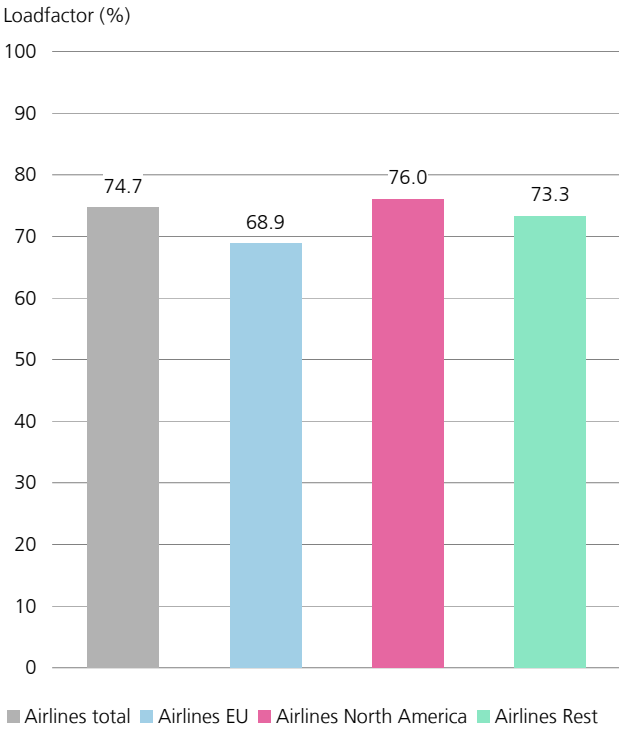
Figure 2-22: RPK and ASK for the top 25 Regional Carriers

Source: DLR calculations based on Airline Business data



The big differences seen here are mainly due to the number of airlines and the number of passengers, but are also in part due to the greater average distance per passenger. While in Europe and Asia the mean distance flown per passenger is 598 km and 641 km respectively, North American regional airlines show an average distance flown of 911 km per passenger. Overall, the average across all airlines is 877 km.

Due to the gap between available seat kilometres and passenger kilometres actually performed, the corresponding seat load factor is lower on average for this airline class than for the other classes. The overall average value (74.7%) is significantly lower than those achieved by FSNCs,



LCCs and Holiday/Charter Carriers (see below). European airlines have the lowest value in this class, indeed in almost any airline class (68.9%). On average, aircraft of these airlines are only loaded to two-thirds capacity. By contrast, the American airlines achieve an average seat load factor of 76.0%, which significantly exceeds the mean value. Nevertheless, there are only two airlines in this class that make the 80% range of the seat load factor.

Figure 2-23: Average seat load factor for the top 25 Regional Carriers

Source:
DLR calculations based on Airline Business data

2.1.2.4 Holiday/Charter Carriers

The following table lists the top 10 holiday and charter airlines.

Table 2-4: The top 10 Charter Airlines worldwide

Source: Airline Business

2007

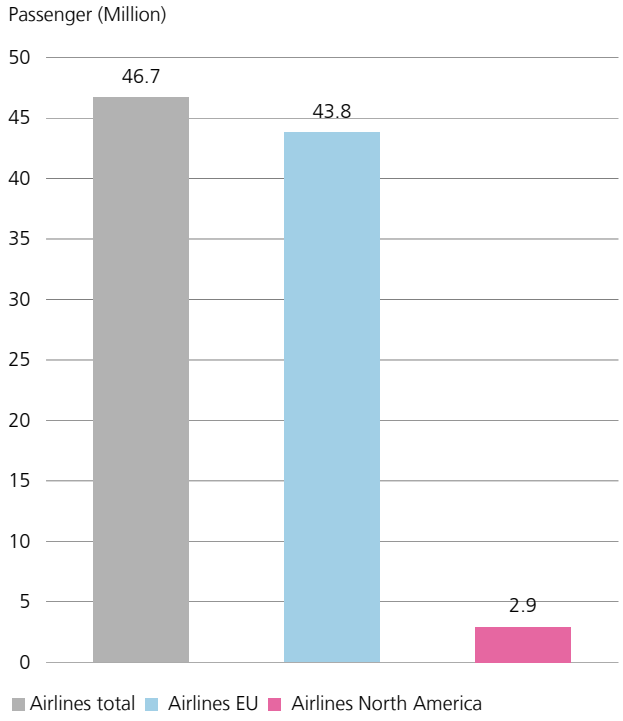
Rank 2007 RPK class	Rank 2006 RPK class	Rank 2007 RPK total	Airline	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	1	46	**Thomsonfly**[1]	Europe	9.40	23,148	26,621	87.0
2	2	47	**Condor Flugdienst**	Europe	7.30	22,675	25,743	88.1
3	4	61	**First Choice Airways**[1]	Europe	5.60	16,763	18,151	92.4
4	6	66	**Thomas Cook Airlines**	Europe	5.00	15,492	17,956	86.3
5	5	68	**Monarch Airlines**	Europe	6.10	14,825	17,957	82.6
6	8	81	**Air Transat**	North America	2.90	12,632	14,166	89.2
7	7	82	**MyTravel Airways**	Europe	3.60	12,425	13,804	90.0
8	9	86	**Corsairfly**[2]	Europe	1.60	11,533	13,953	82.7
9	10	90	**XL Airways UK**	Europe	3.00	10,887	12,282	88.6
10	11	110	**Martinair**	Europe	2.20	8989	12,180	73.8

[1] From the year 2009 under the joint brand Thomson Airways
[2] From the year 2008 as TUIfly

The data obtained for 2007 mainly related to European charter airlines. Air Transat is the only North American airline to appear in the Top 10 ranking list, and they play only a minor role compared to the major holiday airline, Thomsonfly. The passenger numbers emphasise the strong position of European Airlines in this class thanks to the importance of European charter traffic in recent times (mainly flights to tourist destinations around the Mediterranean Sea). Europe has always been more dominant in this sector than other geographical regions (see Figure 2-24).

Figure 2-24: Number of passengers carried by the top 25 Holiday/Charter Carriers

Source:
DLR calculations based on Airline Business data



Thomsonfly was also the leading airline in terms of passengers carried during the period studied, marking this company out clearly from its closest competitors, Condor Flugdienst, First Choice Airways and Thomas Cook Airlines UK. As the leading airline, Thomsonfly carried 9.4 million passengers (more than 20% of all passengers carried by the top 10 airlines). The German-British owned Thomas Cook Airlines UK, which was founded by the merger of several travel companies, only carried around 10% of all passengers.

Analysis of the available seat kilometres and the revenue passenger kilometres data reveals the high distances travelled compared to all classes. On average, each passenger was carried over a distance of approximately 2866 km, with the European airlines even showing slightly higher values. Overall, the carrying distances are above the average rate for Full Service Network Carriers.

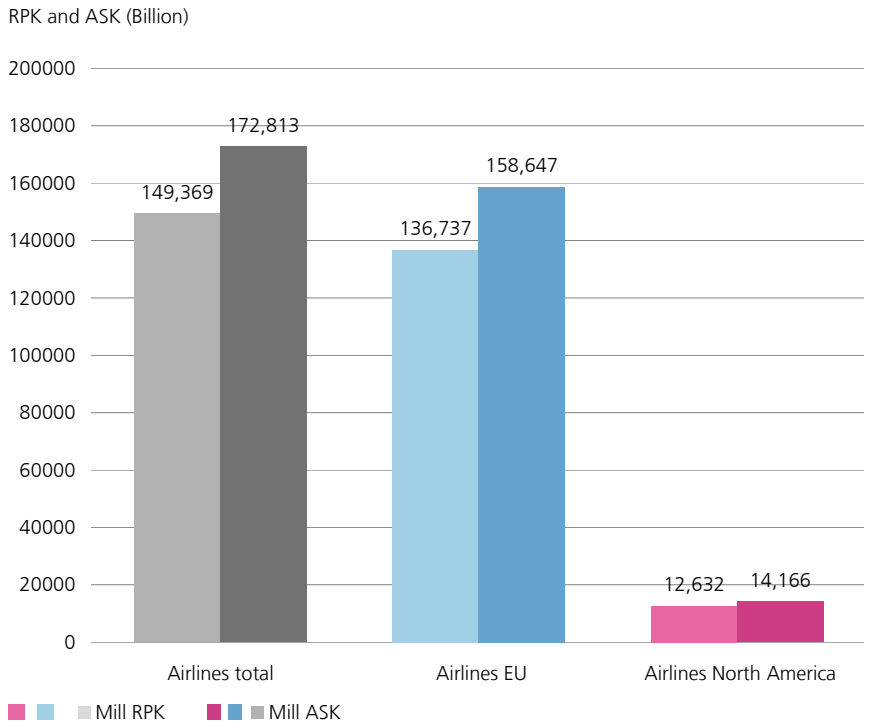


Figure 2-25 shows the number of available seat kilometres and the level of demand in 2007.

Figure 2-25: RPK and ASK for the top 10 Holiday/Charter Carriers

Source: DLR calculations according to Airline Business

The average seat load factor of all holiday/charter airlines based on the data for available seat kilometres and revenue passenger kilometres shows a relatively high average value of 86.1%. First place in this group goes to First Choice Airways (92.4% load factor), followed by MyTravel Airways (90.0%). The only North American airline in this group, Air Transat, achieved a load factor of 89.2%.

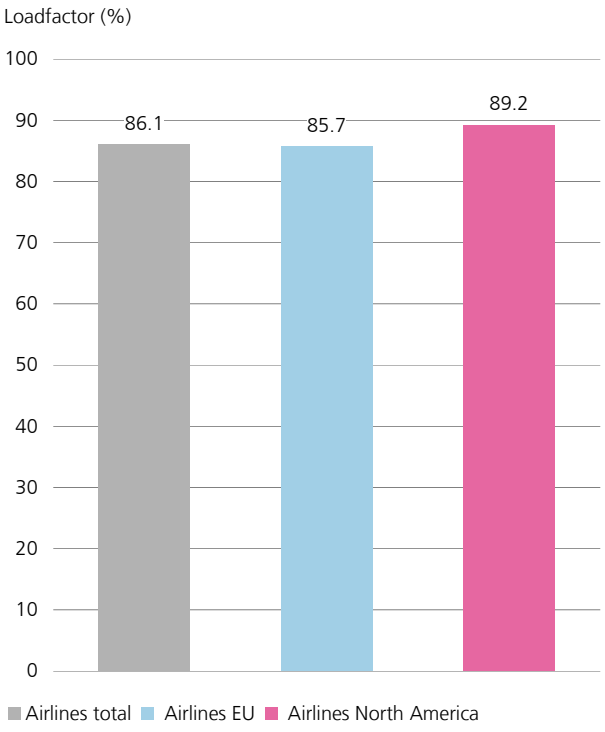


Figure 2-26: Average seat load factor for the top 25 Holiday/Charter Carriers

Source:
DLR calculations based on Airline Business data

2.1.3 Passenger Fleet

Table 2-5 shows the development of the world passenger fleet in 2007 compared to 2006. The world fleet is defined here as all passenger aircraft in commercial use. Only aircraft that were actually in service at year-end are taken into account. The total number of passenger aircraft with more than 19 seats in service at year-end 2007 stood at 19,655 - up from 18,688 at year-end 2006.

Aircraft Size	2007	2006	Percentage Change
20-39 seats	1447	1427	1.4%
40-69 seats	3228	3181	1.5%
70-119 seats	2458	2310	6.4%
120-169 seats	7001	6627	5.6%
170-239 seats	3046	2782	9.5%
240-349 seats	1859	1744	6.6%
350+ seats	616	617	-0.2%
Total	19,655	18,688	5.2%

Table 2-5: Passenger aircraft in service at year-end

Source: Ascend Online Fleets

The overall fleet growth of 5.2% reflects the growth of global air transport. However, the trend varies considerably if the different aircraft size categories are considered more closely. Smaller types of aircraft used for passenger service in particular show below average growth. This trend reflects the economics of airline operations, as well as general market growth. On the one hand, smaller aircraft are usually associated with higher operating costs per seat, while at the same time market growth means that airlines are increasingly able to operate larger aircraft in markets that until now had only sustained smaller types of aircraft. The most rapidly growing market segment is the 170-239-seater segment. Aircraft in this category include the Boeing 737-800 and 737-900, which are increasingly used by low cost carriers.

Also growing considerably is the segment comprising smaller long-range aircraft with 240 to 349 seats. The number of aircraft in service in the category with more than 349 seats has seen a drop. This is reflected by the fact that many ageing Boeing 747 jets are being replaced by smaller, more economical twin-jets such as the Airbus A330 and Boeing 777. However, the segment comprising very large passenger aircraft can be expected to grow again in future with the delivery of more Airbus A380s over the coming months and years.

Figure 2-27 depicts the development of the different fleet segments over the past 10 years. In total, the world passenger aircraft fleet grew by almost 33%. The number of aircraft at the two ends of the market (very small and very large aircraft) declined by 17.7% and 11.9% respectively. The strongest growth of 89% was seen in the market for large single-aisle and small twin-aisle aircraft in the 170 to 239 seats category. The market for medium-sized long-haul aircraft (240-349 seats) also grew at an above average rate of almost 55%.

Figure 2-27: 10-year development of the world passenger aircraft fleet

Source: Ascend Online Fleets, data as of April 2008

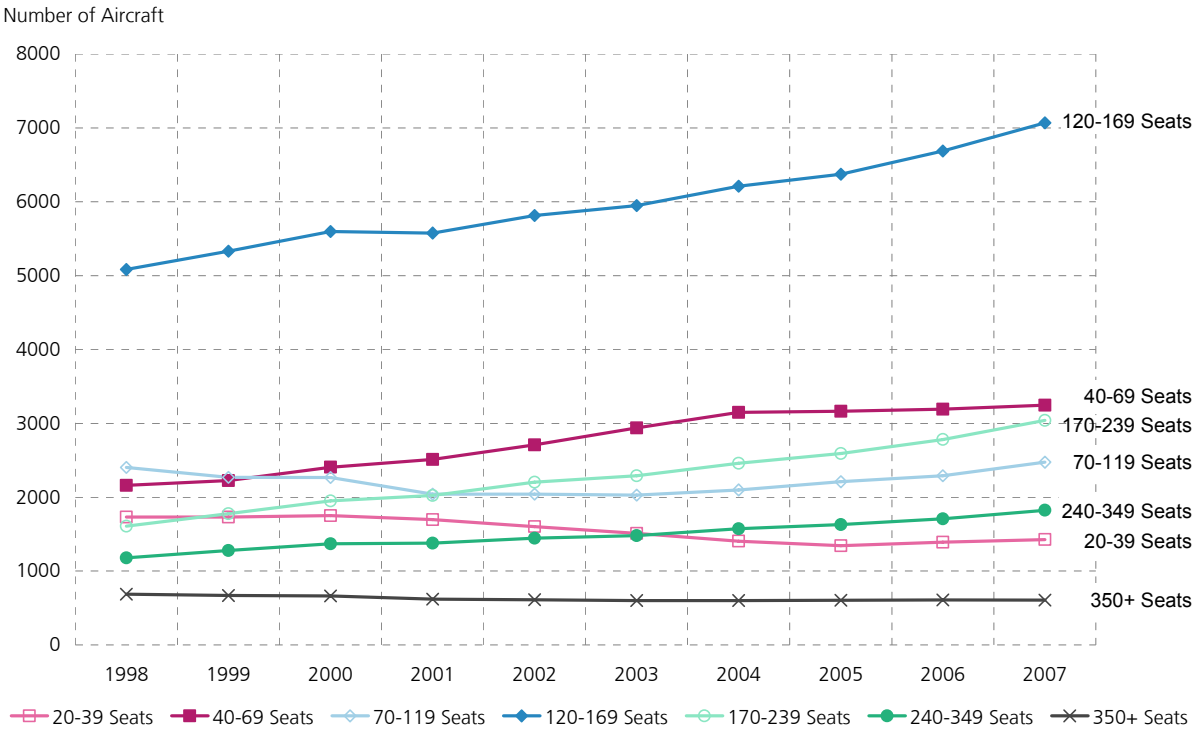


Table 2-6: Average age of passenger aircraft in service at year-end

Source: Ascend Online Fleets, data as of April 2008

Aircraft category	2007
20-39 seats	17.97
40-69 seats	12.22
70-119 seats	12.41
120-169 seats	11.19
170-239 seats	9.39
240-349 seats	9.14
350+ seats	12.89
Overall average age	**11.59**

It is interesting to note that larger aircraft are on average younger than smaller aircraft. One potential explanation is that airlines tend to use modern, fuel-efficient aircraft in the long-haul segment, as the fuel consumption advantage is higher than with short-haul aircraft.

Table 2-7: The 20 largest network carriers by fleet size at year-end 2007, mainline passenger operations only

		Regional jets and turboprops	Small single aisle jets/ turboprops	Medium single aisle jets	Large single aisle/ small twin aisle jets	Intermediate twin aisle jets	Large twin aisle jets
Pos. Operator	**Total fleet**	**Aircraft Seat Classes**					
		20-69	**70-119**	**120-169**	**170-239**	**240-349**	**350+**
1 American Airlines	**659**	0	0	391	187	81	0
2 Delta Air Lines	**445**	0	0	206	188	51	0
3 United Airlines	**404**	0	43	160	105	96	0
4 US Airways	**360**	0	11	261	79	9	0
5 Continental Airlines	**356**	0	60	192	79	25	0
6 Northwest Airlines	**347**	0	62	171	64	32	18
7 China Southern	**249**	6	5	170	45	19	4
8 Lufthansa	**246**	0	30	89	38	63	26
9 Air France	**244**	0	5	105	53	44	37
10 British Airways	**235**	0	9	81	71	53	21
11 China Eastern	**210**	14	0	150	10	36	0
12 Air China	**206**	0	6	135	24	37	4
13 Air Canada	**206**	0	57	85	49	15	0
14 Japan Airlines Internat.	**187**	0	0	42	20	82	43
15 Alitalia	**144**	0	0	98	36	10	0
16 ANA	**139**	0	5	23	23	56	32
17 Iberia	**136**	0	8	75	22	19	12
18 Qantas	**125**	0	0	51	13	36	25
19 SAS	**123**	4	28	61	19	11	0
20 Saudi Arabian Airlines	**116**	0	15	34	8	36	23
Total fleet operated by 20 largest operators	**5137**	24	344	2577	1133	811	245
Percentage of world fleet:	**26.1%**	0.5%	14.0%	36.8%	37.2%	43.6%	39.8%

Source: Ascend Online Fleets, data as of April 2008

American Airlines operates the largest jet fleet in the world. Of the 10 largest network carriers by fleet size, the top six airlines are located in the US, followed by China Southern and three European carriers, Lufthansa, Air France and British Airways. The figures given in Table 2-7 only take into account airline fleets operated by the parent company. Subsidiaries, which are usually founded or contracted to provide feeder services, are not taken into account. Smaller aircraft are therefore underrepresented in this table. Interestingly, the 20 largest network carriers in the world operate more than one quarter of the world's passenger aircraft. In the larger aircraft categories (240 seats or more), these 20 carriers have an even higher share with 42.7% of the world fleet.

Table 2-8: The 20 largest low cost airlines by fleet size at year-end 2007

Pos.	Operator	Total fleet	Regional jets and turbo-props	Small single aisle jets	Medium single aisle jets	Large single aisle/small twin aisle jets	Intermediate twin aisle jets
			Aircraft Seat Classes				
			20-69	**70-119**	**120-169**	**170-239**	**240-349**
1	Southwest Airlines	**518**	0	0	518	0	0
2	Ryanair	**150**	0	0	0	150	0
3	easyJet/easyJet Switzerland	**137**	0	0	137	0	0
4	AirTran Airways	**137**	0	87	50	0	0
5	jetBlue	**134**	0	30	104	0	0
6	Air Berlin	**89**	0	4	30	55	0
7	GOL Linhas Aereas	**78**	0	0	42	36	0
8	Flybe	**73**	24	49	0	0	0
9	WestJet	**70**	0	13	57	0	0
10	Frontier Airlines	**63**	3	11	49	0	0
11	Virgin Blue	**53**	0	3	24	26	0
12	TUIfly	**51**	0	0	15	36	0
13	Air Deccan	**41**	10	8	0	23	0
14	Kingfisher Airlines	**39**	15	0	17	7	0
15	Air Asia	**39**	0	0	9	30	0
16	Spirit Airlines	**36**	0	0	31	5	0
17	Lion Air	**31**	0	0	23	8	0
18	Jetstar	**31**	0	0	0	25	6
19	Jet2	**30**	0	0	21	8	0
20	Norwegian Air Shuttle	**25**	0	0	24	1	0
	Total fleet operated by 20 largest operators	**1825**	52	205	1151	410	6
	Percentage of world fleet:	**9.3%**	1.1%	8.3%	16.4%	13.5%	1.0%

Source: Ascend Online Fleets, data as of April 2008

The list of largest low cost carrier fleets is dominated by Southwest Airlines. Said to be the inventor of low cost flying, the airline operated 518 aircraft at the end of 2007, all Boeing 737 planes. This, in fact, not only puts them in first place among low cost airline fleets, but would also gain them second place among all aircraft operators in the world. Second in the list of low cost fleets is Ryanair with 150 aircraft. Like Southwest, Ryanair operates an all-Boeing 737 fleet, although the Irish carrier uses the slightly larger -800 model with 189 seats, while Southwest's fleet is dominated by the -700 variant with a 137 seat configuration. The top 20 low cost carriers by fleet size are relatively evenly distributed geographically: 6 carriers are from North America, 7 from Europe and 7 from Australasia.

Table 2-9: The 20 largest regional airlines by fleet size at year-end 2007

Pos.	Operator	Total fleet	Regional jets and turboprops	Regional jets and turboprops	Small single aisle jets
			Aircraft Seat Classes		
			20-39	40-69	70-119
1	ExpressJet Airlines	**271**	31	240	0
2	SkyWest Airlines	**266**	59	125	82
3	American Eagle Airlines	**256**	64	167	25
4	Atlantic Southeast Airlines	**171**	0	134	37
5	Pinnacle Airlines	**140**	0	137	3
6	Air Canada Jazz	**135**	36	83	16
7	Comair	**134**	2	107	25
8	Mesa Airlines	**124**	15	71	38
9	Chautauqua Airlines	**118**	17	101	0
10	Lufthansa Cityline	**74**	0	44	30
11	Air Wisconsin	**69**	0	69	0
12	Air Nostrum	**66**	0	50	16
13	Horizon Air	**70**	16	54	0
14	Mesaba Airlines	**67**	49	4	14
15	Regional	**62**	16	28	18
16	Republic	**57**	0	0	57
17	KLM Cityhopper	**55**	0	14	41
18	Piedmont	**52**	41	11	0
19	PSA Airlines	**49**	0	35	14
20	Trans States Airlines	**48**	0	48	0
	Total fleet operated by 20 largest operators	**2284**	346	1522	416
	Percentage of world fleet	**11.6%**	23.9%	47.1%	16.9%

Source: Ascend Online Fleets, data as of April 2008

Nine of the ten largest regional airlines are located in North America. Often these carriers do not operate under their own brand, but rather offer services to the main network carriers as feeders. The "outsourcing" of these services results in cost savings for the network airlines, as the regional airlines often have different labour agreements. Overall, the 20 largest regional airlines operate 11.6% of the world fleet. The group comprising regional jets and turboprop aircraft with 40 to 69 seats represents 47.1% of the world fleet.

Table 2-10: The 10 largest holiday airlines by fleet size at year-end 2007

Pos.	Operator	Total fleet	Medium single aisle jets	Large single aisle/small twin aisle jets	Intermediate twin aisle jets	Large twin aisle jets
			Aircraft Seat Classes			
			120-169	170-239	240-349	350+
1	Thomsonfly	**41**	12	24	5	0
2	Condor	**35**	0	13	22	0
3	Monarch Airlines	**31**	0	24	1	6
4	LTU	**26**	10	4	9	3
5	First Choice Airways	**23**	0	17	6	0
6	Thomas Cook Airlines	**20**	0	16	2	2
7	Air Transat	**16**	0	0	12	4
8	MyTravel Airways	**13**	0	11	2	0
9	Ryan International	**13**	4	8	1	0
10	SunExpress	**13**	0	13	0	0
Total fleet operated by 10 largest operators		**231**	26	130	60	15
Percentage of world fleet:		**1.2%**	0.4%	4.3%	3.2%	2.4%

Source: Ascend Online Fleets, data as of April 2008

The holiday airlines segment is fairly small compared to those following other business models, a fact which is also reflected in the fleet sizes. In recent years, low cost carriers have entered the market by flying to holiday destinations, and some carriers formerly clearly committed to the holiday market have changed their business models to address the low cost market. Looking at the fleets, it seems that the market for holiday carriers is less concentrated than other segments of the airline market, as there are plenty of airlines operating between five and ten aircraft. Holiday/charter airlines seem to be a largely European phenomenon. Of the ten largest operators, eight carriers are from Europe and only two from North America.

2.1.4 Airline Financial Performance

2.1.4.1 Introduction

Concerning the commercial and financial performance of airlines, 2007 continued an already very successful year 2006. A large number of airlines in all market segments, both European and non-European, posted record revenues and profits. Despite an increase in fuel prices, profits developed strongly due to a high demand environment supported by a healthy worldwide economic growth, which created a favourable business environment for airlines. It was possible to pass on fuel price increases to passengers without harming demand growth.

The results of 2007 show healthy profits for most of the major full service network and low cost carriers.

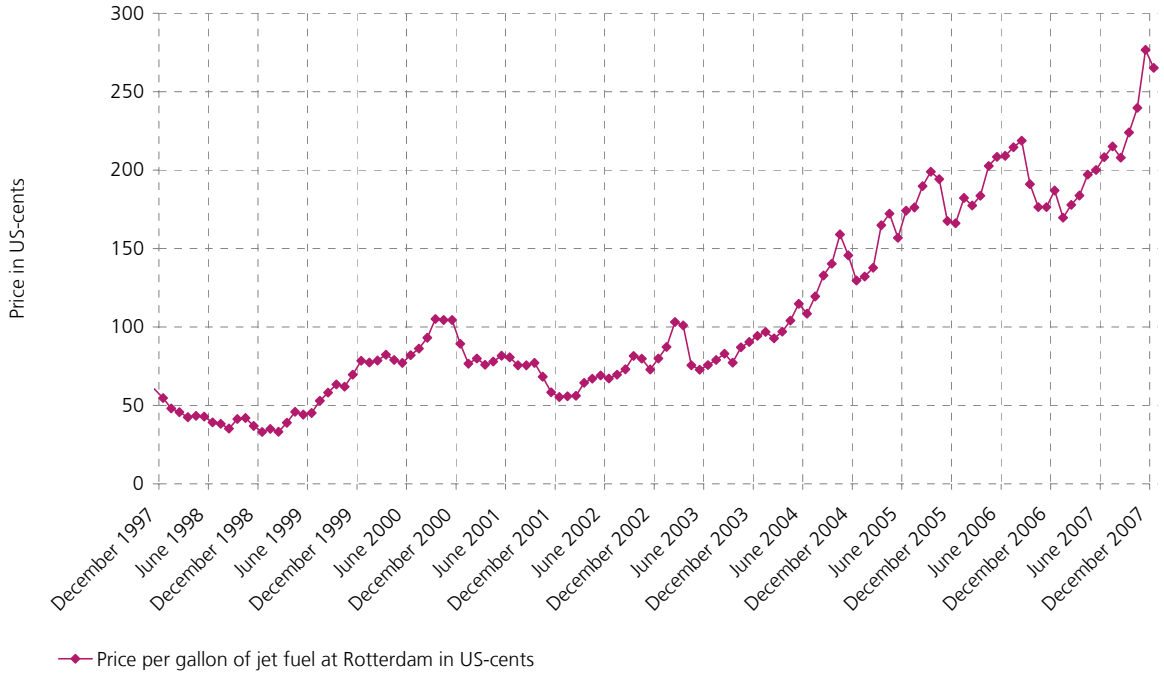
2.1.4.2 Fuel Price Development

In recent years, despite ongoing efforts of the industry to introduce new and more fuel efficient aircraft, fuel has become the single most important cost factor for airlines, just ahead of labour costs. This is mainly due to the fact that fuel prices have increased considerably over the past years, while labour costs have stagnated due to concessions unions had to make in the aftermath of September 11, 2001 and productivity increases. While it is possible in the shorter and medium term for the airlines to hedge themselves against fuel price spikes, it becomes very difficult to protect against long-term price increases.

The following figure depicts the development of the jet fuel price over the past ten years from December 1997 to December 2007 at Rotterdam in US-cents per gallon.

Figure 2-28: Price of jet fuel at Rotterdam in US-cents from 1997 to 2007

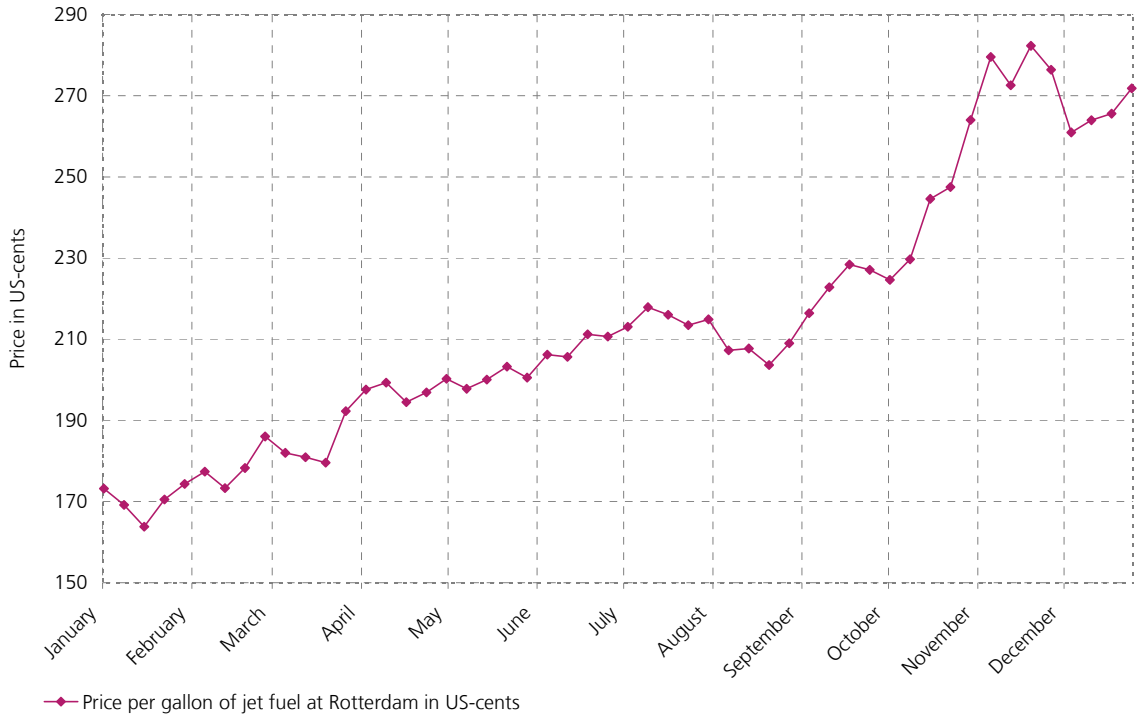
Source: US Energy Information Administration



The nominal price rose more than four-fold in the depicted timeframe from 60 to 265 US-cents. In 2007 alone, the price increased by more than 56% between January and December as shown in the next figure.

Figure 2-29: Price of jet fuel at Rotterdam in US-cents from January to December 2007

Source: US Energy Information Administration



2.1.4.3 European Network Carriers Financial Results

The following table shows the development of revenues and operating profits for European network carriers in the year 2007, compared with the same period in 2006. It also includes the groups' non-aviation businesses. All non-€-currencies were converted into € using the exchange rate at the end of the reporting period.

Table 2-11: Revenues and Operating Results of selected European Network Carriers for the fiscal years 2006 and 2007

Source: Quarterly Reports of the respective airlines/airline groups

Pos.	Airline group	Revenues in million €			Operating income in million €		fiscal year ending
		2007[1]	2006[2]	change	2007	2006	
1	Air France-KLM Group	23,073	21,448	7.6%	1240	936	31.03.2007
2	Lufthansa Group	22,578	19,831	13.9%	1388	844	31.12.2007
3	British Airways	11,402	10,845	5.1%	808	916	31.03.2007
4	Iberia Group	5561	5383	3.3%	286	122	31.12.2007
5	Alitalia Group	4881	4720	3.4%	-313	-466	31.12.2007
6	SAS Group	4297	4382	-2.0%	211	190	31.12.2007
7	THY Turkish Airlines	2775	2159	28.5%	317	46	31.12.2007
8	Austrian Airlines	2569	2609	-1.5%	38	-87	31.12.2007
9	Virgin Atlantic	2565	2527	1.5%	56	55	28.02.2007
10	Finnair	2196	1950	12.6%	143	-11	31.12.2007
11	Aer Lingus	1294	1115	16.1%	89	76	31.12.2007
	TOTAL	**83,190**	**76,967**	**8.10%**	**4263**	**2642**	

[1] 1 USD = 0,6848 € [2] 1 USD = 0,7593 €

Pos.	Airline group	Operating Margin in %	
		2007	2006
1	THY Turkish Airlines	11.4	2.1
2	British Airways	7.1	8.4
3	Aer Lingus	6.9	6.8
4	Finnair	6.5	-0.6
5	Lufthansa	6.1	4.3
6	Air France-KLM Group	5.4	4.4
7	Iberia Group	5.1	2.3
8	SAS Group	4.9	4.8
9	Virgin Atlantic	2.2	2.2
10	Austrian Airlines	1.5	-3.3
11	Alitalia Group	-6.4	-9.9

European network carriers were able to increase their revenues for 2007 by 8.1% on average. Operating profits increased also, despite rising fuel costs. The net results of European major network carriers grew considerably.

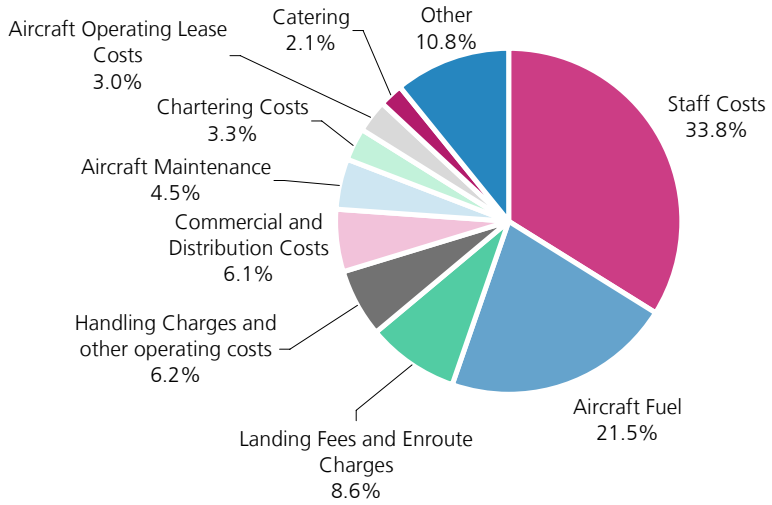
Table 2-12: Operating Margins of selected European Network Carriers

Source: Quarterly Reports of the respective airlines/airline groups

A more detailed analysis for the fiscal year ended 31st March 2007 is shown in the following figure for the operating expenses of the Air France-KLM group:

Figure 2-30: Operating Expenses of the Air France-KLM Group for the fiscal year ended 31st March 2007

Source: Air France-KLM group



2.1.4.4 European Network Carriers Share Price Development

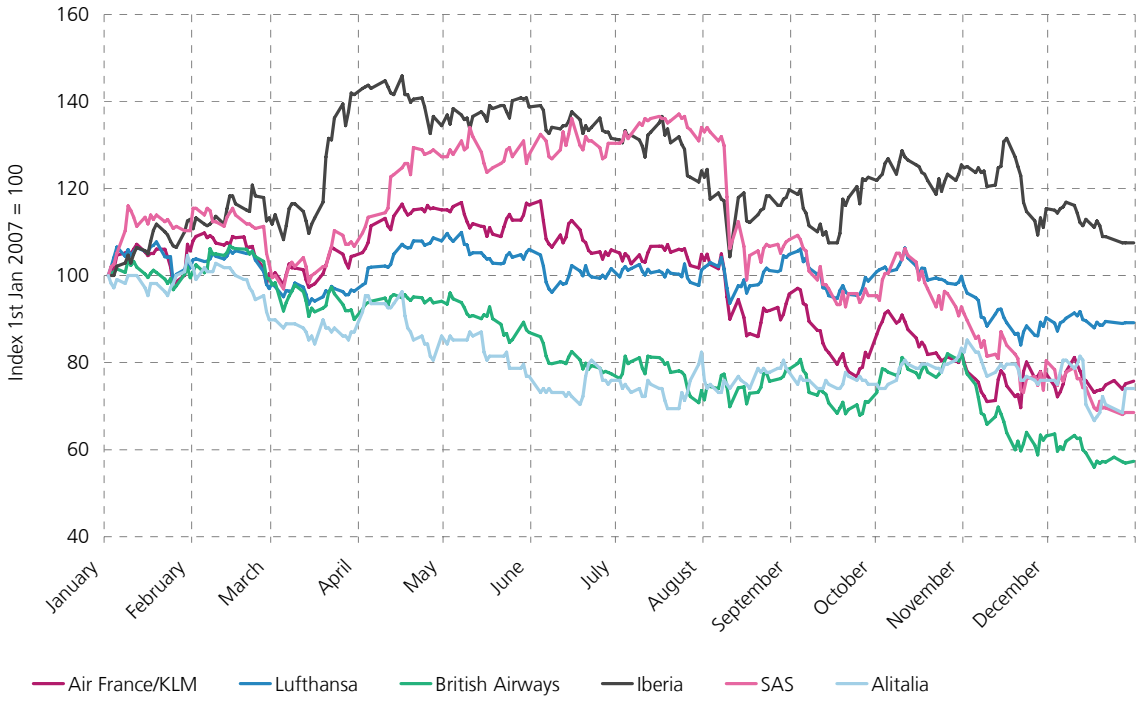
Share prices reflect the market's expectations for future earnings of publicly traded companies. Therefore, they are a good indicator for the well-being of the respective enterprises.

The following chart shows the share price development of major European network carriers, measured in the home currency of the respective carrier and the share price on 1st January 2007 indexed to 100. The share price is adjusted for splits and dividends to reflect total performance. With the exception of Iberia, all major European FSNCs' shares traded lower at year end in comparison to the beginning of the year. One explanation for this is the historically negative

correlation of oil prices and airline shares as the oil price rose considerably in the course of 2007 from less than US-$ 60 to almost US-$ 100. Jet fuel, as a major component of airline operating costs, therefore has a significant impact on the profitability. Another explanation might be that the market expects that the airline industry has come close to its peak in the current business cycle and that future earnings cannot be increased the same way as in the past years.

Figure 2-31: Share price development of major European network carriers in 2007

Source: Historical Stock Quotes on www.yahoo.com, adjusted for splits and dividends



British Airways experienced the strongest decline in share prices – £100 invested in BA shares on 1st January 2007 had a value of only £57.31 on 31st December 2007. The high performance of Iberia can be explained by speculations about a takeover by either financial investors or other network carriers. Usually, such transactions are associated with a considerable mark-up compared to the share prices at the stock exchange. € 100 invested in shares of Iberia at the beginning of the year had a value of € 107.53 at year end, a return of +7.53%. This constitutes an outperformance of the overall market, which performed +3.47% in 2007, as measured by the Dow Jones EURO STOXX Index.

2.1.4.5 European Low Cost Carriers Financial Results

According to Table 2-13 two of the largest low cost carriers in Europe, Ryanair and Air Berlin were able to increase their revenues by 22.4% and 61.0%, respectively, for the year 2007 compared to the preceding year, while easyJet's revenues increased by 7.6%. Concerning profits, a differentiated picture must be drawn. While both Ryanair and easyJet continue to increase profits by double-digit figures, Air Berlin's profit in fact dropped, which is, however, to

be explained by the costs associated with the integration of LTU, which was acquired on March 26, 2007.

Table 2-13: Revenues and Operating Results of selected European Low Cost Carriers for the fiscal years 2006 and 2007

Source: Airline Business and Annual Reports of the respective airlines/airline groups

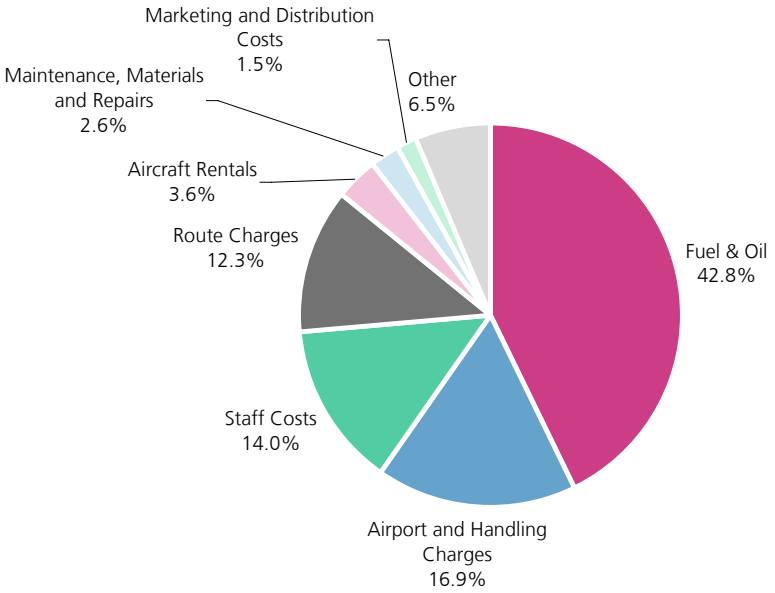
Pos.	Airline group	Revenues in million €			Operating income in million €		fiscal year ending
		2007[1]	2006[2]	change	2007	2006	
1	Air Berlin	2537	1575	61.0%	21	64	31.12.2007
2	easyJet	2512	2334	7.6%	240	170	30.09.2007
3	Ryanair	2042	1669	22.4%	431	364	31.03.2007
4	Transavia Airlines	625	546	14.4%	31	22	31.03.2007
5	Norwegian Air Shuttle	534	344	55.4%	17	-4	31.12.2007
6	Vueling Airlines	365	235	55.6%	-71	-10	31.12.2007
7	GB Airways	343	292	17.2%	6	-1	31.03.2007
8	SkyEurope Airlines	231	176	31.3%	-20	-53	30.09.2007
	TOTAL	**9188**	**7171**	**33.1%**	**654**	**551**	

[1] 1 USD = 0.6848 € [2] 1 USD = 0.7593 €

Ryanair, whose business year ended on March 31, 2007, increased its revenues from € 1.6 billion to € 2.0 billion, which is an increase of 22.4%. Operating income increased by 18.3% from € 364 million in 2006 to € 430 million in 2007. The operative profit margin, which is defined as the proportion of operating income to operating revenues, however, decreased slightly from 21.8% in 2006 to 21.1% in 2007. With this operating margin, the Irish airline remains among the most profitable air carriers in the world.

Figure 2-32: Ryanair's Operating Expenses Structure for the Fiscal Year ended 31st March 2007

Source: DLR Analysis based on Ryanair 20F statement



From Ryanair's 20F-statement, which the airline has to submit as its shares are listed at the New York Stock exchange, a more detailed analysis of the cost structures is possible. The highest share in operating expenses is fuel and oil with 42.8%, followed by airport and handling charges with 16.9% and staff costs with 14.0%. Due to its relatively young fleet, maintenance costs are only a minor factor with 2.6% of total expenses. Ryanair, which sells

its tickets exclusively over the internet and call centres, has (compared to traditional airlines) relatively low costs for marketing and distribution with only 1.5%.

easyJet also reported very favourable financial results of its business year, which ended on 30 September 2007. Passenger revenues increased by 7.6% from € 2.3 billion to € 2.5 billion. At the same time, operating income rose by 41.6% from € 169.1 million to € 230.4 million. The operative margin, as measured by the earnings before interest and taxes (EBIT) divided by the sum of passenger and ancillary revenues was considerably lower than Ryanair's with 9.6% in 2007. This compares to an operative profit margin of 7.3 % in 2006.

Air Berlin's business year is identical to the calendar year. The comparison to the same year 2006 is limited, as the financial statements of 2007 reflect the acquisition of LTU, which was consolidated by 1st August 2007. Revenues increased by 61.0% from € 1575.40bn in 2006 to € 2536.50bn. The operating income declined from € 64.1m to € 21.4m, a fall of 66.6%. This however, is associated to a large extent with the costs for the integration of LTU. The operative result, as measured by the EBITDAR increased from € 256.5m from 2006 to € 379.0m in 2007. Unlike easyJet and Ryanair, Air Berlin is engaged to a large extent in the charter business and sells large quantities of seats directly to tour operators. This segment accounts for almost 35% of the groups' revenues.

2.1.4.6 European Low Cost Carriers Share Price Development

Figure 2-33: Share price development of major European low cost carriers in 2007

Source: Historical Stock Quotes on www.yahoo.com, adjusted for splits and dividends

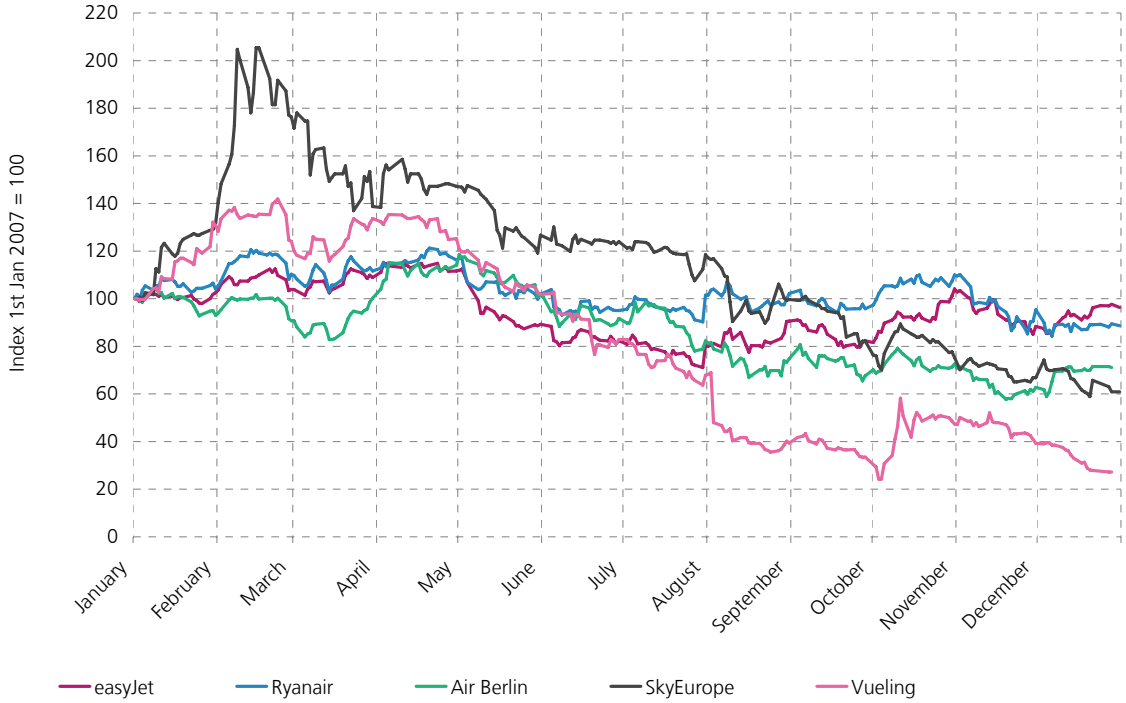


Figure 2-33 depicts the development of share prices for major European low cost carriers. Compared to the share price development of full service carriers, the low cost carriers show a higher volatility. For instance, the share price of SkyEurope doubled within one month from the beginning of the year, but fell from its peak by about two thirds by year end. Worst performer among the group of publicly listed low cost carriers is the Spanish Vueling. € 100 invested in the company in January 2007 had a value of only € 27.20 at the end of the year. The three largest European low cost carriers experienced a decline in their share price: easyJet dropped by 3.7%, Ryanair by 11.3% and Air Berlin by 28.9%.

2.1.5 Alliances

Airline alliances comprise a multitude of marketing instruments, such as code sharing, blocked space agreements or joint frequent flyer programs up to deep integration of different airlines along the value chain in strategic alliances. In many cases, airlines committed to strategic alliances also conclude code-sharing agreements with partners who are not members of their own alliance.

The foundations of two airline alliances were first laid in 1987: Northwest and KLM formed a cooperation which resulted in 1998 in the Wings alliance with Continental, Air France and Alitalia, while Delta Airlines, Singapore Airlines and Swissair founded Global Excellence. The beginning of the Star Alliance goes back to 1993 when Lufthansa and Varig formed a bilateral cooperation. Star Alliance was then finally founded in 1997 by Lufthansa, United Airlines, Scandinavian Airlines, Air Canada and Thai. First signs of oneworld go back to 1996 with British Airways and American Airlines cooperating on flights between Europe and the USA. Together with Cathay Pacific, Qantas and Canadian Airlines, the oneworld alliance was formed in 1998. The now defunct Qualiflyer and Atlantic Excellence alliances were founded in 1998 by several airlines. SkyTeam was formed in 2000 by Air France, Delta Air Lines, Aeromexico and Korean.

In 1995, there were around 300 airline cooperation agreements worldwide. Their number increased steadily to 502 in 1998. In 2000, their number finally reached 580, from which the global strategic airline alliances emerged. Since then, the Wings, Qualiflyer, Atlantic Excellence and Global Excellence alliances have been dissolved. Today, only three global airline alliances remain: Star Alliance, oneworld and SkyTeam. In many cases, members of the dissolved alliances joined one of the remaining three. Figure 2-34 displays the relationships between major airlines and the global strategic airline alliances. The figure only includes full members, whereas regional partners and associated members are not considered in the analysis to follow. Among the three alliances, Star Alliance is the biggest in terms of the number of members. It was formed by 17 airlines in 2007. Varig left the Star Alliance in 2007 (but is still included in the analysis to follow). Potential new members are Air China, Shanghai Airlines and Turkish Airlines. SkyTeam consists of 11 members, with China Southern joining the alliance in 2007 (although it is not included in the analysis to follow). The oneworld alliance comprises ten airlines in 2007. Japan Airlines, Malev and Royal Jordanian joined oneworld in 2007 (although they are not included in the analysis to follow), while Aer Lingus left the alliance. Aer Lingus now operates in the low cost

segment. There are a number of airlines which do not belong to any alliance; these are essentially low cost carriers such as easyJet or Air Berlin and big FSNCs, with Emirates being the most prominent full service carrier not belonging to any airline alliance. Recently, a number of airlines from Asia (especially from China) joined one of the three airline alliances.

Figure 2-34: Airline alliances 2007

Source: OAG 2007, DLR

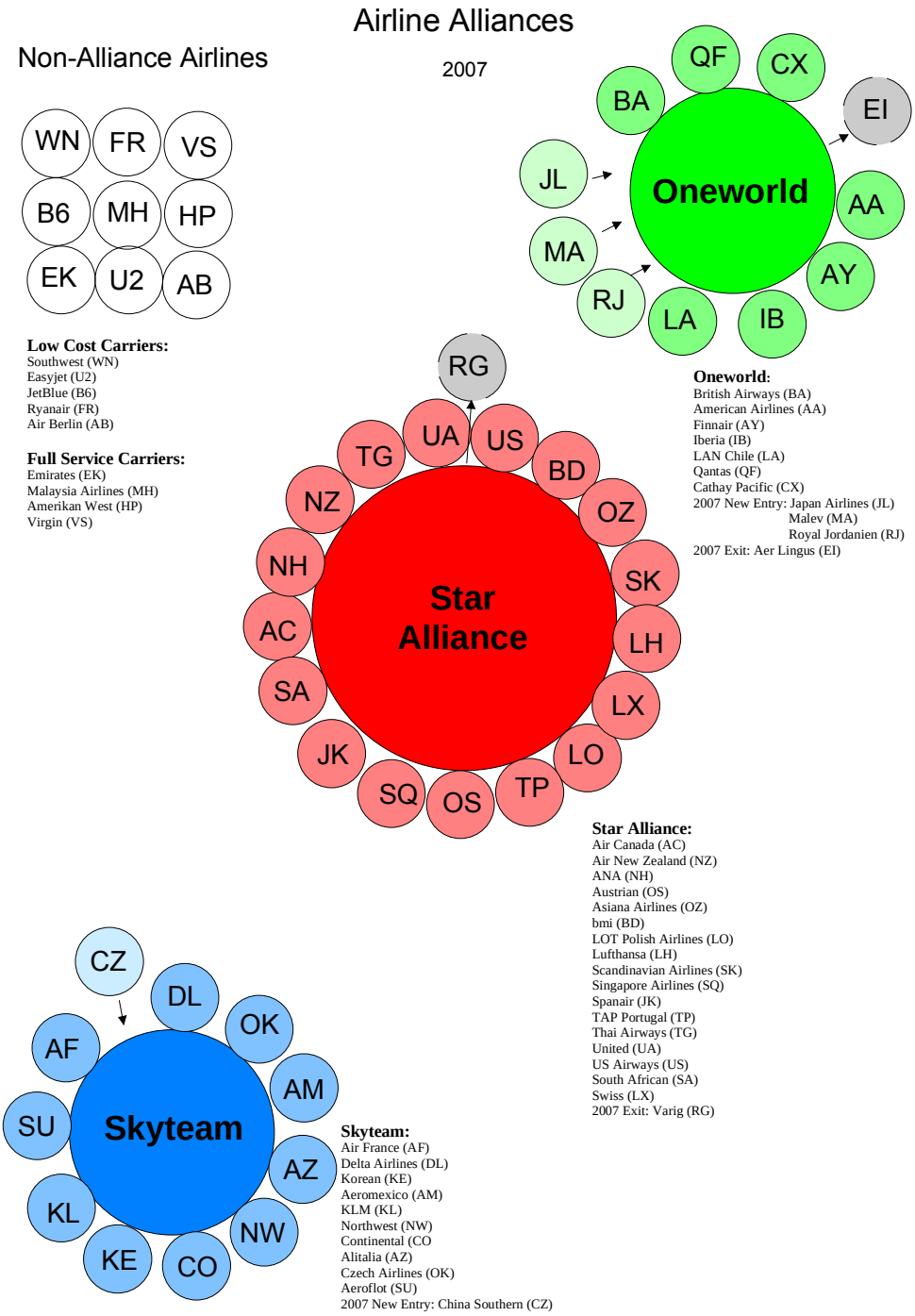


Table 2-13: 2007 International Scheduled Traffic by Alliance

Source: IATA 2008

	oneworld		SkyTeam		Star Alliance	
	Number	Y-o-Y % Change	Number	Y-o-Y % Change	Number	Y-o-Y % Change
Kilometers Flown (thousands)	2,646,103	2.2	3,051,611	5.3	4,032,826	8.0
Aircraft Departures	921,680	-0.7	1,182,483	4.0	1,759,305	6.1
Hours Flown	3,703,267	1.9	4,422,879	5.7	5,834,977	6.3
Passengers Carried	118,828,539	2.7	130,983,637	5.7	188,719,802	7.5
Passenger-Kilometres Flown (thousands)	473,699,005	2.7	493,627,993	6.9	652,999,567	6.6
Available Seat-Kilometres (thousands)	608,762,182	1.3	625,129,417	6.7	831,493,523	5.4
Passenger Load Factor	77.8%		79.0%		78.5%	
Tonne-Kilometres Performed (thousands)	70,204,345	3.3	75,220,132	5.3	99,447,289	7.2
Available Tonne-Kilometres (thousands)	105,736,536	3.3	106,571,602	4.6	140,949,634	1.0
Employees	450,512		601,254		706,426	

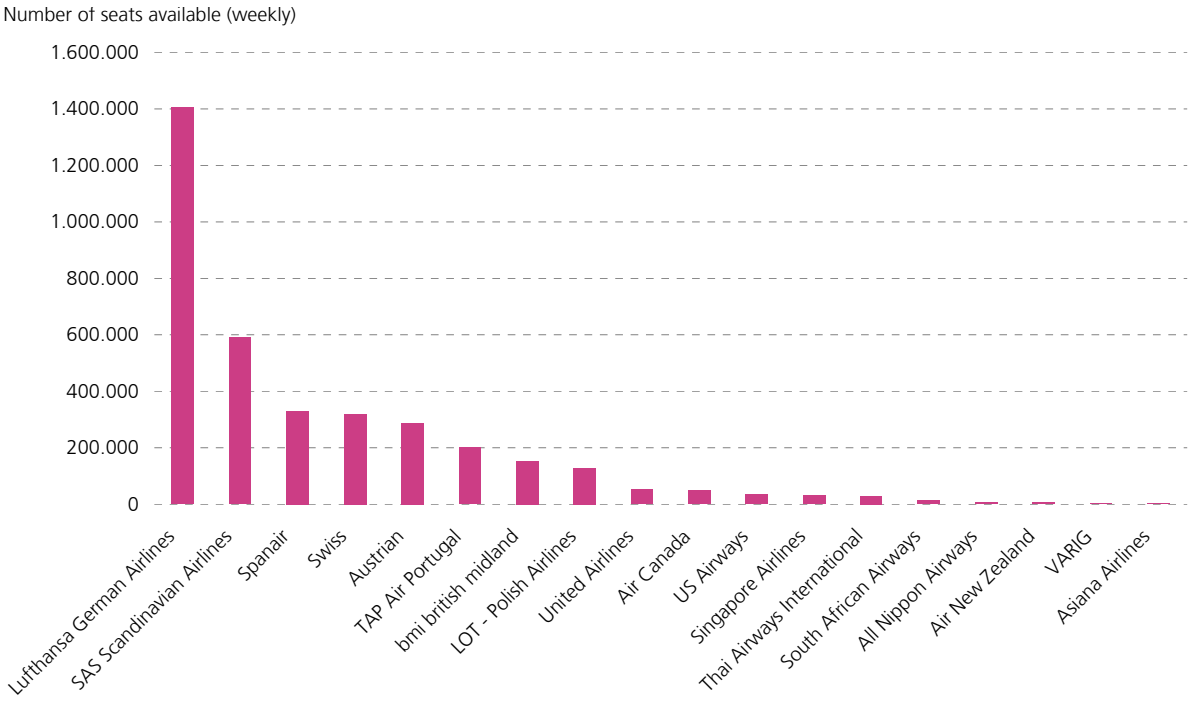
Table 2-13 shows important performance metrics for the three major global airline alliances oneworld, SkyTeam and Star Alliance. The number of passenger-kilometres flown has increased for all three alliances by between 2.7% and 6.9% in 2007 compared to 2006. Star Alliance remains the largest airline alliance, not only in terms of member airlines, but also by the number of employees and its transport performance. Despite the exit of Varig and no new airline joining in 2007, Star Alliance had the highest growth rates in terms of passenger-kilometres flown and tonne-kilometres performed among the three alliances. More than 700,000 employees work for the Star Alliance airlines. In total, more than 1.7 million employees work for the airlines in the three major alliances.

The Star Alliance's market share, measured by passenger-kilometres, among all IATA carriers has reached 27.7%, followed by SkyTeam with 23.9% and oneworld with 19.6%. Still, 28.8% of IATA carriers' passenger kilometres are flown by non-aligned airlines. It can be expected that this number will further decline, as global airline alliances increasingly attract airlines which so far have not joined any alliance. This is particularly the case for emerging markets like China and India, but also airlines from Mexico, Russia and Turkey have already declared their plans to become members of a major global alliance. The largest airlines measured by passenger kilometres among the group of non-aligned airlines are Emirates, China Eastern Airlines and Virgin Atlantic Airways.

Figure 2-35 shows the weekly seat capacity of airlines belonging to the Star Alliance from European airports. Lufthansa has by far the highest number of seats available in 2007, which sum up to more than 1 400 000 per week on 13 000 flights, followed by SAS with 600 000 weekly seats on 5 000 flights in the analysed reference week in 2007.

Figure 2-35: Number of weekly seats available of Star Alliance airlines in 2007

Source: OAG 2007



Air France is the leading member in the SkyTeam alliance in terms of seats available in 2007 as illustrated by Figure 2-36. Air France offered nearly 1.3 million seats on the observed 11 000 weekly flights in 2007, followed by Alitalia with a good 600 000 seats on 5 000 flights.

Figure 2-36: Number of weekly seats available of SkyTeam alliance airlines in 2007

Source: OAG 2007

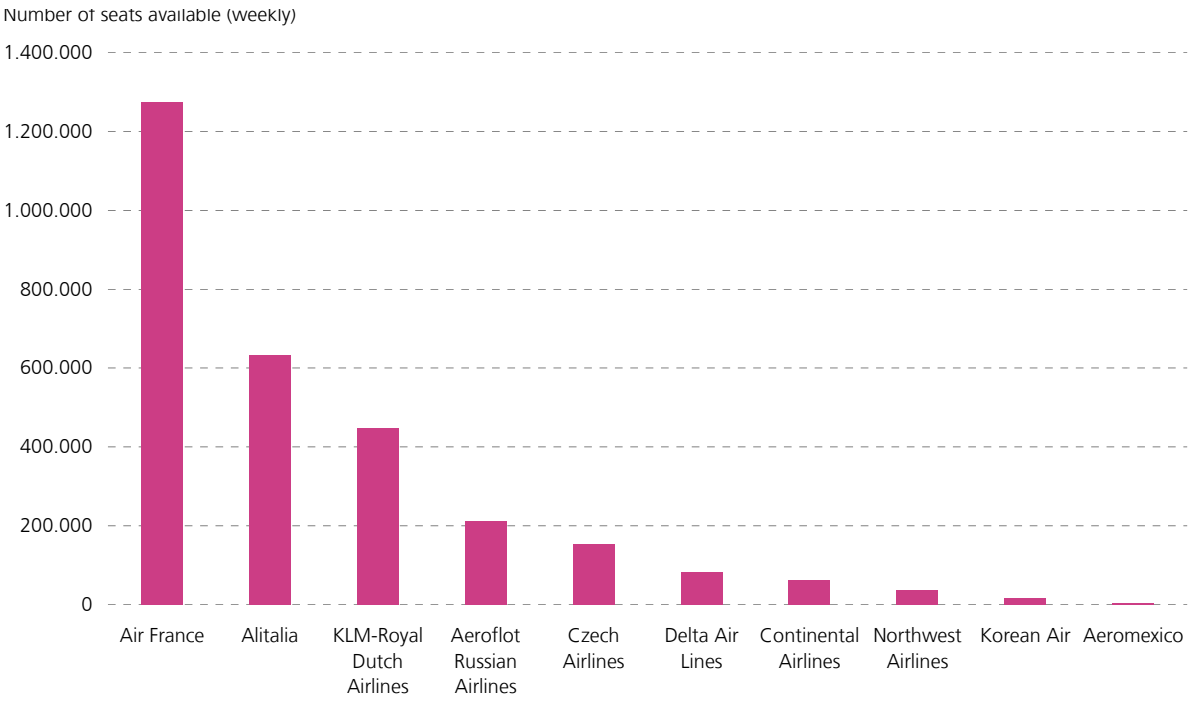


Figure 2-37 shows the number of seats available in 2007 for the members of oneworld. The two major airlines in terms of seat capacity are British Airways and Iberia with 870 000 seats on just 6 000 flights and 800 000 seats on just over 7 000 flights respectively.

Figure 2-37: Number of weekly seats available of oneworld alliance airlines in 2007

Source: OAG 2007

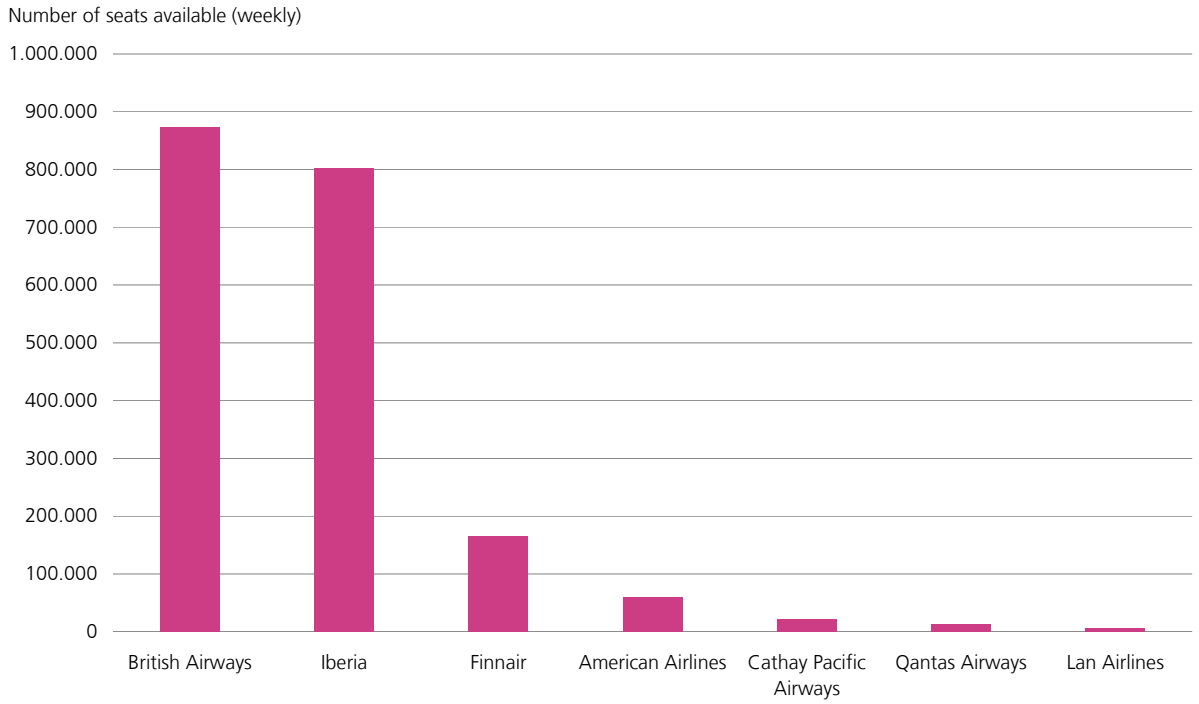
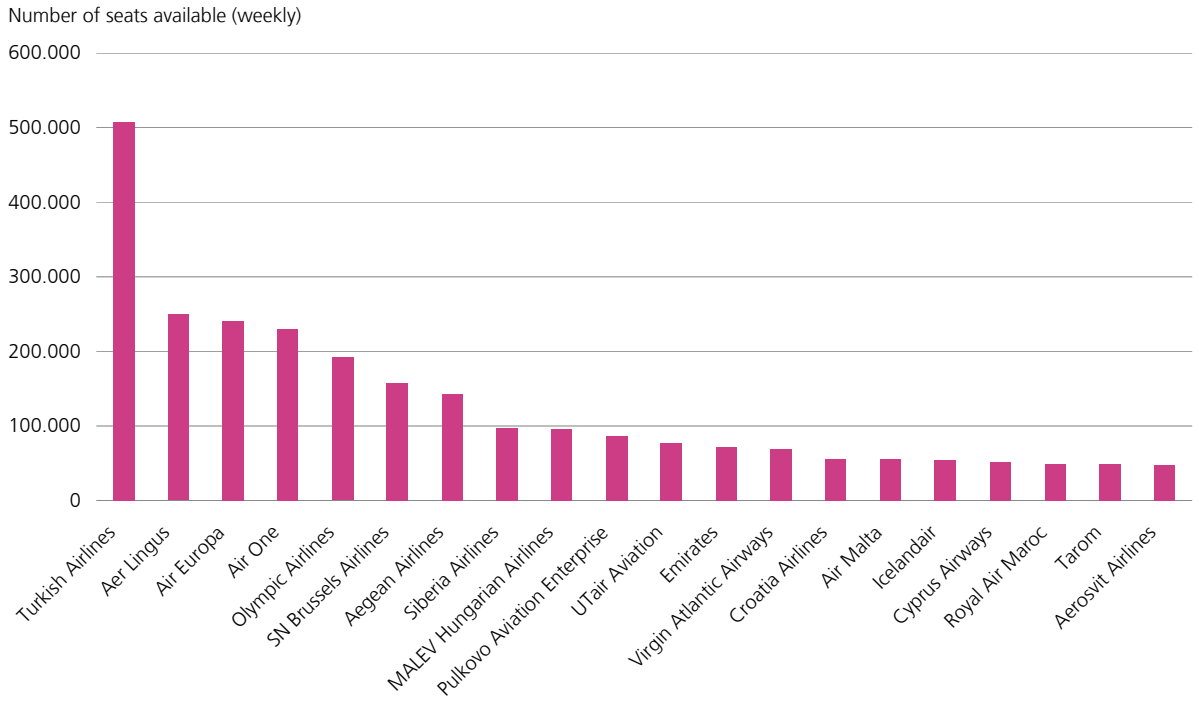


Figure 2-38 shows the number of seats available per week in 2007 for the 20 largest non-alliance full service network carriers, of which Turkish airlines is the biggest with more than half a million seats offered on 3 200 weekly flights in 2007.

Figure 2-38: Number of weekly seats available of non-alliance FSNCs in 2007

Source: OAG 2007



Figures 2-39 and 2-40 illustrate the shares of the four carrier categories described earlier in this study at major hub and international airports in Europe. Full service network carriers are differentiated as to whether they belong to one of the four airline alliances (and which of these) or not. Typical hub airports like Frankfurt/Main, Amsterdam, Paris Charles de Gaulle, London Heathrow, Madrid and Zürich are mainly dominated by FSNCs which belong to one of the airline alliances. The major alliance at such an airport typically accounts for between 50% and 75% of the seat capacity offered, as illustrated by Figure 2-40. However, London Heathrow is an exception to the rule as both Star Alliance and oneworld have a considerable market share. Furthermore, 200,000 weekly seats are from full service network carriers belonging to no airline alliance. Nevertheless, oneworld carriers have the highest share of departures at London Heathrow, accounting for nearly 50% of the total number of seats available. Madrid is similar to London Heathrow, with oneworld being the major alliance at the airport, but both Star Alliance and non-alliance full service network carriers are together responsible for more than 200,000 seats per week. London Gatwick has both a high share of FSNCs and low cost traffic, although it is much smaller in terms of the seats available compared to the major hub airports mentioned before. oneworld is the major airline alliance operating at London Gatwick. Cologne/Bonn airport is an example of an international airport with extensive low cost traffic. The main alliance

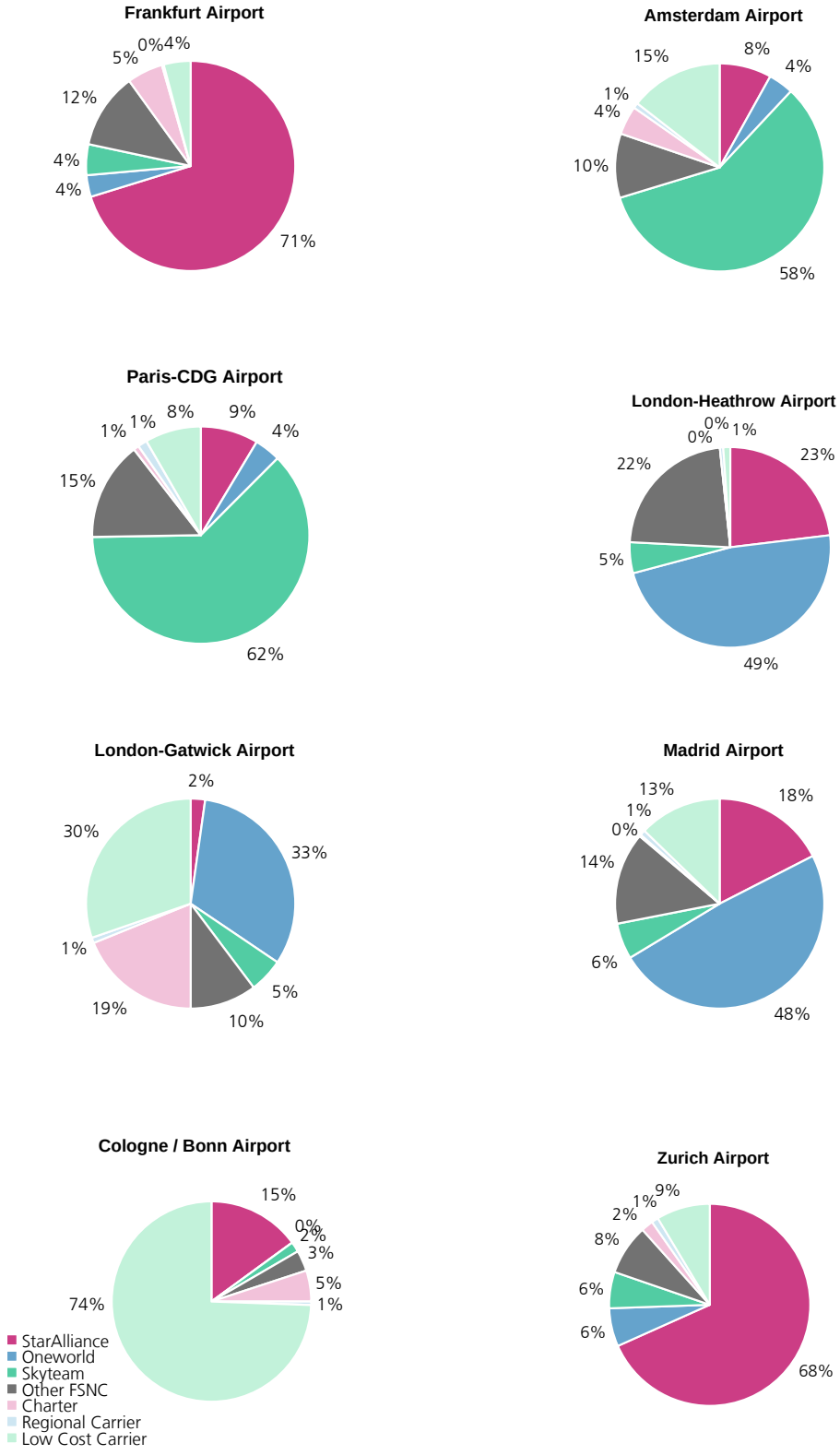
operating at Cologne/Bonn is Star Alliance, however, about two thirds of the total offered seat capacity is made up of low cost traffic.

Figure 2-39: Airline alliances at major European airports

Source: OAG 2007

Figure 2-40: Market share of airline alliances at major European airports in detail

Source: OAG 2007



2.1.6 Competition

Figure 2-41 shows the share of flights departing from European airports in 2007 per week which were offered in total including code share arrangements and those that were actually operated by an airline. Altogether, 255 000 flights were offered per week in 2007, whereas only 161 000 were actually operated. Therefore, 37% of the flights offered per week in 2007 were code sharing flights.

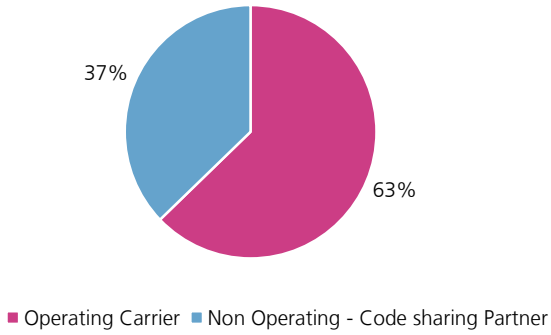


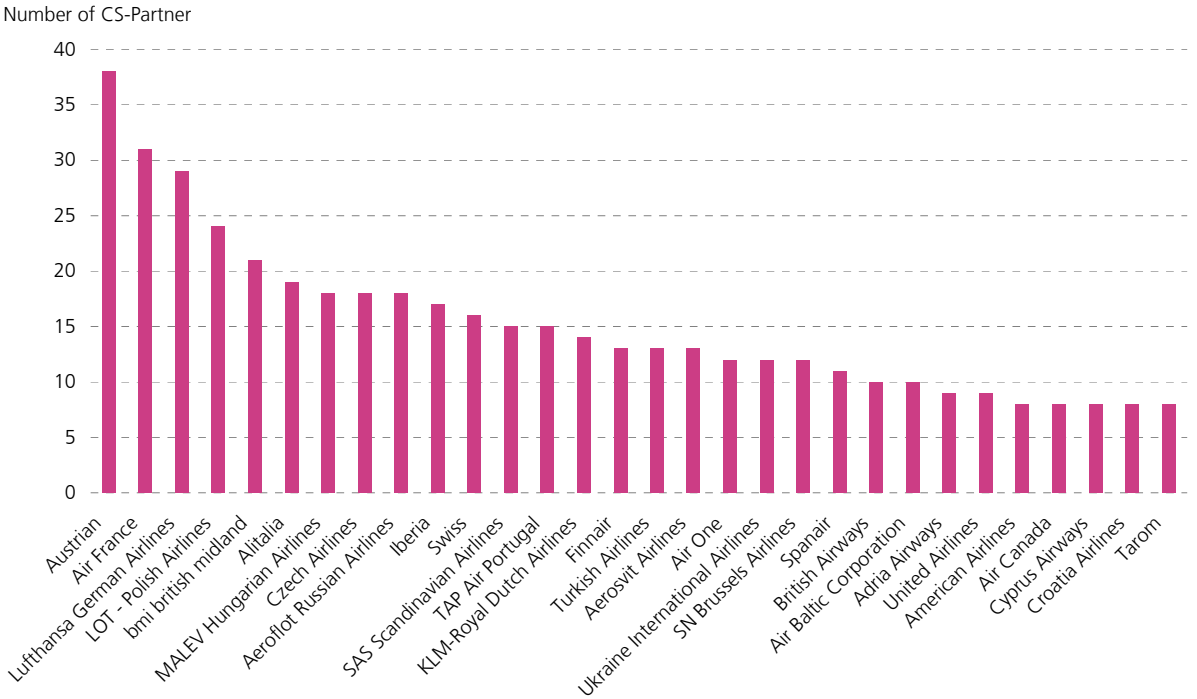
Figure 2-41: Share of flights offered, including code share flights and actually operated in 2007

Source: OAG 2007

Figure 2-42 ranks airlines according to the number of their code sharing partners in Europe. The top three airlines are Austrian, Air France and Lufthansa with 38, 31 and 29 code sharing partners respectively. The number of code sharing partners declines slowly with Tarom having the smallest number of code sharing partners, that being eight partners. As Figure 2-43 illustrates, the number of code sharing partners does not depend on airline size. For example, Lufthansa has 29 partners, whereas British Airways has only ten partners. On the other hand, Austrian and LOT Polish Airlines have 38 and 24 code sharing partners respectively.

Figure 2-42: Ranking of airlines according to the number of code sharing partners in Europe

Source: OAG 2007

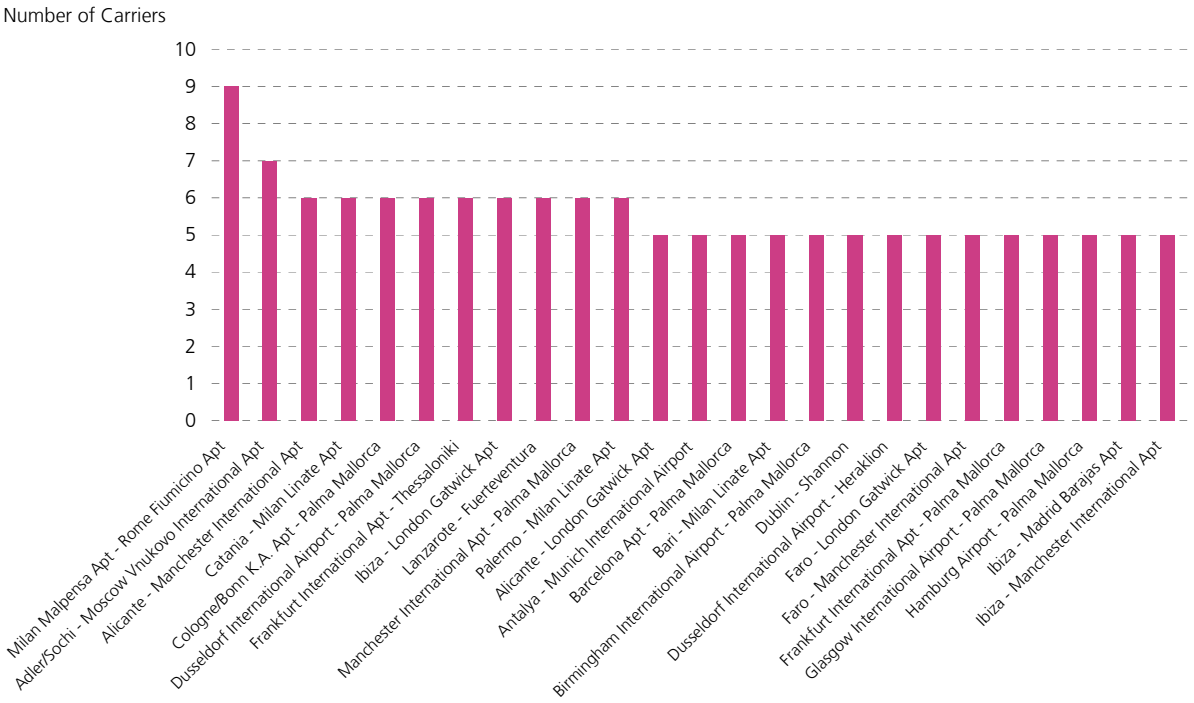


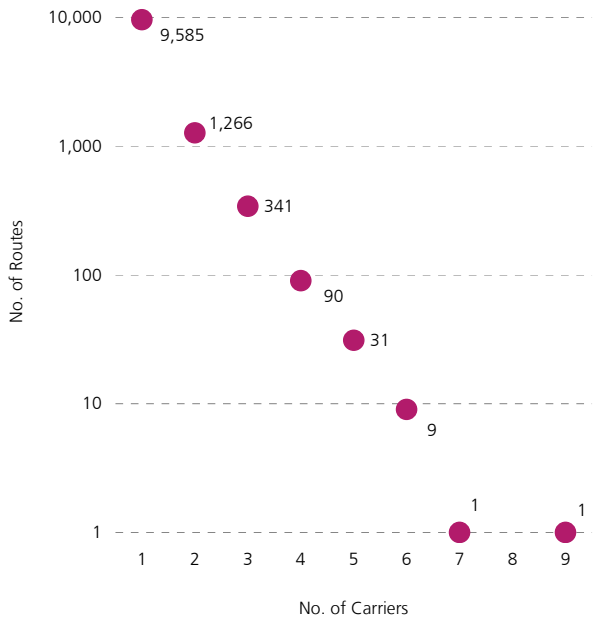
Closely related with airline alliances is the number of carriers operating on specific routes. Figure 2-43 displays the routes with the highest number of carriers. The number of carriers operating

on a route is an indicator of the degree of competition. The route Milan Malpensa – Rome Fiumicino is served by nine different carriers, followed by Adler/Sochi – Moscow Vnukovo and Alicante – Manchester International with seven and six different carriers respectively. The high number of different carriers on certain routes is mainly a result of low cost operations.

Figure 2-43: Top routes in Europe in terms of the number of carriers operating

Source: OAG 2007





In order to give an indication of competition among carriers in the European network, Figure 2-44 shows the share of routes served by only one or by competing carriers. About 85% of the routes in Europe are served by only one carrier and a share of 12% by two carriers, thus only 3% of the routes in Europe are served by three carriers or more. In fact, Milan Malpensa – Rome Fiumicino and Adler/Sochi – Moscow Vnukovo are the only routes served by nine and seven carriers respectively.

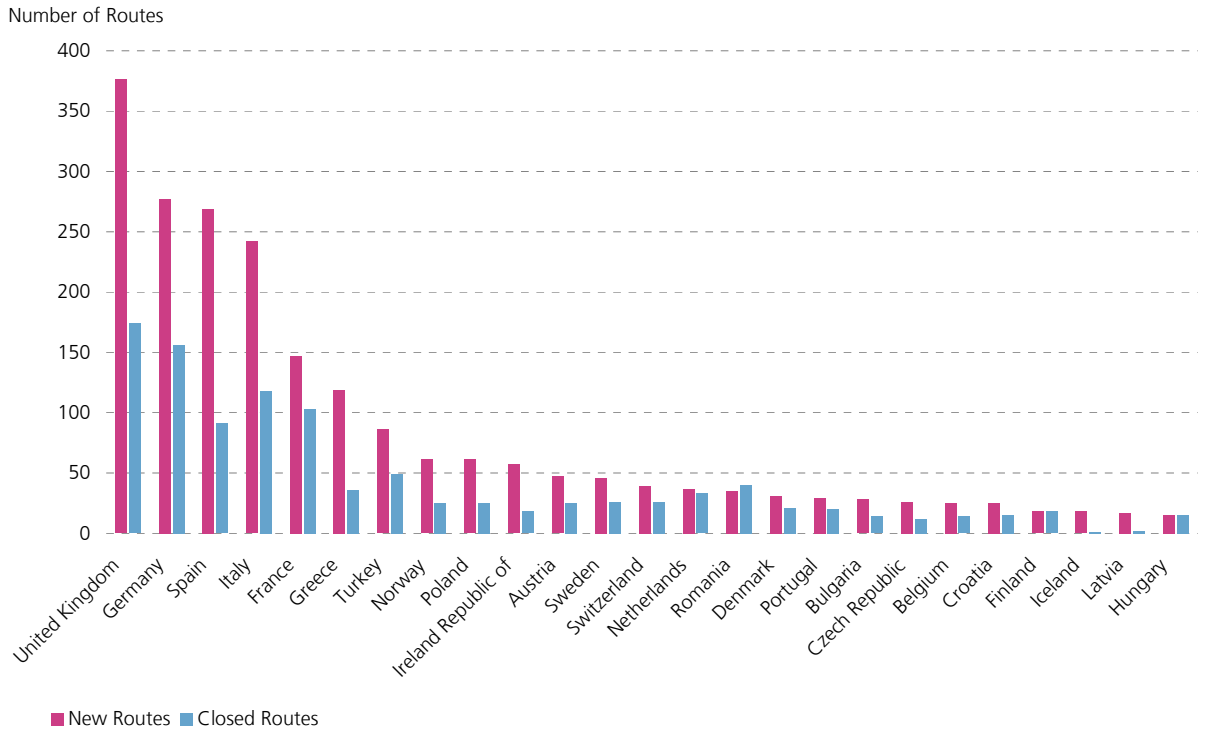
Figure 2-44: Number of routes with one or more carriers in 2007

Source: OAG 2007

Figure 2-45 describes the number of new routes against the number of routes closed per country in 2007.

Figure 2-45: Market entry / market exit in 2007

Source: OAG 2007



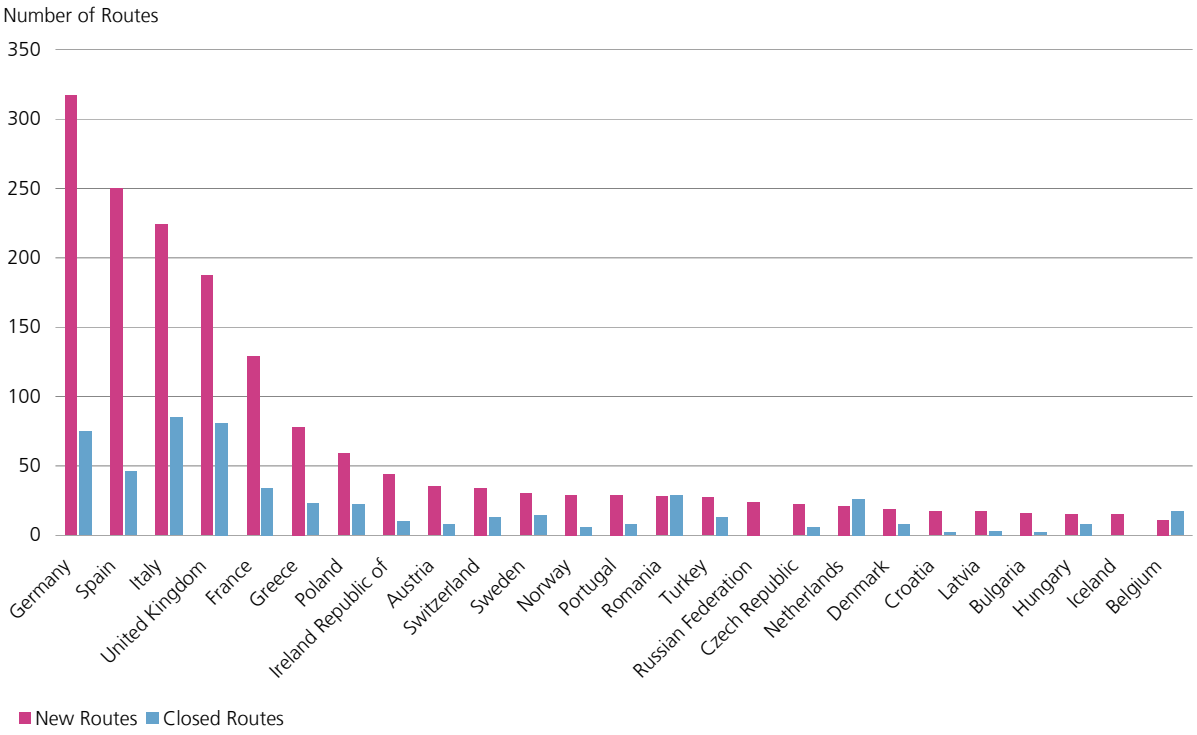
In most cases, there is a net increase in the number of routes, with Romania being the only exception with more routes closed than new ones opened. However, this occurs on a very low level of 30 to 40 routes opened or closed in 2007 respectively. In Finland, the number of routes opened equals the number of routes closed in 2007. Altogether, changes in the number of routes are positively correlated with country size. The largest gross changes occur in networks of the UK, Germany, Spain, Italy and France (descending order). The networks of the UK and Spain show the largest net changes with a net increase of 202 and 178 routes respectively. The UK network exhibits the largest gross increase as well with 376 new routes. For the majority of countries, gross network changes lie below 100 routes opened and closed, which results in net changes ranging from a four to 39 increase or decrease in the number of routes.

Figure 2-46 displays the number of new low cost routes against those closed in 2007 per country. In most cases, there is a net increase in the number of routes, with the networks of Romania and the Netherlands being the only exceptions with more routes closed than new ones opened. However, this occurs on a very low level of 20 to 30 routes opened or closed in 2007. Altogether, changes in the number of routes are again strongly correlated with country size. The evolution of low cost routes is clearly more dynamic and upward than for the entire set of

routes, as a comparison of the Figures 2-45 and 2-46 reveals. The largest gross changes of networks occur in Germany, Spain, Italy, the UK and France (descending order). Networks in Germany and Spain show the largest net changes with a net increase of 242 and 204 routes respectively. Germany also exhibits the largest gross network growth as well with 317 new routes, whereas Italy shows the largest gross decrease with 85 routes closed in 2007. For the majority of countries, gross network changes lie below 100 routes opened and closed, which results in net changes ranging from a one to 55 increase or decrease in the number of routes.

Figure 2-46: Market entry and market exit of low-cost carrier routes in 2007

Source: OAG 2007



The following tables show the market entries and exits of air carriers in Member States of the EU-27. Mostly smaller, low cost-oriented carriers ceased operations and four airlines continued operations under new ownership and/or as a rebranded carrier. BA Connect was sold by British Airways to competing carrier Flybe. With this step, British Airways has mostly withdrawn from the market for regional operations in the UK, with the exception of BA Cityflyer, which was founded to continue the operations from London City Airport within the BA group. The TUI Group decided in 2007 to rebrand and consolidate its airline operations, which were formerly operated as charter carrier HapagFly and low cost carrier HLX into a single airline and rebranded it as TUIfly. Virgin Express, based in Belgium, merged with SN Brussels Airlines. The merged company was subsequently rebranded as Brussels Airlines.

Besides several smaller airline start-ups in 2007, the biggest start-up is AeroLogic. Founded as a joint venture between DHL and Lufthansa Cargo, the airline will be based at Leipzig-Halle

airport, which will become the hub of the integrator DHL Express. The airline has ordered 11 Boeing 777 freighters. Ranked by the cargo capacity of its fleet, it is likely that it will be among the 30 largest cargo airlines by 2012 when all ordered aircraft have been delivered. The carrier will operate for the integrator DHL Express during weekdays on services to Asia and on weekends for Lufthansa Cargo to destinations in Asia and America.

Table 2-14: Market entries of carriers in EU-27 during 2007

Source: Ascend

Airline	Country	Remarks
AeroLogic	Germany	Joint Venture between DHL and Lufthansa Cargo, to start operations at Leipzig/Halle with B777F in 2009
Air Bee	Italy	Low Cost Carrier operating domestic flights in Italy
Air Italy Polska	Poland	Charter Airline as part of the Air Italy Group, operates 2 B757-200 from Warsaw for Polish tour operators
Air Sylhet	United Kingdom	New operator intending to fly between UK and Bangladesh
Amsterdam Airlines	Netherlands	New operator intending to operate from Amsterdam and Maastricht with A320 aircraft
Austrojet	Austria	New operator flying between Salzburg and Banja Luka in Bosnia and Herzegovina
BA Cityflyer	United Kingdom	Subsidiary of British Airways operating Avro Regional Jets from London City
Blue City Aviation	United Kingdom	Plan to start regional cargo services from Coventry
Brussels Airlines	Belgium	Merged/Rebranded operations of SN Brussels/Virgin Express
Cargo B Airlines	Belgium	Cargo airline based at Brussels operating two leased B747 freighters
City Star Executive	United Kingdom	Plan to start all-business-class service from Aberdeen to Houston
Estonian Air Regional	Estonia	Regional subsidiary of Estonian Air, operating two Saab 340
Eurociel	France	Plan to launch domestic and European services from Nimes and Lyon with Boeing 737 aircraft
Eurotigair	Hungary	Planned new low cost airline
Fly Excellent	Sweden	Swedish wet lease operator with two MD-83
FlyEm	United Kingdom	Planned new low cost airline based at Doncaster/Sheffield
Flyforbeans	United Kingdom	Planned new low cost airline based at Cardiff
FlyU	Ireland	Planned to start international scheduled passenger services in 2007 from Waterford to destinations across Europe.
Flywhoosh	United Kingdom	Carrier serving Belfast, Birmingham and Dundee, ceased operations after only 7 months
GainJet Aviation S.A.	Greece	Operator offering VIP charters with an MD-83 and Gulfstream G200
Gulfwings Air Cargo	Italy	Cargo services to Johannesburg, Kinshasa, Liegi, Nairobi, Ouagadougou and Saragozza, operated by Girjet
Janes Aviation	United Kingdom	Cargo operator based at Southend, operating two HS748 aircraft
Jetstream Express	United Kingdom	Operator based at Blackpool, ceased operations after only one month
Kalmarflyg	Sweden	Operator providing services between Kalmar and Stockholm-Bromma
Lusitania Airways	Portugal	Plan to start international charter passenger services from Lisbon
Mistral Air / Air Vatican	Italy	Airline to provide charter services to pilgrim destinations from Rome
OCA International	Germany	Airline for cargo ad-hoc charters based at Berlin-Schönefeld
Orbest	Portugal	Charter airline operating from Lisbon to tourist destinations with an A330
Premjet	United Kingdom	Airline intending to offer premium services between UK and Spain from 2009
Pronair	Spain	Wetlease operator flying one B747-200 freighter, an MD-87 and a Cessna Citation
TAER Andalus	Spain	Operator based at Cordoba, offering mainly domestic flights
TUIfly	Germany	Merged/Rebranded operations of Hapagfly and HLX
World International Airlines	Netherlands	Planning to start operations with a Tristar in 2008

Table 2-15: Market exits of carriers in EU-27 during 2007

Source: Ascend

Airline	Country	Formed	Ceased Operations	Remarks
Air Adriatic	Croatia	2000	15 March 2007	Market Exit
Air Asturias	Spain	2005	25 January 2007	Market Exit
Amber Air	Lithuania	2004	15 July 2007	Market Exit
BA Connect	United Kingdom	2002	15 April 2007	Takeover of operations by Flybe
Bright Aviation Services	Bulgaria	2001	25 June 2007	Market Exit
European Air Express	Germany	1999	30 September 2007	Market Exit
Flyjet	United Kingdom	2003	15 October 2007	Market Exit
FlyMe	Sweden	2004	15 February 2007	Market Exit
Flywhoosh	United Kingdom	2007	07 December 2007	Market Exit
HapagFly	Germany	1972	01 April 2007	Rebranding into TUIfly
Hapag-Lloyd Express	Germany	2002	01 April 2007	Rebranding into TUIfly
Jetstream Express	United Kingdom	2007	30 June 2007	Market Exit
MagicBird Airlines	Netherlands	2006	15 August 2007	Market Exit
Slovak Airlines	Slovakia	1998	15 February 2007	Market Exit
Virgin Express	Belgium	1991	15 March 2007	Merged with SN Brussels/Rebranding into Brussels Airlines

2.1.7 Public Service Obligations – PSO

In order to maintain appropriate scheduled air services on routes which are vital for the economic development of the region they serve, EU Member States may impose public service obligations (PSO) on these routes involving a peripheral or development region. Therefore, they must respect the conditions and the requirements set out in Article 4 of Regulation (EC) 2408/92. If no air carrier is interested in operating the restricted routes, the EU Member State can restrict the access to the route to one single carrier and compensate its losses. Because of this market interference and for transparency, all impositions and modifications have to be published in the Official Journal of the European Union. An updated PSO inventory table of all routes in the EU on which PSOs have been imposed with the corresponding references in the Official Journal and on-going tender procedures is available[3].

	2006	**2007**
Finland	3	**4**
France	83	**73**
Germany	9	**3**
Greece	25	**25**
Ireland	7	**7**
Italy	31	**31**
Portugal	27	**27**
Spain	16	**16**
Sweden	11	**11**
United Kingdom	22	**26**
Total	*234*	***223***

Table 2-16: PSO routes per country 2007

Source: DG TREN

The following text will only concentrate on the quantitative changes or effects which took place in 2007. Table 2-16 gives an overview of the status as of December 2007.

The number of countries did not change; they are the same 10 countries as in December 2006. The overall number of routes decreased by 4.7% - in most cases,

[3] http://ec.europa.eu/transport/air_portal/internal_market/doc/pso_web_111207.pdf

PSOs were lifted on routes where no air carrier responded to the call for tenders and hence where no air services were being operated - mainly caused by a decrease of 6 out of 9 flights in Germany and a decrease of 10 routes in France. In contrast there is an increase of 4 further PSO services in the UK, an increase of 18%. Most of the PSO services are domestic routes, but 21.5% of all French services are international. All these international routes are from regional airports in France to international hub airports.

A further 12 of the domestic French routes are services within or into the French overseas regions, the Dom-Tom regions France d'outre-mer. The focus of the other routes is on one hand those to Corsica, on the other hand linking regional airports to the capital. The Italian routes concentrate on those to Sardinia and Sicily; comparable to the Greek services which also mainly link the islands to the main land and some inter-island routes. For Portugal most services concentrate on the Azores and the Spanish services include only island services either between the Balearics or between the Canary Islands. Also in the UK most services operate to or from the Orkney, Shetland and Hebridean Islands. So it can be generalized that most PSO services concentrate on regions otherwise difficult to access; only in France and in Ireland are there some more services where at least competition with surface transport modes is possible.

Concerning airlines serving PSO routes, it can be stated that in most cases these services are provided by regional airlines. Interestingly, these airlines usually cooperate with the respective national carrier, which in many cases is not optimally suited for these services, due to a higher cost base. The most important exception is the Greek island services being completely provided by Olympic Airlines. Though it is required that the tender has to be open for all European airlines, in most cases only carriers of the same country were able to provide such a service. The reason might be that it is too cost-intensive for a rather small carrier to start a service outside its own existing catchment area. Exceptions are the international services to and from Strasbourg, where airlines from another country were able to win the contract.

2.1.8 Fare Development

An important indicator for the description of the air transport industry's development is the level of the fares and yields. It can be assumed that with increasing competition on a particular route air fares decline. It is, however, very difficult to obtain appropriate data about ticket prices and yields. The International Air Transport Association (IATA) published detailed fare and yield data in 2007 for the first time. In the following paragraphs, the most important developments in Europe are provided. The IATA fare data show only the development in the first half of 2007 (January to June). The growth rates displayed refer to the first half of 2006.

Figure 2-47: Appraisal of ticket fares per kilometre according to stage distance (Economy class)

Source: IATA Faretracker

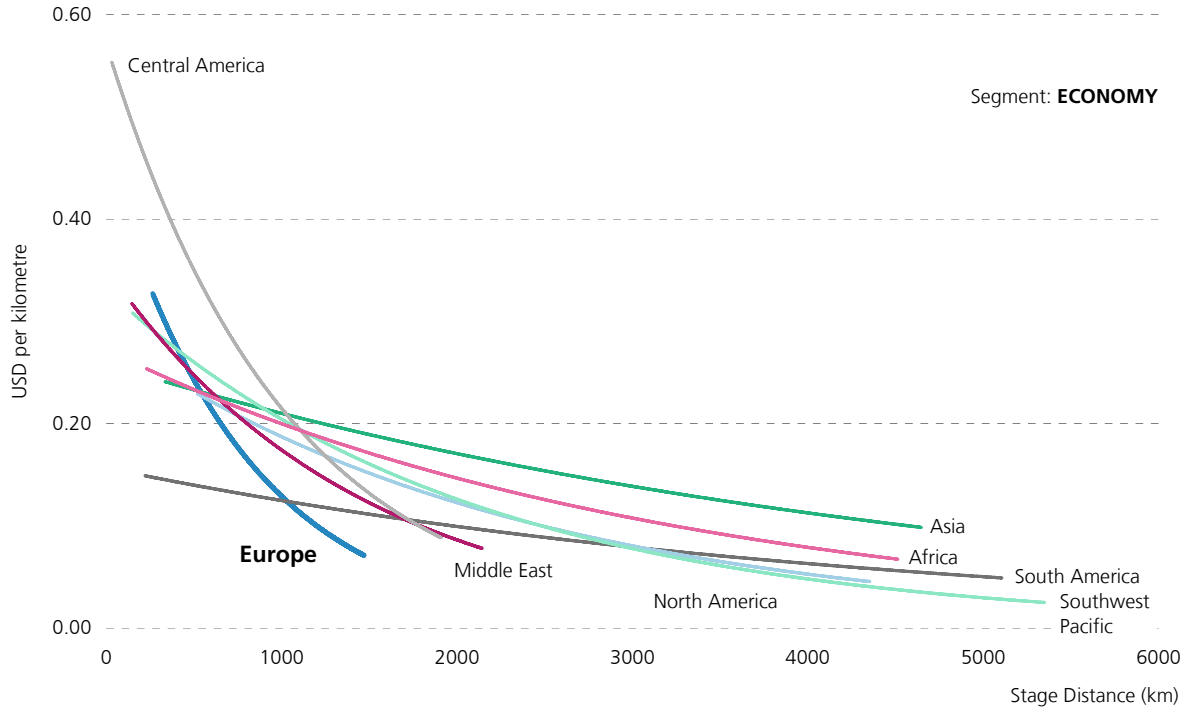
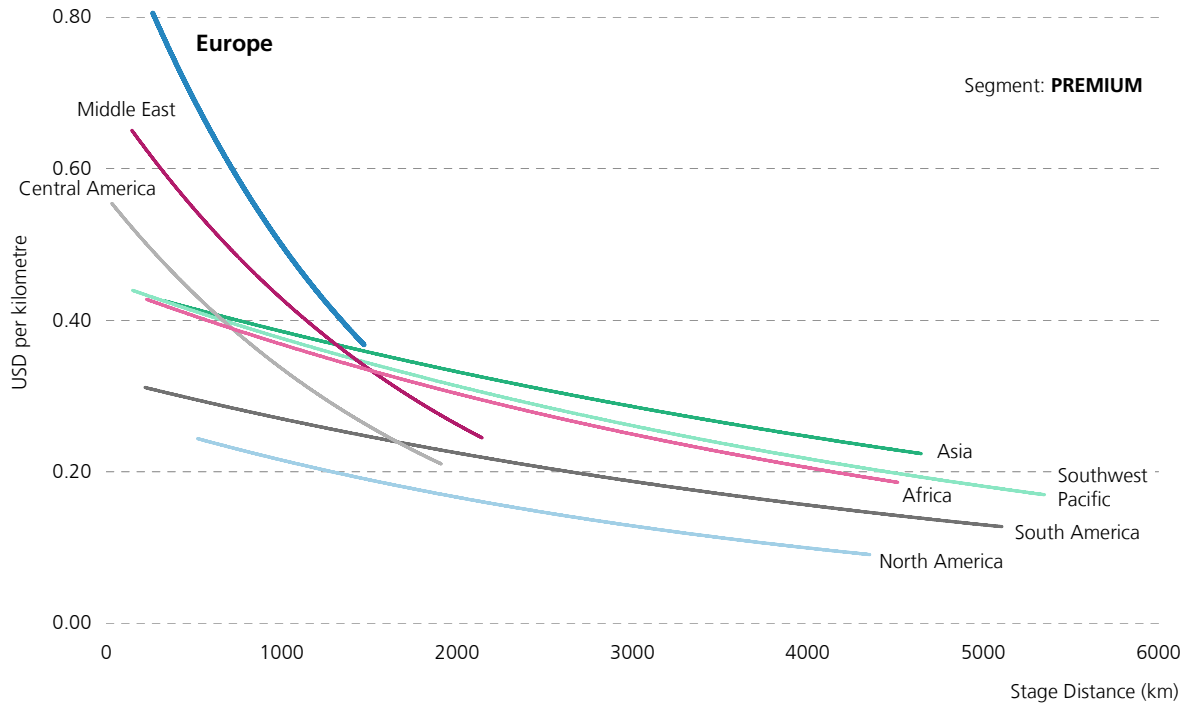


Figure 2-48: Appraisal of ticket fares per kilometre according to stage distance (Premium class)

Source: IATA Faretracker



When comparing route-specific ticket prices of individual world regions, decreasing yields (measured in US$ per kilometre) for increasing distances become obvious. Thus, in the region Central America, short distance flight tickets for the economy class show relatively high route-dependent prices. However, these distance-dependent prices considerably decrease according to increasing route distance. In other world regions like Asia, Africa or South West Pacific, route-specific prices are also lower for short distances, although they do not decrease very fast. In Europe too, above average ticket prices per kilometre for shorter distances can be observed. However, these prices drop with increasing route distance – more than in other regions – to a below average level. With respect to route-specific premium-class yields for short distances Europe is number one. Also for this, segment prices considerably decrease according to increasing route distance. Nevertheless, they stay relatively high compared to the specific ticket prices of other world regions.

Fare Development on a Global Scale

On a global scale, ticket prices increased by approx. 0.5% for economy class on average, compared to the first half of 2006. However, the changes in price are effected rather differently with respect to the individual world regions and flight corridors: Thus, prices increased by approx. 15.6% in the region Southwest Pacific, whereas they dropped by approx. 13.1% in the region South America in the same time frame. A considerable price increase was also seen in the region Central America (approx. 14.4%), on the South Pacific route (approx. 9.4%) and also on the North Atlantic route (approx. 7.1%). Dropping average prices for economy class were noted on the Pacific corridor America - Asia (approx. minus 11%), between Africa and Middle East (minus 6.4%) and within North America (minus 6.2%). All in all it is worth mentioning that ticket prices for premium classes (business and first class) reveal similar tendencies – they are partly even more volatile. Thus, premium class ticket prices dropped by approx. 16.3% within the region South America, whereas they increased by 20.5% on the South Pacific route.

Fare Development between Europe and other World Regions

When considering the air fare trends with respect to passenger flows between Europe and other world regions, a rather strong increase in ticket prices is revealed on the main European intercont-relation to North America in the first half year 2007. In the economy class, fares have increased by approx. 7.1% and in the premium segment by 6.6%. Simultaneously, a considerable growth of passenger traffic (16.8%) is seen on this relation, whereas passenger traffic has only grown by 3.7% in the economy class. The second most important intercont-corridor with respect to passenger traffic – the one between Europe and Asia – shows a considerable growth with respect to economy passengers (12.9%) as well as premium passengers (20.3%). Simultaneously, the average ticket price has increased by 7.5% in the premium classes, and only by 1.8% in economy class. Likewise, with respect to the growing flow between Europe and the Middle East, fares have increased (12.9%) in the premium classes significantly more than in the economy class (4.5%). The relation Europe – North Africa, which is

mainly frequented by tourists, however, shows dropping fares (-3.3%) in the economy class and stagnating fares (+1.1%) in the premium classes. For the relations Europe – South Africa and Europe – South West Pacific fares increased significantly. Here, tickets are almost 10% more expensive than in the first half of 2006.

Flight Stages with the most Premium and Economy Class Passengers

The IATA evaluation of ticket prices also provides an overview of country pairs, showing the highest number of premium-class and economy-class passengers. With respect to the premium classes, the relation between the USA and Canada is the most frequented one (1.6 million passengers) in the first half of 2007. The average fare in premium classes amounts to 323 US$. Average premium-class ticket prices for this country pair dropped by 9.8% compared to the first half 2006. Between the UK and the USA – the second most important relation with respect to the premium classes – in the first half of 2007, 1.3 million passengers were carried for an average fare of 2,540 US$. On this relation, the price increase amounts to 5% in the time frame monitored. The relation Germany - USA shows the third biggest volume (0.8 million premium class passengers). An average fare of 1,963 US$, which equals a growth of 11.1%, was gained. Simultaneously, the number of premium class passengers increased by 11.5%. On the relation France - USA, 0.5 million passengers were carried for a fare of 2,674 US$ in the premium classes.

When considering the most important country relations with respect to economy class passengers, the relation UK - Spain, which is mainly frequented by tourists, is number one in the first half year 2007 (9.8 million passengers). Here, with a slightly rising number of passengers and a price increase of 4.4%, an average ticket price of 96 US$ was gained. The second biggest passenger flow between two countries, namely the one between Mexico and USA, shows passenger traffic of 8.6 million passengers. Then follows the flow between Germany and Spain, which again is mainly a tourist one. 7.9 million passengers were carried for an average price of 114 US$ in the first half of 2007. Compared to the same period in the preceding year, this is a passenger traffic growth of 4.4% and a price decrease of 5.8%. In the economy class, the flow between the USA and the UK shows a high number of passengers (5.8 million). Compared to average fares for premium classes, the economy class fare is significantly lower (401 US$).

Important City Pairs within Europe

Besides the consideration of ticket prices from a global point of view, the IATA evaluation also enables the analysis of pricing trends with regard to intra-European flight routes. The most frequented route in Europe in the first half of 2007 was the relation Dublin – London-Heathrow. Here, approx. 34,000 premium class passengers and 571,000 economy class passengers were carried. The average ticket price amounted to 266 US$ for premium and 127 US$ for economy class. Premium class prices were about 13.2% higher than in the same period in the preceding year. Economy class showed a price increase of 9.5%. Nevertheless, demand increased by

11.6% for the economy class, whereas it remained almost unchanged for premium classes. In the first half of 2007, the second biggest passenger flow was seen on the route Amsterdam - London-Heathrow. Here, approx. 91,000 passengers were carried in the premium classes and approx 462,000 passengers in economy class. Compared to the preceding year, demand decreased by 14.8% for the premium classes. Simultaneously, the ticket price increased by 20% to 200 US$. Demand for the economy class slightly dropped by 2.7%, whereas prices rose by approx. 4.9% to 107 US$ per ticket. For the third most frequented relation, Paris-Charles-de-Gaulle – London-Heathrow, 74,000 premium class tickets and 444,000 economy class tickets were sold in the first half of 2007. The demand dropped significantly for both price segments: by 18.2% for premium and by 17.2% for economy class. Simultaneously, ticket prices increased by 15.1% for premium classes and by 5.5% for the economy class. On the route Copenhagen – Oslo – the fourth most frequented relation in Europe – in the economy class, passenger traffic increased by approx. 50%, which amounts to 453,000 passengers, whereas it remained almost unchanged in the premium classes (approx. 65,000). However, ticket prices rose by approx. 30% for both segments. For the route Dublin – London-Stansted, which is served by low cost airlines, the average ticket price (49 US$) remained constant when comparing the first half of 2006 with the same period in 2007. However, the number of economy class passengers dropped by 4.6% to 506,000. There were no premium class passengers counted on this relation.

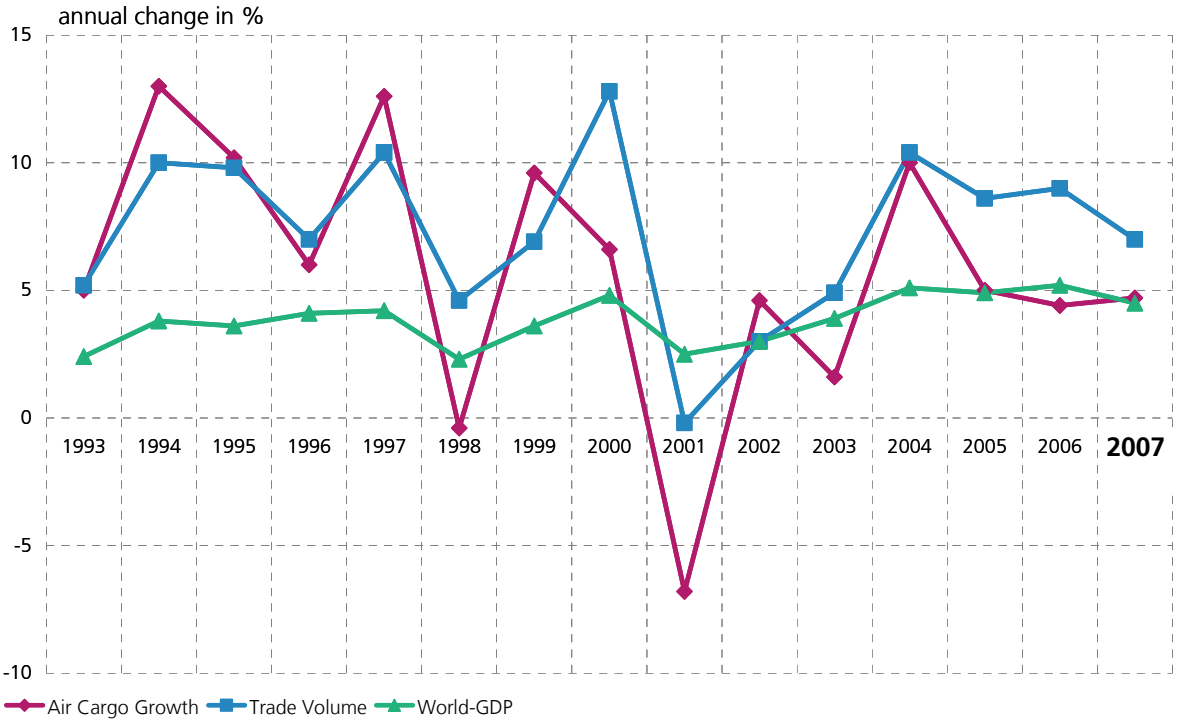
2.2 Cargo Airlines

Following the 5.9% drop in growth of the air freight market in 2001 as a result of weakened global economic growth and the terrorist attacks of 11 September, the sector has found its way back onto a stable path of growth since the end of 2003. The occurrence of external shocks, such as SARS, the Iraq war and high oil prices, did have a short term influence on this growth trend. The most important influencing factor on the growth of the air freight market, however, is the development of the global economy and international trade. The WTO predicts that international trade should increase by 7% per year over the long term, which if achieved should translate into a positive development of the medium to long-term prognosis for market participants in the air freight sector. Measured according to the value of goods, close to 40% of world trade is transported by air freight today. This shows the enormous importance of this sector for the global economy.

The illustration below shows the high correlation between worldwide economic growth, world trade and the growth of the air freight market, measured in freight tonne kilometres.

Figure 2-49: Growth rates of the global economy, world trade and air freight (FTK)

Sources: IATA, Merge Global, OECD, World Bank Group, HSH-Nord Bank Research



2.2.1 Cargo Airlines – Supply

There are various types of providers in the air freight market, who differ according to the length of the value chain and the breadth of services offered. Alongside the all-cargo and combination airlines, air freight services are also offered by integrators. Originally specialist courier businesses, the major players in the sector – FedEx, UPS, TNT and DHL – are now transporting an increasing amount of classic air freight. The integrators and express service providers are sustained by their global networks. Their processes are standardised, heavily automated and computerised. The air freight companies Atlas Air and Air Atlanta Icelandic have similarly optimised their businesses, which involve chartering their fleets and providing fly-on-demand jets, including crew, maintenance and insurance. The contract carrier market segment is experiencing equally strong growth. Providers such as Atlas Air Holdings and Evergreen lease their cargo fleets on a wet-lease basis. According to estimates by Airbus, the proportion of air freight transported on a wet-lease basis in 2005 was as much as 8.7%.

Airline	Country	Cargo traffic Million RTK	Change
2007 results			**vs. 2006**
FedEx	USA	16,008	4.0%
Air France-KLM Group	**France**	**11,365**	**3.4%**
United Parcel Service (UPS)	USA	9,930	8.5%
Korean Air	South Korea	9,677	9.3%
Cathay Pacific	China	8,900	18.4%
Lufthansa Cargo	**Germany**	**8,451**	**4.3%**
Singapore Airlines Cargo	Singapore	7,959	-0.5%
China Airlines	Taiwan	6,299	0.2%
Cargolux Airlines International	**Luxembourg**	**5,480**	**4.0%**
Emirates	UAE	5,413	9.0%
British Airways	**UK**	**4,890**	**4.2%**
EVA Air	Taiwan	4,774	-7.5%
Japan Airlines Corporation	Japan	4,621	-2.7%
Air China	China	3,686	12.1%
Asiana Airlines	South Korea	3,577	3.1%
American Airlines	USA	3,098	-4.6%
Northwest Airlines	USA	3,018	-8.9%
United Airlines	USA	2,937	-1.8%
Martinair	**Netherlands**	**2,854**	**-7.7%**
LAN Airlines	Chile	2,702	4.8%
Malaysia Airlines	Malaysia	2,633	1.4%
Qantas	Australia	2,621	-0.5%
China Eastern Airlines	China	2,611	8.2%
Thai Airways	Thailand	2,382	16.3%
All Nippon Airways	Japan	2,089	21.9%
Kalitta Air	USA	1,982	62.5%
China Southern Airlines	China	1,973	6.0%
Nippon Cargo Airlines	Japan	1,895	-14.2%
Polar Air Cargo	USA	1,852	-19.2%
Delta Air Lines	USA	1,812	-5.0%
Alitalia	**Italy**	**1,630**	**7.7%**
Southern Air	USA	1,495	37.6%
Virgin Atlantic Airways	**UK**	**1,490**	**11.9%**
China Cargo Airlines	China	1,465	17.9%
Continental Airlines	USA	1,380	-3.8%
Qatar Airways	Qatar	1,321	45.2%
Air Canada	Canada	1,271	10.8%
Saudi Arabian Airlines	Saudi Arabia	1,262	16.4%
Iberia	**Spain**	**1,225**	**9.5%**
Swiss	**Switzerland**	**1,164**	**9.3%**
World Airways	USA	1,154	6.1%
Evergreen International Airlines	USA	1,098	-10.4%
MK Airlines	**UK**	**1,081**	**168.0%**
SAS Cargo	**Denmark**	**1,024**	**-5.4%**
ABX Air	USA	942	13.0%
South African Airways	South Africa	933	-11.2%
Shanghai Airlines	China	927	57.9%
Global Supply Systems	**UK**	**920**	**3.6%**
El Al	Israel	873	36.5%
AirBridge Cargo	Russia	859	28.9%

Table 2-17: Revenue freight tonne kilometres in 2007

Source: Airline Business

Measured in terms of RTK, FedEx was by far the largest air freight carrier in 2007, with an overall total of 16,008 billion RTK. FedEx has gained a foothold in the Chinese market through the establishment of a central hub in Guangzhou. Following in second place by a considerable margin is Air France-KLM, with a total of 11,365 billion RTK (2007). The merger of Air France and KLM has displaced Lufthansa Cargo as the largest European air freight carrier. Lufthansa Cargo is seeking to position itself in the Asian market through its stake in Jade Cargo International, which is the first Chinese air freight company to attract foreign investment. The combination airline with the strongest growth is currently Korean Air Cargo. The table shows the results available for cargo airlines in 2007, compared to the change in 2006. Integrators and contract charter carriers, such as Atlas Air and Gemini, are excluded. Cargo traffic includes freight and mail, scheduled and charter, measured in freight tonne kilometres.

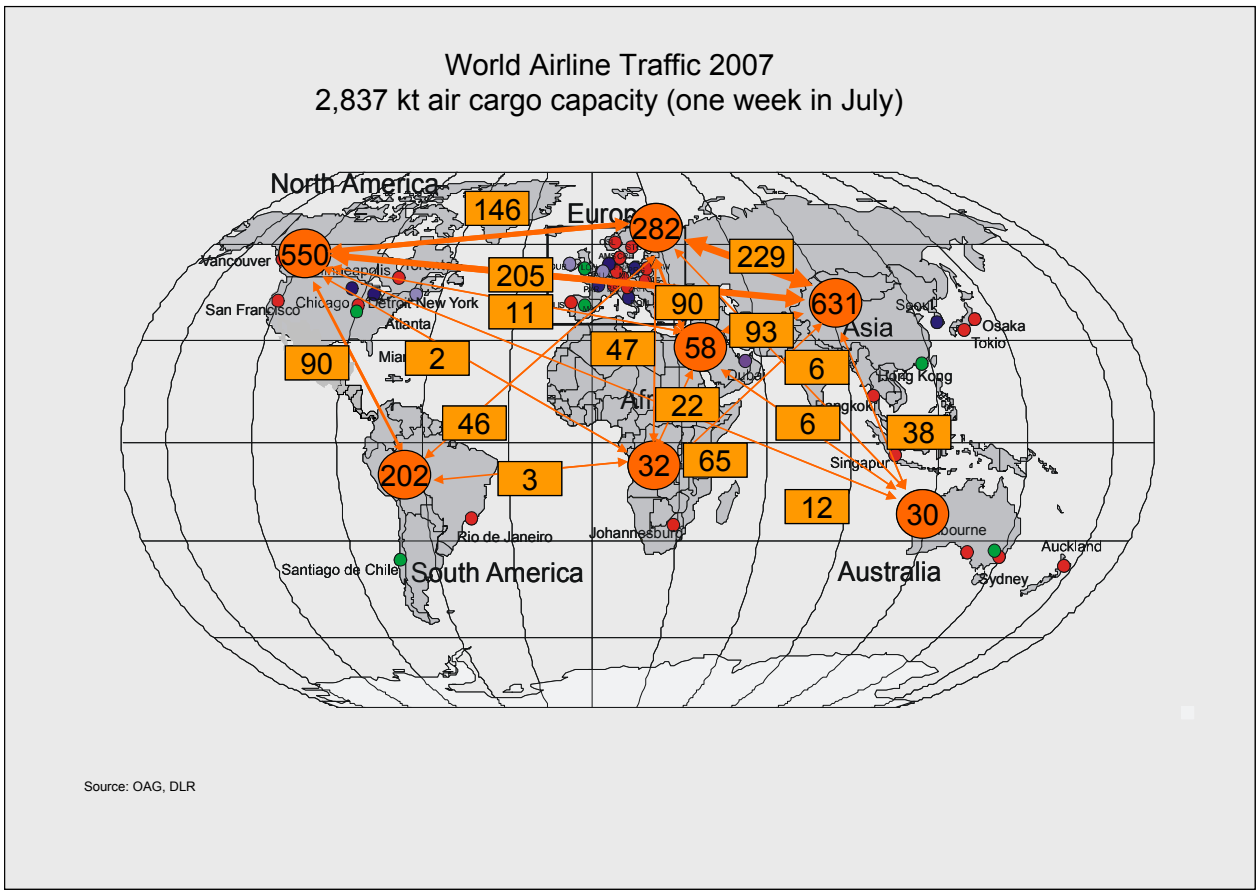
2.2.1.1 Cargo Airlines - Freight Capacity

A general analysis of OAG data over one week in July 2007 with regard to the potential freight capacity provided by all flights flown by belly-cargo and all-cargo providers gives the results shown in Figure 2-50 below. The highest capacity was provided on Europe-Asia routes, with 229 flights, followed by North America-Asia routes, with 205 flights. The third highest level was achieved on services between Europe and North America, but at only 146 thousand tonnes this fell well below the first two routes. Following behind by a substantial margin were capacities of 93 thousand tonnes on Asia-Middle East routes and 90 thousand tonnes for both North America-South America and Europe-Middle East.

The picture for inbound and intra-regional freight capacities in the various parts of the world is as follows. The two areas offering the most inbound freight capacity within a region are Asia and North America with 631 and 550 thousand tonnes respectively. Well below this are Europe with 282 thousand tonnes and South America with 202 thousand tonnes. By contrast, it is clear why experts are predicting an increase in the air freight potential for Africa over the coming years: only 32 thousand tonnes air freight capacity was available there during the week studied, according to the OAG data.

Figure 2-50: World airline traffic 2007: air freight capacity (in thousand tonnes for one week in July)

Source: OAG, DLR



If the worldwide freight capacity is considered specifically for cargo airlines, the analysis produces the charts shown below for the thirty largest providers of European and worldwide freight capacity. Cargolux leads the field both in the European arena and worldwide. Lufthansa and Cathay feature in the top performing groups using both analyses of data. Only China Airlines was able to edge its way between the latter two airlines when considering the global situation.

Figure 2-51: World airline cargo traffic: air cargo freighter capacity (one week in July 2007)

Source: OAG

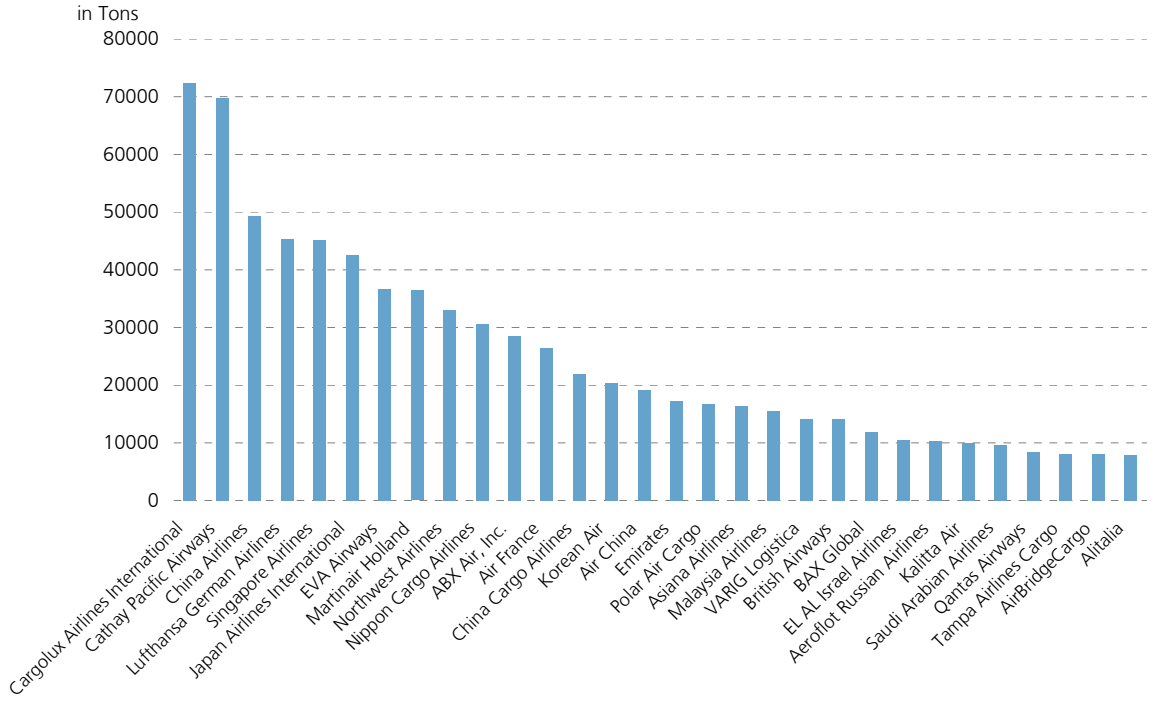
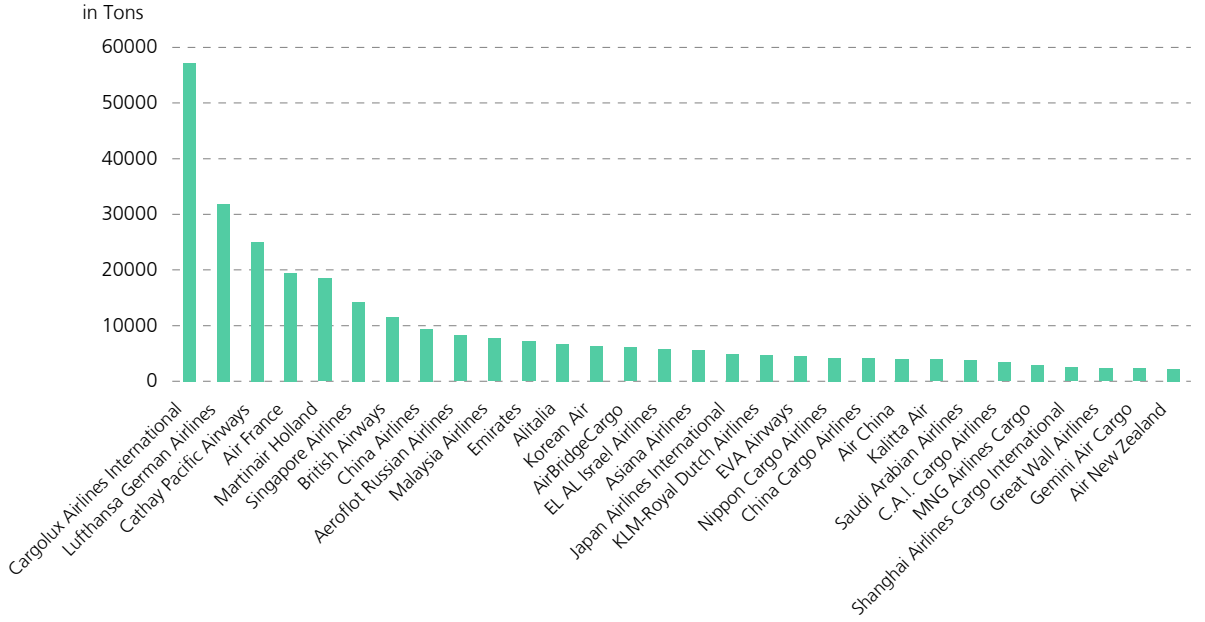


Figure 2-52: European airline cargo traffic: air cargo freighter capacity (one week in July 2007)

Source: OAG



2.2.2 Cargo Airlines – Demand

Due to the advance of globalisation and the outsourcing of production facilities and ancillary industries to emerging markets, the level of intercontinental connections, measured in **freight**

tonne kilometres (FTK), in particular are growing at an above average level. Measured against the global volume of air freight using the AEA data, the European domestic air freight market has shown a decline.

Table 2-18: Scheduled cargo services of AEA member airlines in 2007

Source: AEA

AEA Air Freight Data	Traffic (million)	TFTK %
Domestic (1)	117.3	-7.8
Cross-border Europe (2)	737.1	-3.7
Total Europe (1+2)	**856.4**	**-4.1**
Europe - North Africa (3)	190.4	11.2
Europe - Middle East (4)	988.2	-0.7
Intl Short/Medium Haul (2+3+4)	**1,919.9**	**-0.7**
North Atlantic (5)	10,636.1	3.5
Mid Atlantic (6)	1,590.6	2.1
South Atlantic (7)	2,551.9	12.8
Europe - Sub Saharan Africa (8)	3,395.8	10.3
Europe - Far East/Australasia (9)	17,309.0	0.0
Total Longhaul (5 to 9*)	**35,500.6**	**2.9**
Total International (2 to 9*)	**37,446.4**	**2.7**
Total Scheduled (1 to 9*)	**37,563.7**	**2.7**

* Long-haul region 'Other' is not shown above, but is included in the total

Freight traffic is measured in TFTK (Total Freight Tonne-Kilometres) all-cargo services, excluding mail. Growth rates have been adjusted for changes in membership. Introduced in 2004, the new route area Total Europe includes 'international' or Cross-border Europe services and Domestic services.

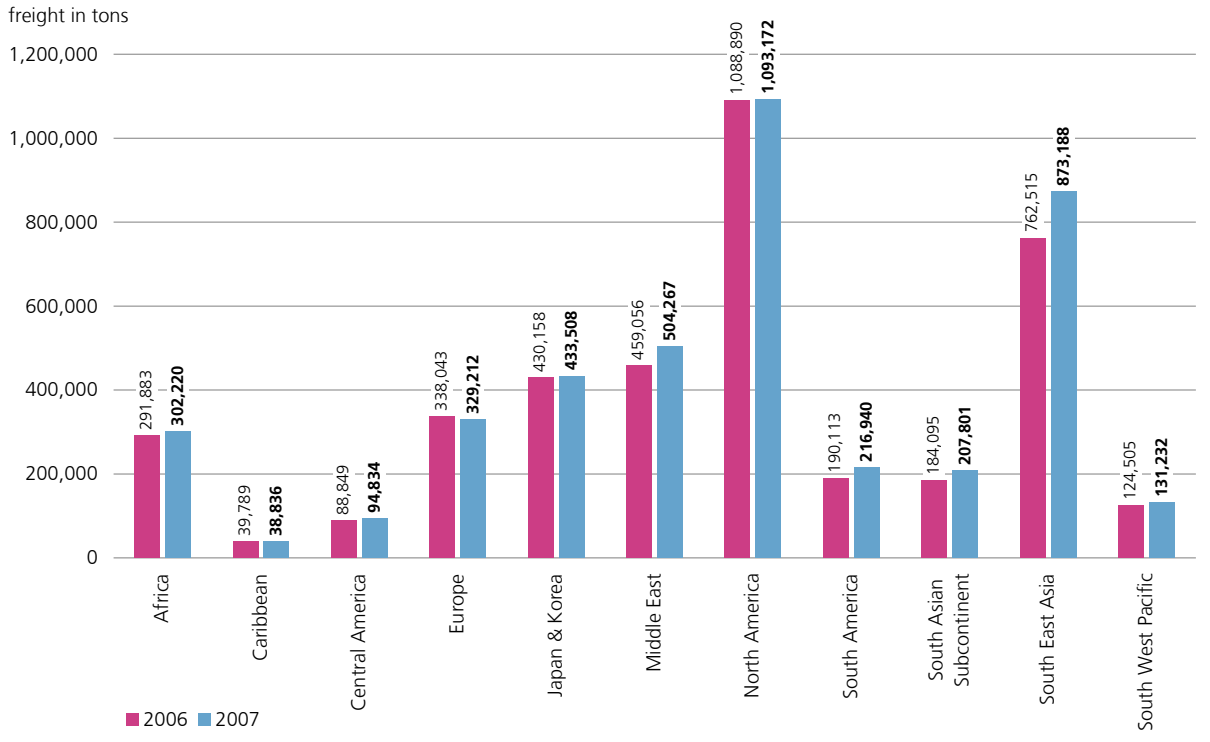
2.2.2.1 Cargo Airlines - Tonnes of Freight

Intra-European air freight growth has been slow over the past several years as regional air freight volume has come under pressure. The close proximity of major cities makes truck and rail transit cost effective and reasonably acceptable in terms of transit time.

The IATA CASS System (Cargo Accounts Settlement System) is a system to simplify the billing between Freight Forwarders and Airlines. CASS data are billing data taken from the Air Waybill's data fields. Analyses of cargo based on IATA-Airway-Bills are export-oriented (documents to retrace the cargo's origin and destination). At present, CASS data is available from following countries: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain with the Canary Islands, Sweden, Switzerland, Turkey and the United Kingdom. Data covering the EU-27 is provided by Eurostat; please refer to Table 1-5 in the first chapter.

Figure 2-53: Freight out of European CASS member states to various regions, 2006 vs. 2007

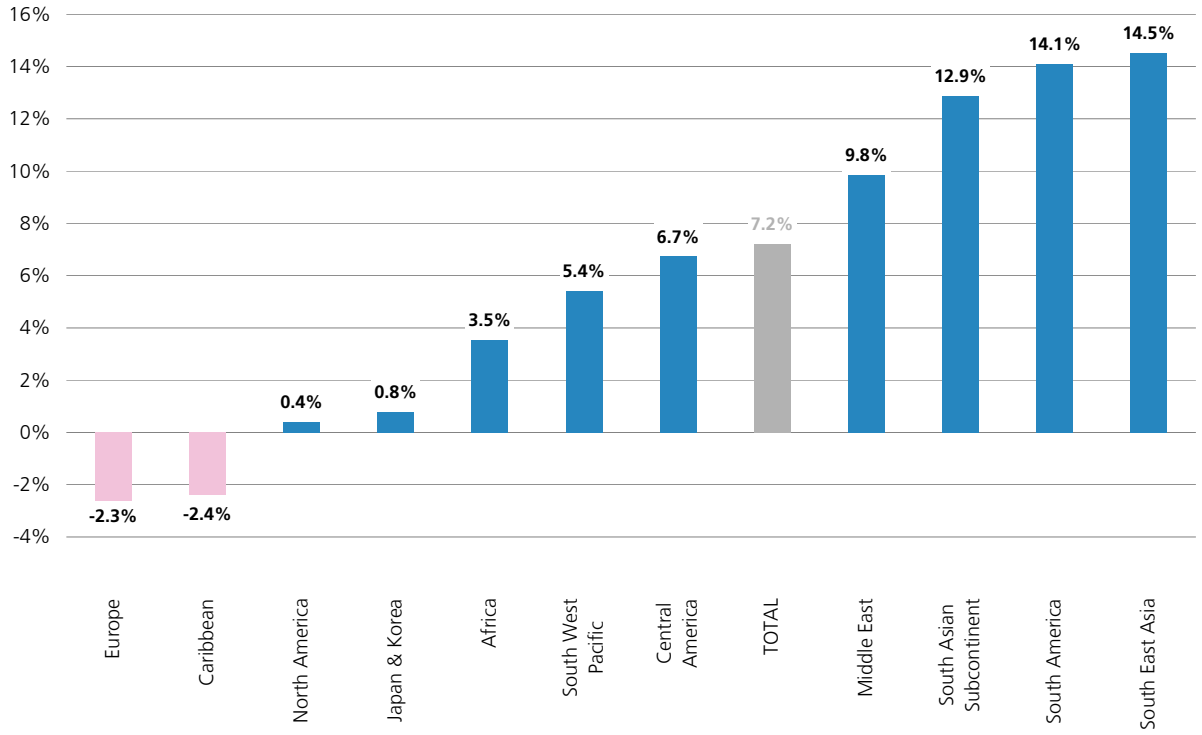
Source: IATA CASS



This view is also supported by the table below. According to this data, the air freight market within Europe has suffered a clear decline of 2.3 percent. By contrast, the flow of freight out of Europe saw an above-average growth of 7.2 percent in 2007 compared to the previous year.

Figure 2-54: Percentage change in freight originating in Europe (CASS), 2006 vs. 2007

Source: IATA CASS



If the proportion of the demand for air freight in 2007 is considered on the basis of the countries covered by the IATA CASS system, then the major flows of air freight out of Europe are to North America (26 percent) and to South East Asia (e.g. China and Hong Kong) (21 percent).

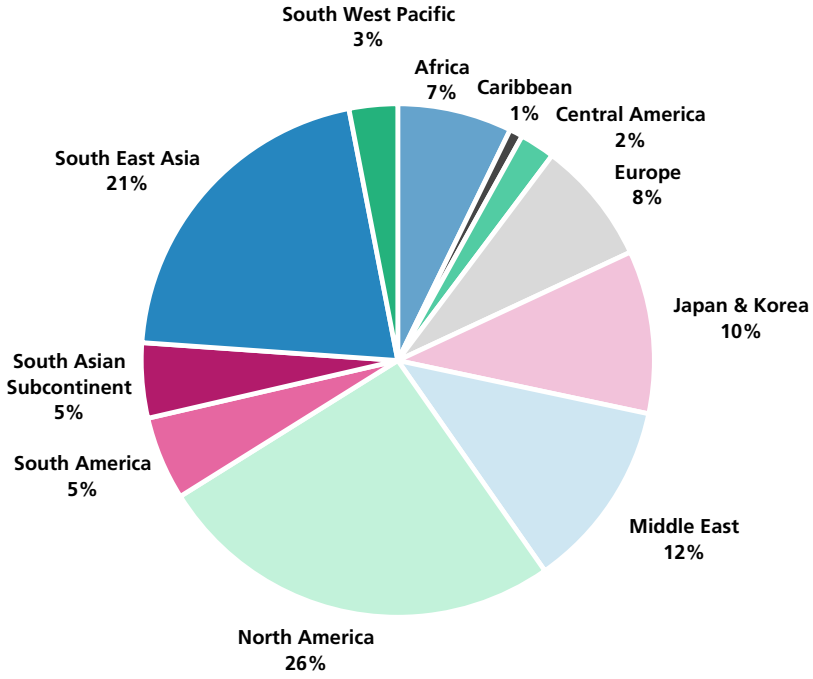


Figure 2-55: Percentage distribution of freight out of Europe in 2007

Source: IATA CASS

2.2.2.2 Cargo Airlines - Freight Kilometres

Figure 2-56: Air freight traffic originating in Europe carried by CASS members by region; 2006 vs. 2007

Source: IATA CASS

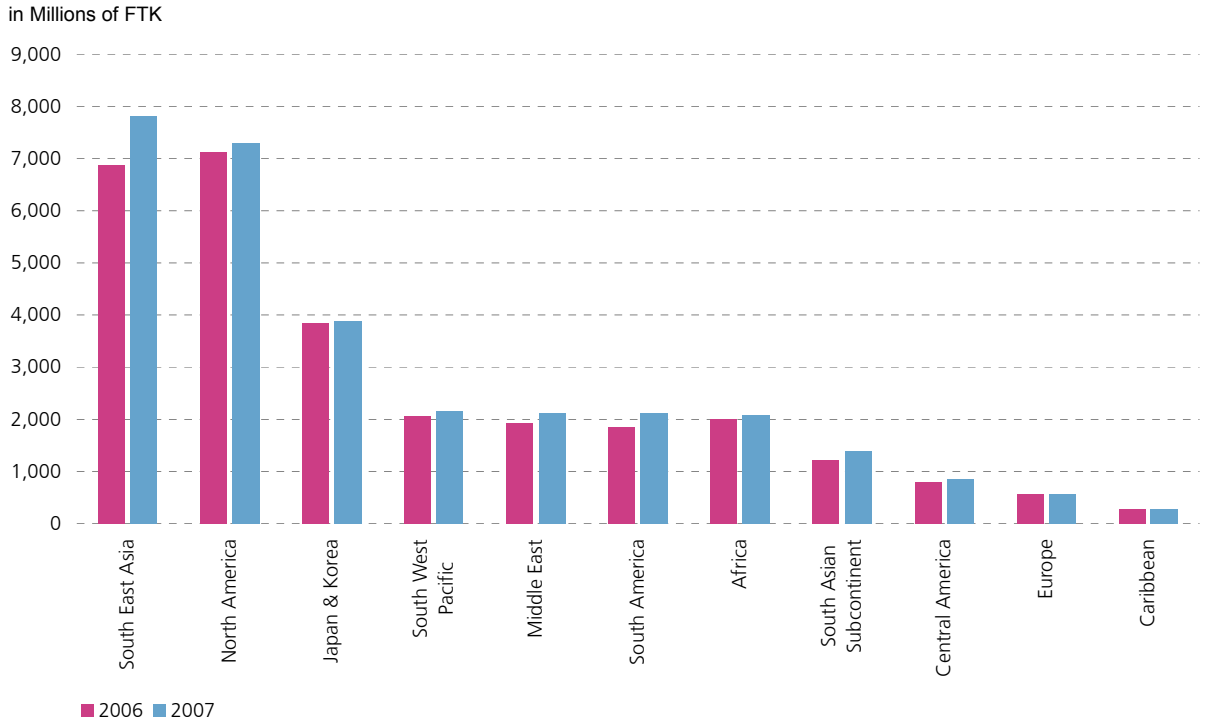
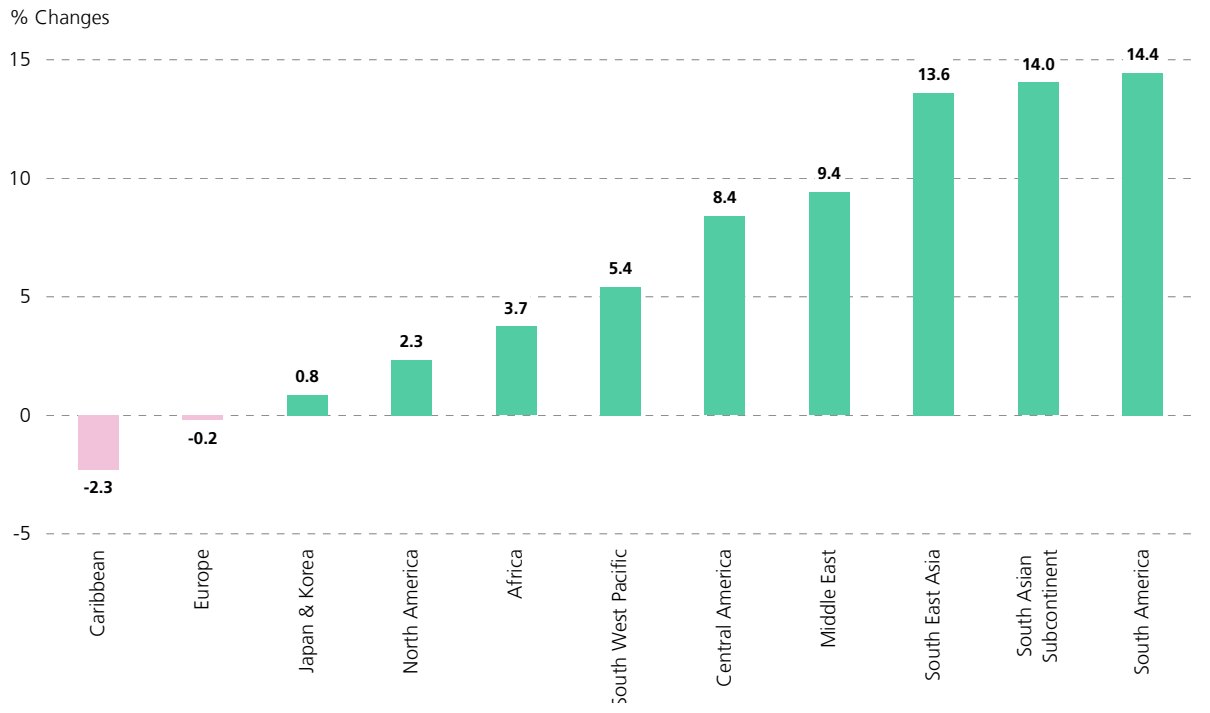


Figure 2-57: Growth of air freight traffic originating in Europe carried by CASS members by region; 2006 vs. 2007

Source: IATA CASS



2007		Freight Data	
	AEA Airlines	**Traffic TFTK (mill)**	**TFTK %**
LH	DEUTSCHE LUFTHANSA AG	8,346.0	3.2
AF	AIR FRANCE	6,136.9	4.3
CV	CARGOLUX	5,479.8	5.0
KL	KLM ROYAL DUTCH AIRLINES	4,953.8	1.0
BA	BRITISH AIRWAYS PLC	4,518.0	-4.4
AZ	ALITALIA	1,659.8	11.7
VS	VIRGIN ATLANTIC AIRWAYS	1,489.9	11.9
LX	SWISS INTERNATIONAL AIRLINES	1,159.7	6.5
IB	IBERIA	1,121.4	9.3
SK	SAS - SCANDINAVIAN AIRLINES	546.0	-9.9
AY	FINNAIR	489.7	19.9
TK	TURKISH AIRLINES	477.5	6.8
OS	AUSTRIAN	453.8	-22.7
TP	TAP PORTUGAL	318.8	13.4
BD	BMI	96.7	-33.6
LO	LOT POLISH AIRLINES	83.1	3.8
SN	BRUSSELS AIRLINES	79.9	6.0
OA	OLYMPIC AIRLINES	65.8	2.2
OK	CSA - CZECH AIRLINES	32.7	-17.1
MA	MALEV HUNGARIAN AIRLINES	26.0	2.9
KM	AIR MALTA	8.6	-20.3
RO	TAROM ROMANIAN AIR TRANSPO	5.5	13.9
CY	CYPRUS AIRWAYS	4.1	-90.6
JU	JAT AIRWAYS	4.1	-1.9
JP	ADRIA AIRWAYS	3.8	11.7
OU	CROATIA AIRLINES	2.2	6.2
LG	LUXAIR	0.0	-94.9
	∑ AEA	**37,563.7**	**2.7**

If the air freight carried by AEA members in 2007 is considered in comparison to 2006, then the market leaders in Europe are clear: the German carrier Lufthansa (with 8,346.0 TFTK) only lost its top position due to the merger of Air France (6,136.9 TFTK) with KLM (4,953.8 TFTK). Cargolux (5,479.8 TFTK) and British Airways (4,518.0 TFTK) form the core group accounting for 27% of the total freight tonne kilometres of AEA airlines. Despite a growth of 11.7% compared to 2006, Alitalia is far behind with only 1,659.8 TFTK.

Table 2-19: AEA members' air freight traffic, 2006 vs. 2007

Source: AEA

2.2.3 Cargo Airlines - Fleet

The world's largest cargo fleets are operated by integrators. The two largest operators, FedEx and UPS, alone operate 17.3% of all cargo aircraft world-wide. Taking into account that integrators often use wet-lease agreements with other operators, the position of these carriers would be even stronger. This also applies for the DHL Group, which includes fully owned subsidiaries Blue Dart Aviation, DHL Aero Expreso, DHL Ecuador, DHL de Guatemala, DHL Air, European Air Transport and SNAS. In addition to these carriers in the group, it has to be mentioned that ABX Air and Astar Air Cargo also almost exclusively operate for DHL. Adding these carriers to the group would reduce the gap to the market leaders FedEx and UPS.

It is worth noting the fact that more than 70% of the world fleet of aircraft between 50 t and 100 t are operated by only five different airlines; FedEx alone operates more than 41% of the world fleet in this category. In total, the 20 largest operators account for 51.3% of the payload capacity of the world's cargo fleet and 30.3% of all cargo aircraft.

Table 2-20: The 20 largest cargo airlines by fleet payload capacity at year-end 2007

Source: Ascend Online Fleets, data as of April 2008

Pos.	Operator	Operator Country	Fleet Payload Capacity in t	Aircraft in Fleet	Aircraft max. Payload Class 1,000-10,000 kg	10,001-25,000 kg	25,001-50,000 kg	50,001-100,000 kg	100,001-250,000 kg
1	FedEx	USA	**15,684**	**355**	0	87	129	139	0
2	UPS	USA	**12,071**	**242**	0	0	166	69	7
3	Korean Air	South Korea	**2579**	**23**	0	0	2	0	21
4	China Airlines	Taiwan	**2480**	**20**	0	0	0	0	20
5	ABX Air*	USA	**2325**	**88**	0	48	38	2	0
6	Cathay Pacific	China/Hong Kong	**2190**	**19**	0	0	0	7	12
7	DHL Group*	Multinational	**2145**	**68**	2	4	52	0	0
8	Atlas Air	USA	**2051**	**18**	0	0	0	0	18
9	Volga-Dnjepr Airlines	Russia	**1935**	**20**	1	0	9	0	10
10	Kalitta Air	USA	**1879**	**18**	0	0	0	6	12
11	Cargolux	Luxemburg	**1860**	**15**	0	0	0	0	15
12	Singapore Airlines Cargo	Singapore	**1736**	**14**	0	0	0	0	14
13	Air France	France	**1289**	**15**	0	0	1	0	14
14	Evergreen International	USA	**1574**	**15**	0	0	0	6	9
15	Antonov Airlines	Ukraine	**1413**	**13**	2	2	0	1	8
16	Northwest Airlines	USA	**1409**	**13**	0	0	0	0	13
17	Japan Airlines International	Japan	**1404**	**14**	0	0	0	3	11
18	Astar Air Cargo*	USA	**1279**	**43**	0	29	14	0	0
19	Lufthansa Cargo	Germany	**1188**	**22**	0	0	0	22	0
20	Nippon Cargo Airlines	Japan	**1183**	**10**	0	0	0	0	10
	Total fleet operated by 20 largest operators		**59,674**	**1045**	5	170	411	255	194
	Percentage of world cargo fleet		**51.3%**	**30.3%**	0.4%	25.4%	50.5%	75.4%	56.9%

*) DHL Group includes Blue Dart Aviation, DHL Aero Expreso, DHL Ecuador, DHL de Guatemala, DHL Air, European Air Transport and SNAS. Also ABX Air and Astar Air Cargo have operated almost exclusively for DHL.

Table 2-21: Cargo aircraft in service at year-end 2007

Source: Ascend Online Fleets, data as of April 2008

max. payload	2007	2006	change
1000–10,000 kg	1285	1289	-0.3%
10,001–25,000 kg	668	735	-9.1%
25,001–50,000 kg	814	799	1.9%
50,001–100,000 kg	338	325	4.0%
100,001–250,000 kg	341	313	8.9%
Total cargo fleet	**3446**	**3461**	**-0.4%**

Table 2-21 shows the development of the world cargo aircraft fleet from 2006 to 2007. Overall, the number of freighters declined slightly from 3461 in 2006 to 3446 in 2007. A particularly high number of smaller aircraft with a maximum payload of up to 25,000 kg have been withdrawn from service, whereas the number of larger freighters with a maximum payload of more than 50,000 kg has increased. The demand for very large freighters with a maximum payload of more than 100,000 kg experienced particularly high growth. The number of these aircraft in the world fleet has increased by almost 9% from 313 to 341 year-over-year. The growth in the market for large intercontinental cargo aircraft reflects increasing world trade, particularly between Europe and Asia and North America and Asia.

Table 2-22 shows the average age of the world cargo aircraft fleet. In comparison to the world passenger aircraft fleet, the cargo fleet is relatively old. Many of the fleet are passenger aircraft that have been converted and are now enjoying a second life as a freighter. This trend has even continued in the current environment of rising fuel prices, as cargo aircraft are usually not as intensely used as passenger aircraft. This means that cargo aircraft operators feel the pressure of rising fuel prices to a lesser extent than passenger aircraft operators.

max. payload	2007	2006
1000–10,000 kg	26.48	25.88
10,001–25,000 kg	32.37	32.52
25,001–50,000 kg	20.69	20.42
50,001–100,000 kg	19.92	19.37
100,001–250,000 kg	15.39	15.42
Total cargo fleet	**24.51**	**24.47**

Table 2-22: Average age in years of cargo aircraft at year-end 2007

Source: Ascend Online Fleets, data as of April 2008

The largest freighters have the youngest average age, as compared to all other freighter classes. Many new large freighters have been delivered (the only type delivered in 2007 was the Boeing 747-400F), while older aircraft have been retired. Additionally, many relatively young 747 passenger aircraft have been converted as airlines have replaced these aircraft with more economical and environmentally efficient twin-engine jets. In future, it can be expected that the average age of large (50 t–100 t maximum payload) and very large (100 t+ maximum payload) freighters will decrease as new types are introduced, namely the Airbus A330-200F, Boeing 777-200F/LRF and Boeing 747-8F. In the market segment comprising the smaller freighters (10 t–25 t), the relatively high average age of more than 32 years can be expected come down as older A320-type passenger aircraft will be converted. Despite the age of these aircraft generally being between 10 and 20 years, they still represent best available technology on the market.

2.2.4 Cargo Airlines - Financial Performance

2007 was characterised by strong growth in the world economy and world trade. However, increasing oil prices and capacity expansion have led to a difficult environment for the cargo operators. Most of the major cargo airlines have increased their fuel surcharges throughout the year 2007. Lufthansa Cargo for instance raised its fuel surcharges to € 0.65 per kg of air freight in October, Air France-KLM's surcharge stood at € 0.80 per kg at year end. The same surcharge was applied by Cargolux.

Air France-KLM Cargo is the second largest cargo airline worldwide behind FedEx in terms of cargo traffic in revenue ton kilometres. It operates a total of 13 747 freighters and additionally carries a large amount of belly cargo on its passenger services. In the financial year from April 2007 to March 2008 the company generated cargo revenues of € 2.93 billion, which is no significant difference to cargo revenues of € 2.91 billion in the comparable period of 2006/07. A similar distribution shows the operating income in the cargo business segment for the years 2007/08 and 2006/07. In this period the operating income rose also moderately from € 62 million to € 63 million.

Lufthansa Cargo, operating 19 MD-11 freighters and managing the belly cargo capacities of Lufthansa Passage Airlines and several other companies in the Lufthansa group, reported a decline in revenues from € 2.8 billion concerning 2006 to € 2.7 billion in 2007. The decline of 3.8% in total revenues is contrasted by an increase of revenue tonne kilometres of 4.3%. The contradicting trend in revenues and revenue ton kilometres is an indication for relatively strong competition, resulting in a decline in yields. At the same time, the operative result increased by 65.9% from € 82 million to € 136 million, as costs were reduced to a larger extent than revenues declined.

The third largest cargo carrier in Europe, as measured by revenue tonne kilometres, is **Cargolux** from Luxemburg. The carrier operates a fleet of 15 Boeing 747-400 freighters. The most recent financial report refers to US-$ 1.7 billion revenues for the financial year 2007. In contrast to US-$ 1.5 billion revenues in 2006 this trend marks an increase of 11.8%. At the same time the company generated an operating loss of US-$ 33 million in 2007 due to a significant lower other operating income than in 2006.

British Airways reported an increase in cargo revenues by 3% to £ 616 million for the period April 2007 to March 2008 in comparison to the previous financial year. The amount of cargo tonnes carried rose by 5.6% while revenues per tonne kilometre climbed only moderately by 0.9%.

The anecdotal evidence of the four carriers' financial results suggests a diverse picture for the overall calendar year 2007: On the one hand, a solid growth in the world economy and world trade led to an increasing demand for air cargo services. On the other hand, the commercial and financial success of the four largest European air cargo carriers is limited. Operating profit margins are below comparable margins for passenger services. Strong competition due to capacity increases, imbalanced traffic flows and high fuel costs lead to a difficult commercial environment for the air cargo business.

2.2.5 Cargo Airlines - Alliances

Following on from the trend of passenger businesses towards alliances that started a few years earlier, an increasing number of air freight carriers are now joining to form alliances. The aim of these co-operations is, on the one hand, to lower costs through mutual exploitation of freight capacity, expansion of route networks and the provision of a broader range of products, whilst on the other hand defending and building the competitive position of the companies. These arguments are equally applicable here as they are to passenger transport. An additional reason exclusive to the freight business is the heavy competition from integrators. Currently there are two freight alliances in the market. The first of these, the **WOW** alliance, was established by the three members of the Star Alliance passenger alliance. The second alliance, **SkyTeam Cargo**, is the cargo arm of the SkyTeam passenger alliance.

The following sections provide a short overview of the two cargo alliances.

WOW

WOW is a strategic alliance between four airlines. WOW is not an abbreviation. It is a name chosen to reflect the dynamism and innovation of the organisation. WOW was established in April 2000 by Lufthansa Cargo, SAS Cargo and Singapore Airlines. Japan Airlines joined the alliance in July 2002.

The participating airlines have access to a network of 523 destinations in more than 100 countries. The alliance has over 43 freight aircraft and access to the belly capacity of 760 passenger aircraft. In 2004 WOW achieved a global market share of 12% or 19.3 billion FTK. With the exception of JAL Cargo, the passenger businesses of the WOW members are represented in the Star Alliance. JAL belongs to the oneworld Alliance.

WOW members: Lufthansa Cargo (LH), SAS Cargo (SK), Singapore Airlines (SQ) and Japan Airlines (JL).

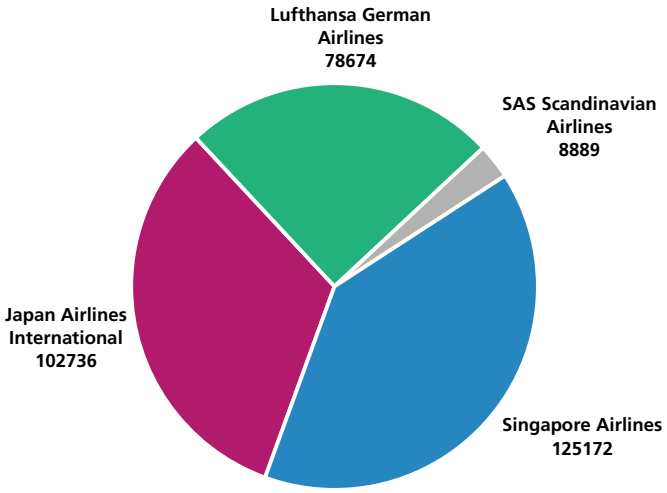


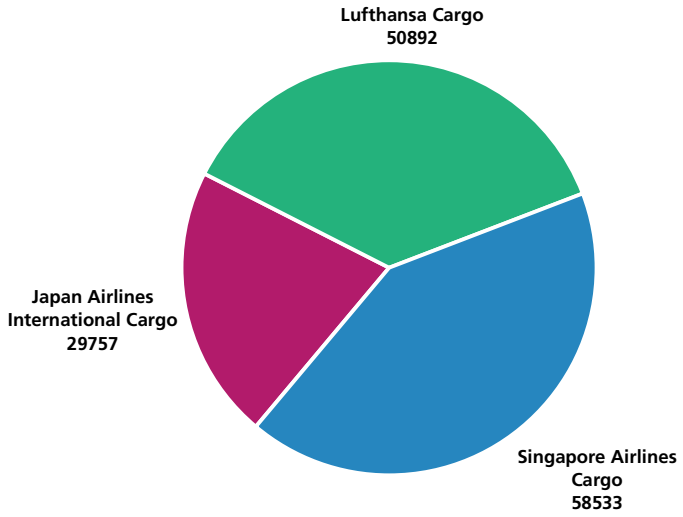
Figure 2-58: Available freight capacity in tonnes (belly & freighters) WOW members – worldwide (one week in July 2007)

Source: OAG

Note on founding WOW member Lufthansa Cargo: On 28 October 2007, the Russian authorities declared a ban on overflights by Lufthansa Cargo. Russia had requested that the German company relocate its freight hub from the Kazakh city of Astana to Krasnoyarsk in Siberia. On 2nd November the German Transport Ministry softened their stance and declared that the German side was prepared concede and move the Lufthansa hub to Krasnoyarsk in Russia. In 2007 Lufthansa flew 49 times per week from Frankfurt to Astana and Tashkent. Flights continue from there to other destinations in Asia.

Figure 2-59: Available freight capacity in tonnes (freighters only) WOW members – worldwide (one week in July 2007)

Source: OAG



The charts show the worldwide freight capacity offered by WOW members in tonnes, according to data from the OAG. Figure 2-58 shows belly and freight aircraft, while Figure 2-59 shows only the tonnage offered by dedicated freight aircraft.

SkyTeam Cargo

SkyTeam Cargo was established in September 2000. The founding members, Aero Mexico Cargo, Air France Cargo, Delta Air Logistics and Korean Air Cargo, are all members of the SkyTeam passenger alliance. Czech Airlines Cargo was incorporated as a new member in April 2001, followed by Alitalia in August of the same year. With the incorporation of KLM Cargo in September 2004, SkyTeam Cargo succeeded in displacing the WOW Alliance as the largest freight group, measured in terms of freight tonne kilometres. This position was further strengthened by the incorporation of Northwest Airlines Cargo.

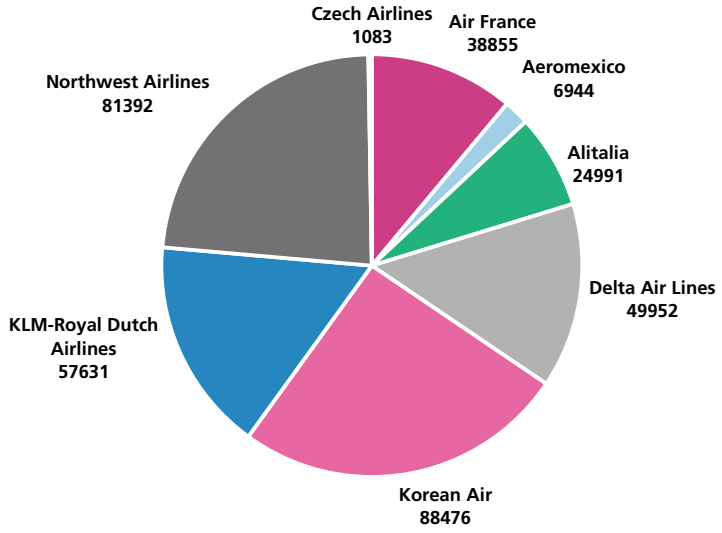


Figure 2-60: Available freight capacity in tonnes (belly & freighters) SkyTeam Cargo members – worldwide (one week in July 2007)

Source: OAG

The alliance flies to 728 destinations in 149 countries. The fleet consists of over 2360 aircraft and in 2006 achieved a global market share of 13.7% with 22.6 billion freight tonne kilometres (FTK) carried per year.

SkyTeam Cargo members: AeroMexico Cargo (AM), Air France Cargo (AF), Alitalia Cargo (AZ), CSA Cargo (OK), Delta Air Logistics (DL), KLM Cargo (KL), Korean Air Cargo (KE), NWA Cargo (NW).

The charts show the worldwide freight capacity offered by SkyTeam Cargo members in tonnes, according to data from OAG. Figure 2-60 shows belly and freight aircraft, while Figure 2-61 shows only the tonnage offered by dedicated freight aircraft.

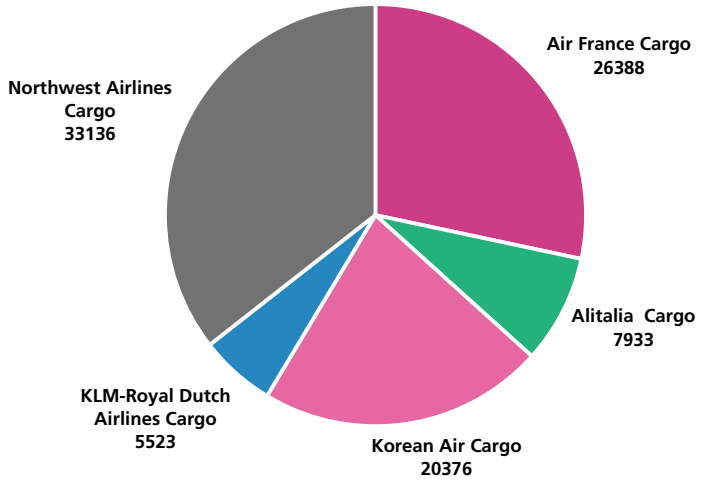


Figure 2-61: Available freight capacity in tonnes (freighters only) SkyTeam Cargo members – worldwide (one week in July 2007)

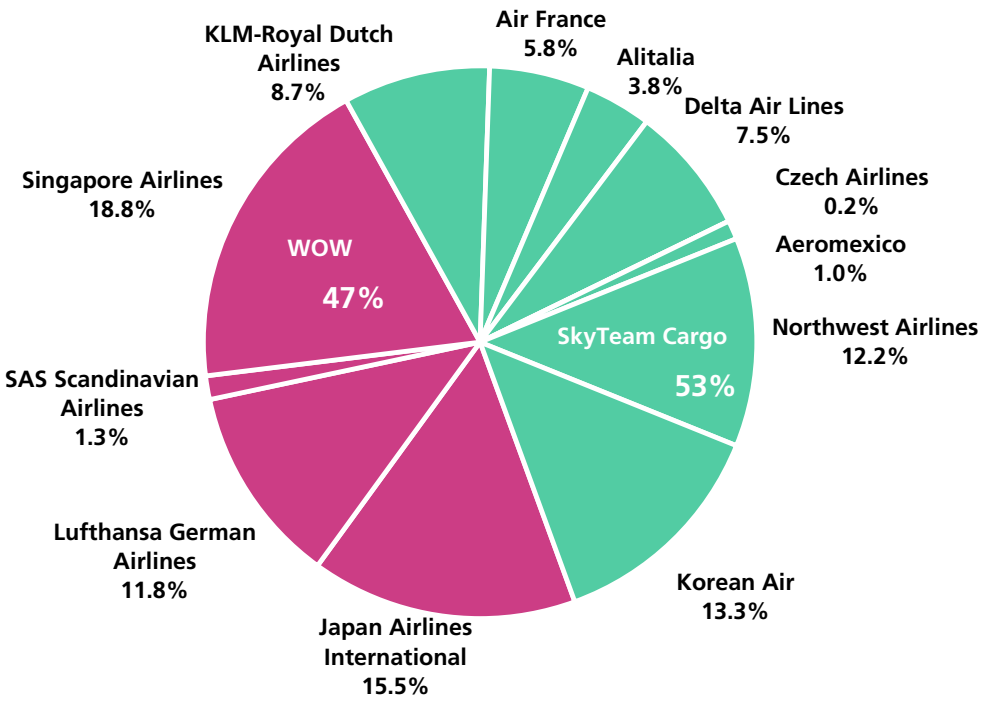
Source: OAG

Comparison of WOW vs. SkyTeam Cargo

The following chart shows a comparison between the freight capacities offered by the two cargo alliances. By this measure, SkyTeam Cargo provides slightly larger capacity.

Figure 2-62: Available freight capacity in tonnes (belly & freighters) WOW vs. SkyTeam Cargo – worldwide (one week in July 2007)

Source: OAG



2.2.6 Cargo Airlines - Competition

Two types of providers have profited from the boom: door-to-door carriers, such as the international express services DHL, FedEx and UPS with their own fleets; and those service providers that systematically charter their fleets to logistics companies (wet lease). Leading providers in the latter category are the US-based Atlas Air Inc. and their Icelandic competitor, Air Atlanta Icelandic. According to industry observers, these companies offer a "more economical cost structure and greater profitability" (Accenture GmbH) in comparison to full-service providers. Lufthansa Cargo, a combination carrier, is looking to capture some of this market through its deal with DHL. While Lufthansa Cargo is able to offer transportation rights on international routes, they in turn will profit from the massive transportation volume of their new partner.

Because air-freight is more expensive than other transportation options, and with the price differential between air freight and other modes of transport increasing, some shippers are shifting their business from air to surface transport. This trend has meant that shippers within Europe, following the pattern set in the USA, have optimised both their logistics planning and their networks to such an extent that the speed advantages of domestic air freight have been all but neutralised.

One of the challenges for air freight providers is to compete effectively with ocean freight. In recent years, ocean container freight has seen average growth of over 9 percent, a figure more than double that achieved by air freight. This notwithstanding, the aeroplane remains the preferred means of transport for high-cost and time-sensitive goods, although by far the biggest proportion of merchandise in terms of tonnage is shipped by sea.

In terms of volume, air freight represents just 5 percent of the total volume of shipments, but 35 percent of the value of shipments, totalling nearly US$12 trillion (Aleks Popovich, IATA's Global Head of Cargo).

Nonetheless, with trends shifting towards surface transport and higher fuel prices exacerbating the gap between ocean and air pricing, ocean freight has proved to be more competitive and is growing at a faster rate than air freight.

As a result of heavy competition and excess capacity, the pricing pressure on air freight has also increased strongly. The achievable turnover per unit (RPK or FTK) has fallen significantly since 1985. The downward trend of freight rates in past years has been halted for the time being. The primary reason for the end of the decline in prices in recent years is the establishment of additional surcharges for security and fuel. Taking into account increasing additional surcharges for security and, above all, for fuel, the turnover per freight tonne kilometre achieved in the last few years by the market-leading cargo airlines has increased slightly.

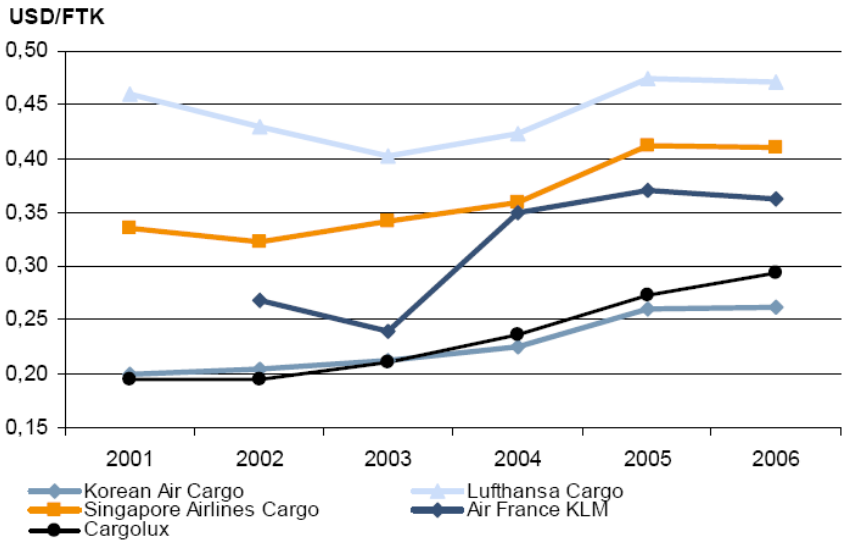


Figure 2-63: Turnover per FTK for various airlines

Source: HSH-Nord Bank Research

In contrast to passenger baggage, freight arrives in the cargo hold practically unscreened. In light of the terror attacks and heightened security requirements, there is currently an intensive effort to find ways of increasing screening capacity for air freight. In view of those security regulations that have already been adopted, nearly all airlines have now established surcharges in order to be able to finance the necessary infrastructure. The air freight market does not react with elastic pricing to the same extent as other transportation markets (certainly in the case of express and special freight), because, due to their particular characteristics, the goods carried cannot be transported by any other method. In many cases an alternative to air freight does not exist.

During 2007 various airlines have found themselves in the sights of the competition regulators. At the time of writing, none of the investigations had been concluded.

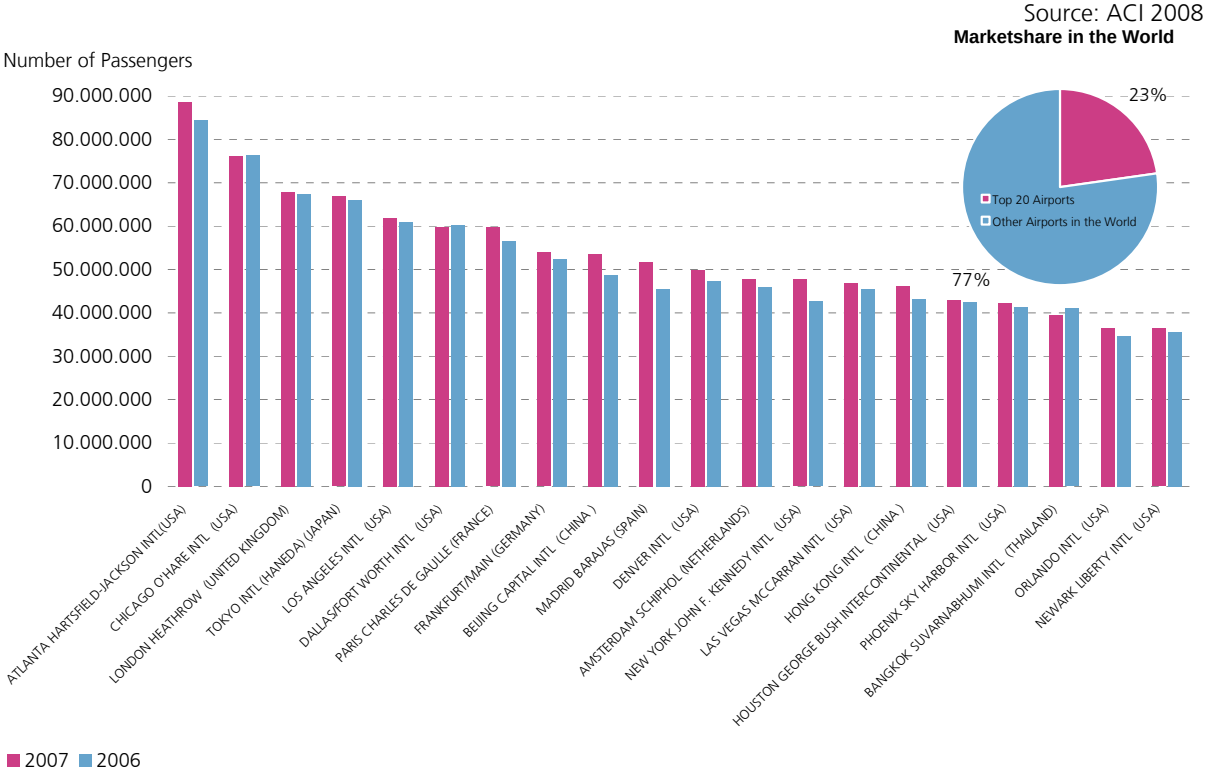
3 Airports

3.1 Passengers

Figure 3-1 shows the world's top 20 airports in terms of passengers handled in 2007. These 20 airports handle 23% of the commercial air passengers worldwide; the degree of concentration is thus higher than in the case of aircraft movements (see 3.2). The total number of passengers handled worldwide in 2007 was 4.7 billion. Again, Atlanta Hartsfield-Jackson International and Chicago O'Hare International occupy places one and two respectively, but the decline of passenger figures from place 1 to 20 is much smoother than in the case of aircraft movements.

Figure 3-1: The 20 biggest airports in terms of commercial air passengers worldwide

Source: ACI 2008



Total commercial passenger numbers sum up to 89 million passengers for Atlanta Hartsfield-Jackson International and 77 million passengers for Chicago O'Hare International. Of EU airports, London Heathrow is ranked third with 67 million passengers handled and Paris Charles de Gaulle is on place seven with 60 million passengers in 2007. The airports Frankfurt/Main (54 million passengers), Madrid Barajas (52 million passengers) and Amsterdam Schiphol (48 million passengers) follow on places eight, ten and twelve respectively. Munich Airport in Germany is not represented within the top 20 places. The reason for London Heathrow moving ten places upwards compared to the top 20 ranking regarding flight movements is the higher share of

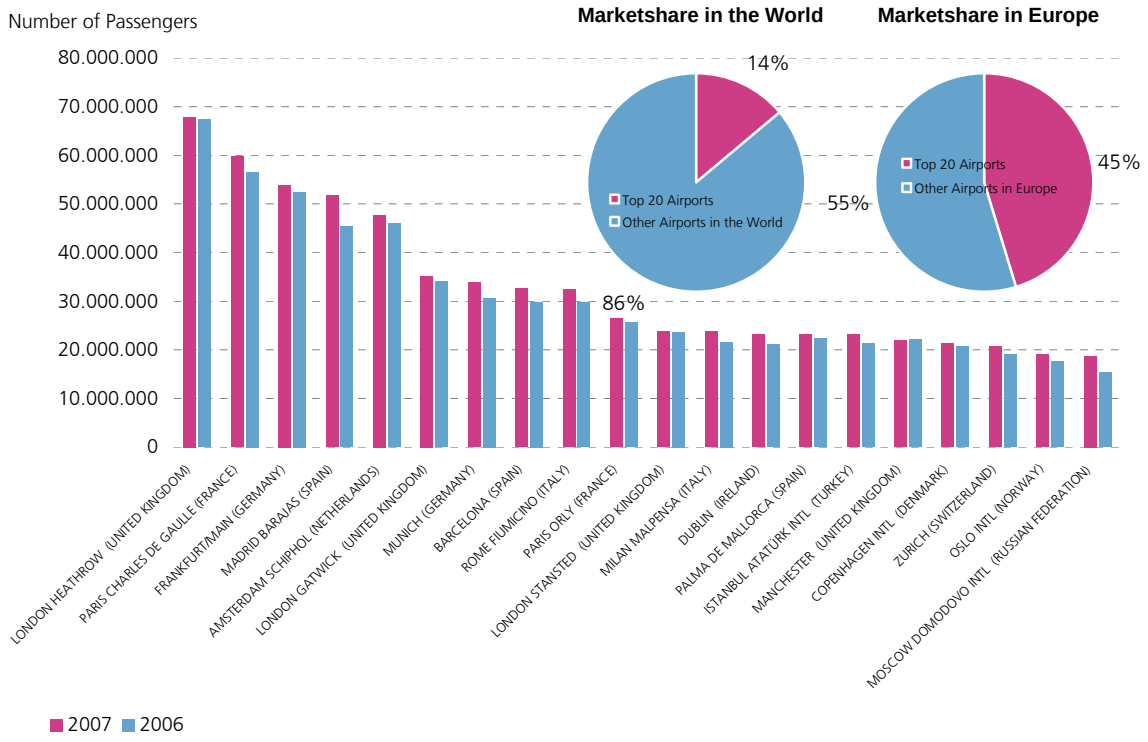
intercontinental flights and thus a higher average seat capacity per aircraft. As mentioned earlier, the average seat capacity per aircraft is lower at US airports, caused by the higher share of domestic flights operated with smaller aircraft.

Furthermore, the top 20 airports with respect to commercial passengers handled comprise four Asian airports (passenger figures in brackets): Tokyo International/Haneda (67 million passengers), Beijing Capital International (54 million passengers), Hong Kong International (46 million passengers) and Bangkok International (40 million passengers).

Figure 3-2 displays the top 20 European airports in terms of commercial passengers handled. These airports handle 14% of the worldwide air passengers and 45% of the passengers at European airports. The total number of passengers at European airports was 1.5 billion in 2007. Within Europe, concentration on the top 20 airports regarding passenger numbers is considerably higher than in the case of aircraft movements, one reason being the comparatively higher share of intercontinental flights with larger aircraft and thus higher seat capacity per flight than e.g. in the USA. The number of passengers range from 68 million for London Heathrow to 19 million for Moscow Domodedovo International. The first five places of Europe's top 20 airports are occupied by the main international hubs of Europe, followed by national hubs for European or selected intercontinental destinations.

Figure 3-2: The 20 biggest airports in terms of air passengers in Europe

Source: ACI 2008



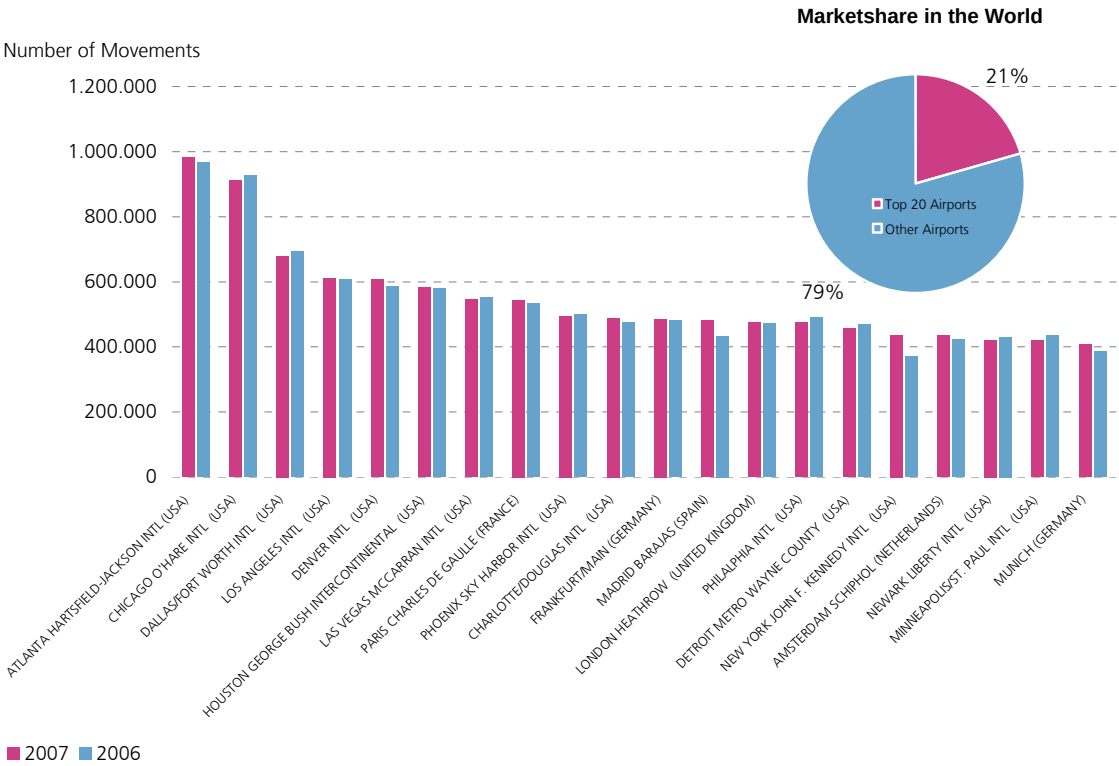
3.2 Aircraft Movements

Aircraft movements are defined as the total volume of commercial aircraft movements of passenger, freight and combined air traffic. Figure 3-3 shows the busiest 20 airports worldwide in terms of commercial aircraft movements in 2007. There were a total number of 52.9 million commercial aircraft movements worldwide, of which the world's top 20 airports cover 21%. By far the two busiest airports are Atlanta Hartsfield-Jackson International and Chicago O'Hare International, both in the USA, with about 981 000 and 911 000 aircraft movements in 2007 respectively. Places three to seven are also occupied by US airports, with aircraft movements ranging between 679 000 and 547 000.

The biggest European airport regarding aircraft movements is Charles De Gaulle in Paris, France with 544 000 aircraft movements on place eight. The second European airport is Frankfurt/Main in Germany with 486 000 aircraft movements in 2007 on place eleven. The European Airports Madrid Barajas, London Heathrow, Amsterdam Schiphol and Munich follow on the places 12, 13, 17 and 20 respectively. The number of aircraft movements at these airports vary between 476 000 for London Heathrow and 407 000 at Munich.

Figure 3-3: The 20 biggest airports in terms of flight movements worldwide

Source: ACI 2008



With regard to commercial aircraft movements, the 20 largest airports worldwide are exclusively located either in the USA (14) or in Europe (6). The ranking of Figure 3-3 shows a large decline in the number of aircraft movements for the top two ranked airport Chicago O'Hare

International and for the third-ranked airport Dallas/Fort Worth. The high number of US airports in the top ranking is largely attributable to the comparatively higher utilisation of smaller aircraft at US airports for domestic air travel, resulting in a lower average seat capacity per aircraft as compared to European or Asian airports.

Figure 3-4 displays the busiest 20 airports in Europe in terms of commercial aircraft movements for 2007. They cover 12% of worldwide commercial aircraft movements, which sum up to 6.3 million. The total number of European commercial aircraft movements in 2007 was 16.6 million, of which Europe's top 20 airports cover 38%.

The number of aircraft movements at the 20 busiest airports lies in a range between 544 000 for Paris Charles de Gaulle and 205 000 for the airport Stockholm Arlanda. The top five places are occupied by international hub airports in Europe (aircraft movements in brackets): Paris Charles de Gaulle (544 000), Frankfurt/Main (486 000), Madrid Barajas (482 000), London Heathrow (476 000) and Amsterdam Schiphol (436 000). The remaining airports comprise national hub airports, which mainly serve European and selected intercontinental destinations.

Figure 3-4: The 20 biggest airports in terms of flight movements in Europe

Source: ACI 2008

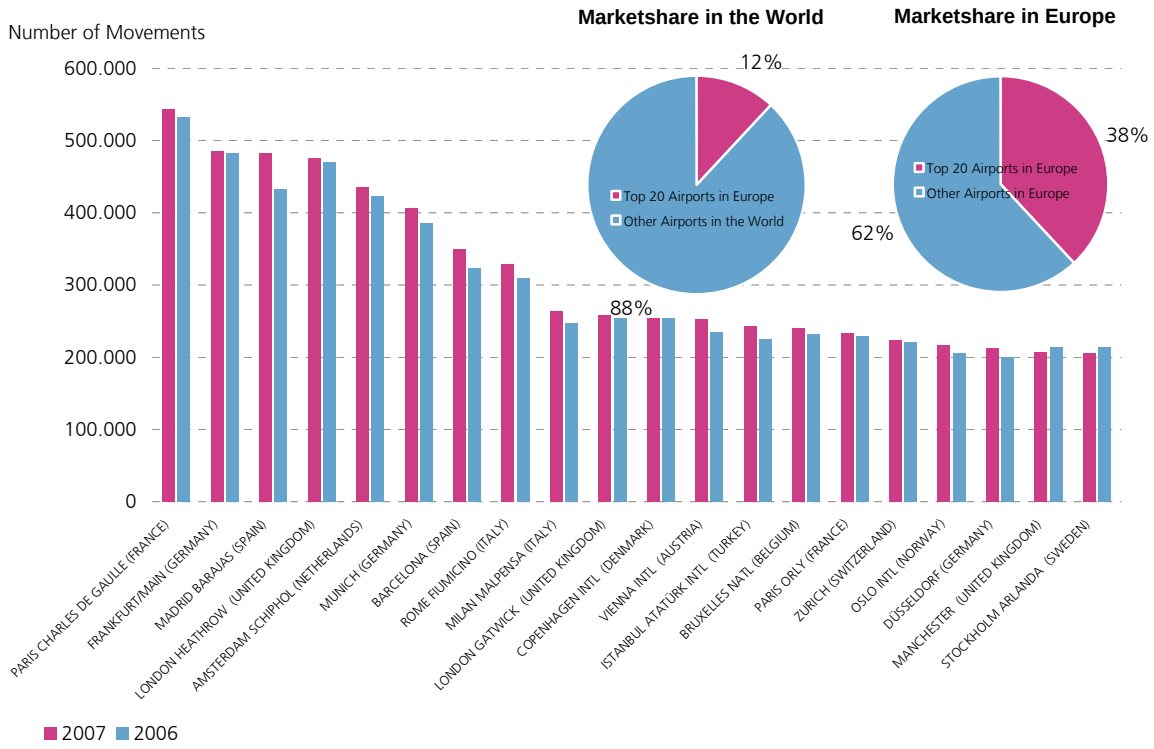


Figure 3-5 shows the top 25 low cost airports in Europe in terms of aircraft departures per week with the third week in July 2007 being the reference. London Stansted has the highest number of low cost carrier take-offs of any airport in Europe. The number of low cost carrier departures per week sums up to 1 751, while the total number of commercial take-offs is 1 886. Low cost

carriers therefore account for nearly 93% of all take-offs at London Stansted. The airports of Barcelona and Palma de Mallorca follow on places two and three with 898 and 838 low cost carrier take-offs respectively. However, the share of low cost operations is much smaller there than at London Stansted. Airports with a similar share of low cost operations are for example Berlin Schoenefeld, Belfast International, Southampton and Milan Orlo al Serio. The share of low cost carrier take-offs varies between 79% and 93% at these airports. The total number of commercial take-offs of these airports lies in a range between 435 and 533, thus significantly smaller than at London Stansted.

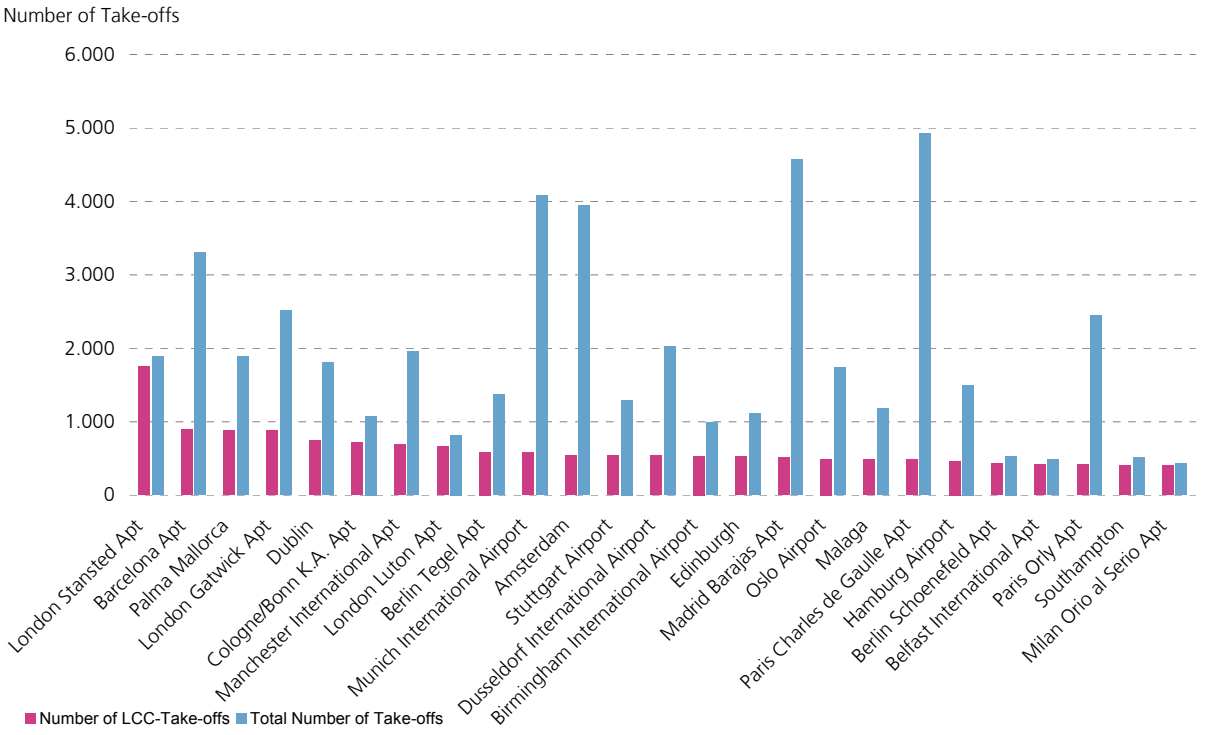
While low cost carriers concentrate operations more at airports serving primarily point to point traffic, there are also some hub airports in Europe with a considerable amount of low cost traffic, such as Paris Charles de Gaulle, Amsterdam and Munich airport. The number of low cost carrier take-offs varies between 400 and 600. However, compared to the total number of commercial aircraft movements, their share is still low, ranging from 10% for Paris Charles de Gaulle to 27% for Düsseldorf airport.

Altogether, four distinct categories of low cost airports are identified:

- London Stansted, as a major low cost offer airport, with the largest number of low cost operations accounting for nearly all take-offs at the airport
- Small low cost airports with about 500 weekly take-offs, having about 80% to 90% of low cost carrier take-offs (e.g. Berlin Schoenefeld)
- Medium sized airports with around 800 weekly low-cost take-offs, accounting for 27% to 67% of total take-offs (e.g. Barcelona)
- Hub airports with about 500 weekly low cost carrier take-offs, having a share of about 10% to 27% of the total number of take-offs (e.g. Paris Charles de Gaulle)

Figure 3-5: Top 25 Low-cost carrier airports in Europe

Source: OAG 2007; third week in July 2007)



3.3 Freight

Freight comprises cargo carried as belly freight by passenger aircraft as well as by freighters. The total volume of freight handled worldwide was 85 million tons in 2007. The top 20 freight airports worldwide as displayed by Figure 3-6 are dominated mainly by Asian and US airports. Nine of these airports are located in Asia, seven in the USA and only four of these are European airports. The world's largest freight airport is Memphis in the USA with 3.8 million tons of freight handled, closely followed by Hong Kong International (3.7 million tons of freight). There is a notable decline from the first two places to rank three; with the third-ranked airport Alaska Ted Stevens Anchorage International in the USA having handled 2.8 million tons of freight in 2007. Total air freight figures range from 3.7 million tons at the airport of Memphis in the USA to 1.2 million tons at Beijing Capital International in China. The top 20 airports handled almost half (48%) of the worldwide freight volume in tons in 2007 and therefore air freight is more concentrated on the top 20 airports than commercial passengers or aircraft movements. The largest European air freight airports are Frankfurt/Main on place eight, closely followed by Paris Charles de Gaulle. Amsterdam Schiphol and London Heathrow follow on places 13 and 18 respectively.

Figure 3-6: The 20 biggest airports in terms of commercial air freight worldwide

Source: ACI 2008

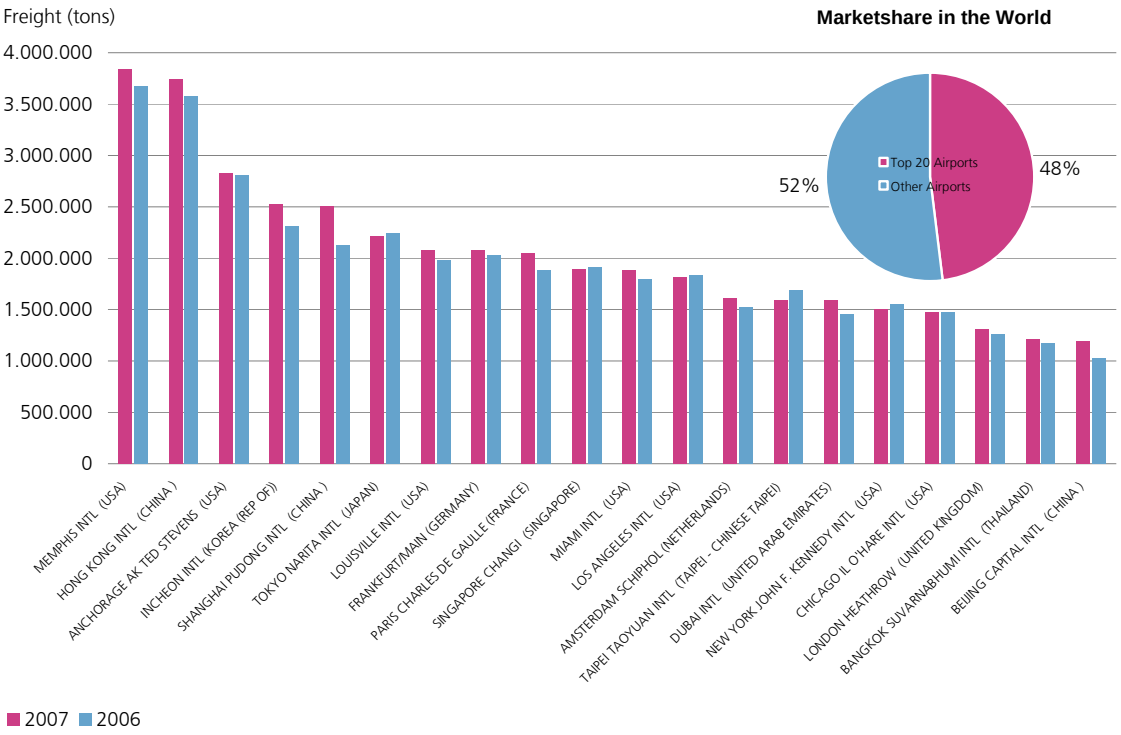
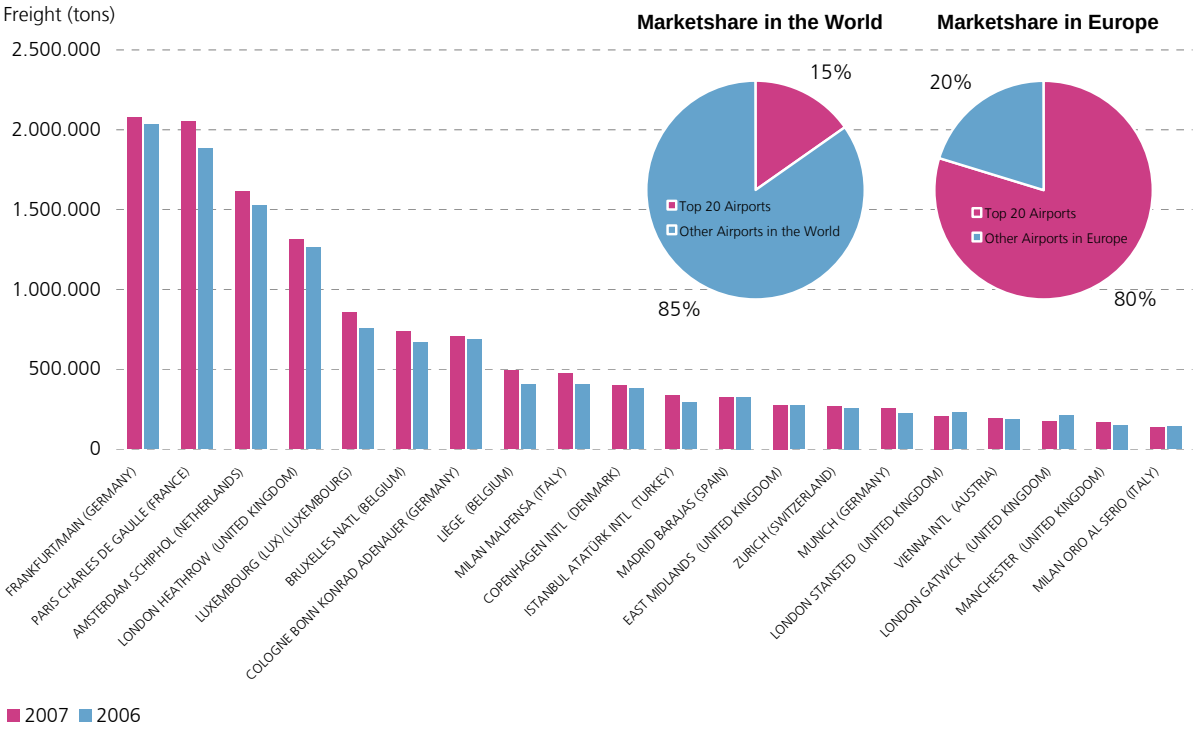


Figure 3-7 illustrates Europe's top 20 freight airports. The total volume of freight handled at European airports was 16.3 million tons in 2007. The largest freight airport in Europe is Frankfurt/Main with 2.1 million tons of freight in 2007, followed by Paris Charles de Gaulle with almost an equal amount of tonnes. Other large freight airports in Europe comprise Amsterdam Schiphol with 1.6 million tons of freight on place three and London Heathrow with 1.3 million tons of freight on place four. The remaining 16 airports are much smaller in terms of tons of freight handled being below 1.0 million tons. Freight handled at European airports lies between 2.0 million tons for Frankfurt/Main and 0.134 million tons for Milan Orio Al Serio. In 2007, the top 20 European airports handled 15% of the worldwide air freight volume in tons; in contrast they handled 80% of the total freight at European airports. This again highlights the high concentration on only a few airports in the European air freight market. However, most of the air freight was handled at airports outside Europe in 2007, as their overall share is only 15%.

Figure 3-7: The 20 biggest European airports in terms of commercial air freight

Source: ACI 2008



3.4 Ground Handling

As IATA states, ground handling covers the complex series of processes required to separate an aircraft from its load (passengers, baggage, cargo and mail) on arrival and combine it with its load prior to departure. The IATA sets an international industry standard on ground handling definitions in the Airport Handling Manual AHM 810. Even the definition of elements covered by "Ground Handling" can be found in this standardised release.

Services that might be provided by order of an air carrier or fields of activity that are outsourced could be:

- Representation, administration and supervision
- Passenger services
- Ramp services
- Load control, communications and flight operations
- Cargo and mail services
- Support services
- Security
- Aircraft maintenance

A distinction can be made between airside and landside services, the latter being passenger-related services such as ticketing and baggage handling at check-in desks. Airside services comprise services such as ramp handling, fuelling and defuelling operations, aircraft maintenance and the provision of catering services.

Ground handling services make an essential contribution to the efficient use of air transport infrastructure. The market in ground handling services is covered by the Directive 96/67/EC dating from October 1996 which gradually opened up the services to competition. This was necessary since the checking-in of passengers, baggage handling, etc. used to be a monopoly at many EU airports, and many airlines complained about the relatively high prices for the services provided and sub-optimal efficiency and service quality.

Services mentioned above are offered by ground handling service providers which can be part of the airport authority, a subsidiary of this or an independent company. The liberalisation process led to an increased number of service providers for ground services and thus to a higher grade of competition. The following tables give an overview of the contracts in a state of flux. All contracts newly agreed in 2007 on European airports within the EEA are listed as published by the "Ground Handling International Magazine"[4]. The list may give an overview of the market and the services in more detail.

Ground service providers, which used to mainly be active behind the scenes, now have more direct interaction with air passengers especially due to increased security checks. That is one reason why the industry forced increases in staff training – recruitment becomes more difficult locally and the knowledge level required is up too. In general, the industry's profit is linked to the health of airlines' business but also affected by new industrial trends and requirements, for example the need for environmental friendliness of apron vehicles. A key driver of economic results seems to be the persistent growth of Low Cost Carriers. The high volumes of travellers that those airlines bring along are very welcome with ground handlers because they make it possible to expand at above the average market growth rate. Contrary to the first impression, Low Cost Carriers "do not require low cost handling services", but a strict punctuality because of their fast turnarounds (GHI 2008).

[4] Information is given on a voluntary basis and may be incomplete.

Table 3-1: List of contracts awarded to Ground Handling Companies in 2007

Source: www.groundhandling.com

Handler	Services provided	Carrier	Stations
aerogate Munchen	passenger handling and ticketing	Saudi Arabian Airlines	Munich
ASIG	cabin cleaning	Sri Lankan Airlines	London Heathrow
Aviance UK	full ground handling	Eastern Airways	London Stansted
Aviapartner	full ground handling	Aer Lingus	Lyon
Aviapartner	full ground handling	Austrian Airlines	Lyon
Aviapartner	full ground handling	BA	Lyon
Aviapartner	full ground handling	BA	Marseille
Aviapartner	full ground handling	BA	Nice
Aviapartner	full ground handling	BA	Toulouse
Aviapartner	full ground handling	bmi	Lyon
Aviapartner	full ground handling	British Regional Airlines	Lyon
Aviapartner	full ground handling	City Airlines	Lyon
Aviapartner	full ground handling	Lufthansa	Marseille
Aviapartner	ramp handling	South African Airways	Munich
Aviapartner	full ground handling	Spanair	Lyon
Aviapartner	full ground handling	Thomas Cook	Lyon
Aviapartner	full ramp handling	Various airlines	Nice Cote d'Azur
Aviapartner	cargo handling	Finnair	Amsterdam
Aviapartner	cargo handling	Finnair	Brussels
Aviapartner	cargo handling	Finnair	Paris CDG
Aviapartner	catering services	Jet Airways	Brussels
CSA Czech Airlines	full ground handling	Lufthansa	Prague
Fernley	aircraft cleaning	Oman Air	London Gatwick
Fernley	aircraft cleaning	Sterling	London Gatwick
Fernley	aircraft cleaning & de-icing	Tui	London Gatwick
Flightcare Belgium	passenger and cargo handling	Albanian Airlines	Brussels
Flightcare Belgium	cargo handling	Asiana Cargo	Brussels
Flightcare Belgium	ground handling	Freebird	Brussels
Flightcare Belgium	passenger and cargo handling	Jet Airways	Brussels
Flightcare Belgium	passenger and cargo handling	KD Avia	Brussels
Flightcare Belgium	cargo handling	Royal Jordanian	Brussels
Flightcare Belgium	cargo handling	Tarom	Brussels
Flightcare Belgium	ground handling	TNT	Brussels
Flightcare Belgium	passenger and cargo handling	US Airways	Brussels
Fraport Cargo Services	document and cargo handling	Emirates SkyCargo	Frankfurt
Fraport Cargo Services	cargo handling	Inter Airlines	Frankfurt
Fraport Cargo Services	cargo handling	Pegasus Airlines	Frankfurt
Gate Aviation Services	packing & loading of inflight catering	easyJet	Various UK airports
Goldair	ramp & passenger services	Air France	Athens
Groundforce	full ground handling	Air Transat	Madrid
Groundforce	full ground handling	Alitalia	Bilbao
Groundforce	full ground handling	Brit Air	Bilbao
Groundforce	full ground handling	Jet2.com	Gran Canaria-Gando
Groundforce	full ground handling	Jet2.com	Tenerife Norte
Groundforce	full ground handling	Jet2.com	Tenerife Sur
Groundforce	full ground handling	Korean Air	Madrid
Groundforce	full ground handling	Regional Air Lines	Seville
Groundforce	full ground handling & lounge services	Royal Air Maroc	Various Portuguese airports
Groundforce	full ground handling	SunExpress	Various Portuguese airports
Groundforce	full ground handling	TAP Portugal	Bilbao
Groundforce	full ground handling	Top Fly	Tenerife Sur
Jet Aviation	full ground handling	Belair	Zurich
Jet Aviation	check-in, gate, ramp, baggage, tickets	British Airways	Geneva

Handler	Services provided	Carrier	Stations
Jet Aviation	check-in, gate, ramp, baggage, tickets	British Airways	Zurich
Jet Aviation	check-in, gate, ramp, baggage, station control	Hello	Geneva
Jet Aviation	check-in, gate, ramp, baggage, station control	Hello	Zurich
Menzies	ramp & cargo handling	Air China	Manchester
Menzies	ramp handling	Emirates Skycargo	Prague
Menzies	cargo handling	Martinair	various Irish airports
Menzies	cargo handling & trucking	MNG Airlines	Various UK airports
Menzies Aviation	ground handling	easyJet	London Gatwick
Menzies Aviation	ramp, cargo and trucking	Great Wall Airlines	London Heathrow
Menzies Aviation	ramp, cargo and trucking	Great Wall Airlines	Manchester
Menzies Aviation	ramp & cargo handling and trucking	Jett8 Airlines Cargo	London Heathrow
Menzies Aviation	ramp & cargo handling and trucking	Jett8 Airlines Cargo	Manchester
Menzies Aviation	full ramp handling	KLM	Bucharest
Nordic Aero	passenger, baggage and ticketing	Air Berlin	Stockholm Arlanda
Nordic Aero	passenger,baggage and de-icing	easyJet	Copenhagen
Nordic Aero	de-icing and ground handling	Qatar Airways	Stockholm Arlanda
Olympic Airways	full ground handling	Aerosvit	various stations
Olympic Airways	full ground handling	Alitalia	various stations
Olympic Airways	full ground handling	British Midland	various stations
Olympic Airways	full ground handling	Egyptair	various stations
Olympic Airways	full ground handling	El Al	various stations
Olympic Airways	full ground handling	SkyEurope	various stations
Penauille Servisair	full ramp handling	easyJet	Liverpool
Penauille Servisair	full ground handling	Silverjet	London Luton
Plane Handling	cargo handling	Libyan Arab Airlines	London Heathrow
Plane Handling	cargo handling	Libyan Arab Airlines	Manchester
SAS Ground Services	passenger and ramp handling	Air France & KLM	Aberdeen
SAS Ground Services	full ground handling	Icelandair	Bergen
SAS Ground Services	full ground handling	Icelandair	Gothenburg
SAS Ground Services	full ground handling	Icelandair	Oslo
SAS Ground Services	full ground handling	Icelandair	Stockholm Arlanda
SAS Ground Services	ground handling	Malaysian Airlines	London Heathrow
SAS Ground Services	full ground handling	Mytravel	Bergen
SAS Ground Services	full ground handling	Mytravel	Malmo
SAS Ground Services	full ground handling	Mytravel	Stavanger
SAS Ground Services	full ground handling	Turkish Airways	London Heathrow
Servisair	ramp & passenger handling	Saudi Arabian Airlines	Manchester
Servisair	ground handling	Thompsonfly	Various UK airports
Servisair Cargo	cargo handling	Air Seychelles	Paris CDG
Servisair Cargo	cargo handling and warehousing	Royal Jordanian Airlines	London Stansted
Servisair Cargo	cargo handling	TAM	Paris CDG
Servivisair Cargo	trucking, cargo handling & towing	Zoom Airlines	Paris CDG
Swissport	ground handling	easyJet	Basel Mulhouse Freiburg
Swissport	ramp handling	easyJet	Zurich
Swissport	ramp, balance, catering and pax services	Various airlines	Sofia
Swissport/Menzies	full ground handling	Air Berlin	Madrid
Swissport/Menzies	full ground handling	easyJet	Madrid
Swissport/Menzies	full ground handling	First Choice	Alicante
Swissport/Menzies	full ground handling	First Choice	Almeria
Swissport/Menzies	full ground handling	FlyBe	Alicante
Swissport/Menzies	full ground handling	Lufthansa/SWISS	Madrid
Worldwide Flight Services	cargo handling	El Al	London Heathrow
Worldwide Flight Services	cargo handling	Silverjet	London Luton

4 Air Transport Forecasts

For the air transport sector, statements on the future development are required for various purposes. For this reason, aircraft manufacturers regularly publish forecasts which are the basis for estimation of aircraft or component requirements for the forthcoming 20 years. Studies on the future development are also essential for strategic planning of the air traffic infrastructure (airports and air traffic control) and also the quantification of potential environment impacts induced by air transport. On the one hand, in this chapter some selected, recently published forecasts of worldwide air traffic are presented in order to give an impression of the potential overall air traffic development. On the other hand, short, medium, and long-term prognoses of the European air traffic are discussed. These forecasts are provided by the European organisation for the safety of air navigation, Eurocontrol.

4.1 Global Forecasts

As already mentioned, forecasts are published by aircraft manufacturers for the purpose of estimating upcoming aircraft requirements. The most well-known prognoses are the Global Market Forecast provided by Airbus and the Current Market Outlook by Boeing. But also the engine manufacturer Rolls-Royce, the regional jet manufacturers Bombardier and Embraer, and the Japan Aircraft Development Corporation regularly publish requirement prognoses for their products. The comparative consideration of the prognoses' central key values in terms of economy growth and growth of passenger and freight-carrying traffic reveals similar values (see Table 4-1). Thus, the forecasts published by Boeing, JADC, Bombardier and Embraer assume an average worldwide GDP-growth rate between 3.0 and 3.2%. According to the outcome of the demand forecast, yearly average growth rates between 4.7 and 5.0% for passenger-carrying and approx. 6% for freight-carrying traffic are indicated. Besides the manufacturer prognoses, aviation industry associations and organisations publish forecasts, for example the International Civil Aviation Organization (ICAO), International Air Transport Association (IATA) and Airport Council International (ACI). Whereas the comparable forecasts performed by ICAO and ACI, which refer to the time horizon until 2025, are based on an average yearly growth of passenger traffic between 3.6% (ACI) and 4.1% (ICAO), the IATA-forecast, referring to a time span until 2011, indicates a passenger traffic increase of 5.1%.

Table 4-1: Comparison of important variables of different global forecast studies

Source: Various global forecasts

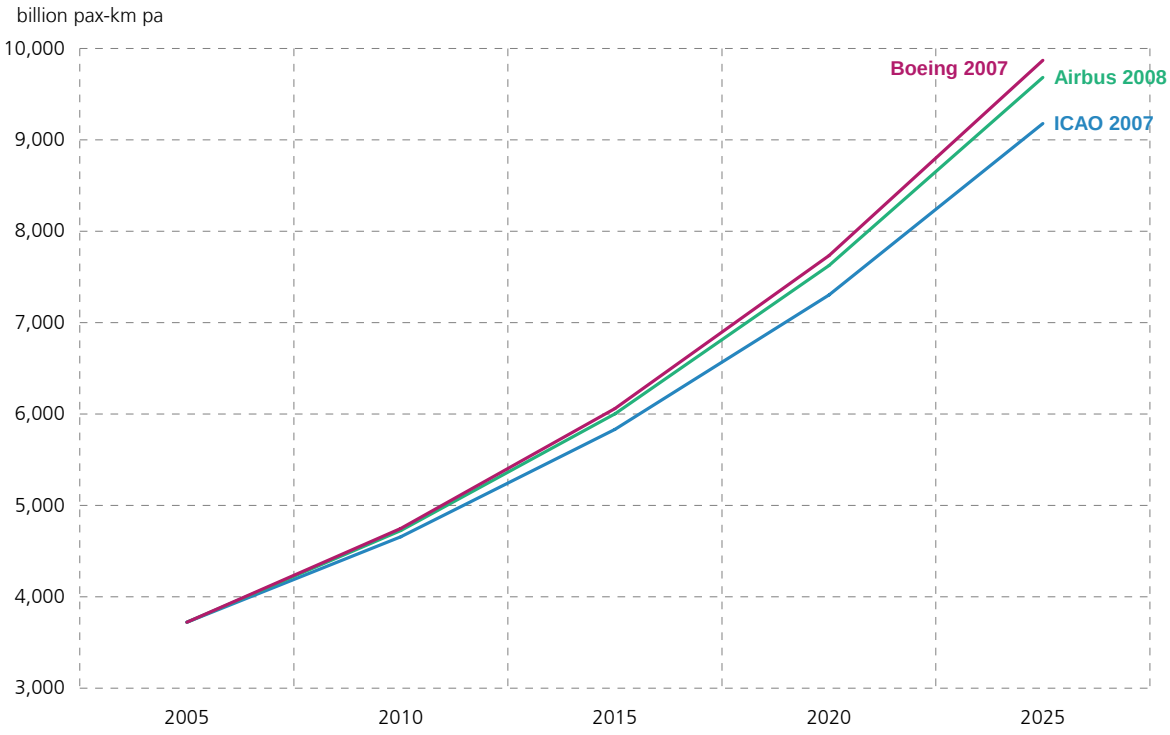
Publisher	*Date of publication*	*Time horizon*	*GDP Growth*	*Passenger Growth*	*Pkm Growth*	*Tkm Growth*
Airbus Market Forecast	2008	2007-2026	n.a.	n.a.	4.9%	5.8%
Boeing Current Market Outlook	2007	2007-2026	3.1%	4.5%	5.0%	6.1%
Rolls-Royce Market Outlook	2007	2007-2026		n.a.	4.9%	n.a.
Japan Aircraft Development Corporation	2007	2007-2026	3.1%	n.a.	4.7%	n.a.
Bombardier Aircraft Market Forecast	2007	2007-2026	3.2%	n.a.		n.a.
Embraer Market Outlook	2007	2007-2026	3.0%	n.a.	4.9%	n.a.
ICAO Outlook for Air Transport	2007	2025	3.5%	4.1%	4.6%	6.6%
ACI Global Traffic Forecast	2007	2006-2025	n.a.	3.6%	n.a.	n.a.
IATA Passenger Forecast	2007	2007-2011	n.a.	5.1%	n.a.	n.a.

In Figure 4-1 the development for the forecast period up to 2025 is displayed. The exponential future growth becomes obvious.

The Airbus-method of traffic forecast applies the „Bottom-up-Approach", using traffic models of approx. 140 different markets. These models take into account variables like development of economy, structural features like availability of Low Cost Carriers or capacity problems, de- and re-regulation plans in developed markets or in third world countries etc. All in all, the recent forecast - published at the beginning of 2008 - gives an average growth of the worldwide traffic performance of 4.9% per year in the time frame 2007 to 2026.

Figure 4-1: Comparison of the passenger kilometres development of different global forecast studies

Source: Airbus 2008, Boeing 2007, ICAO 2007, DLR calculationss

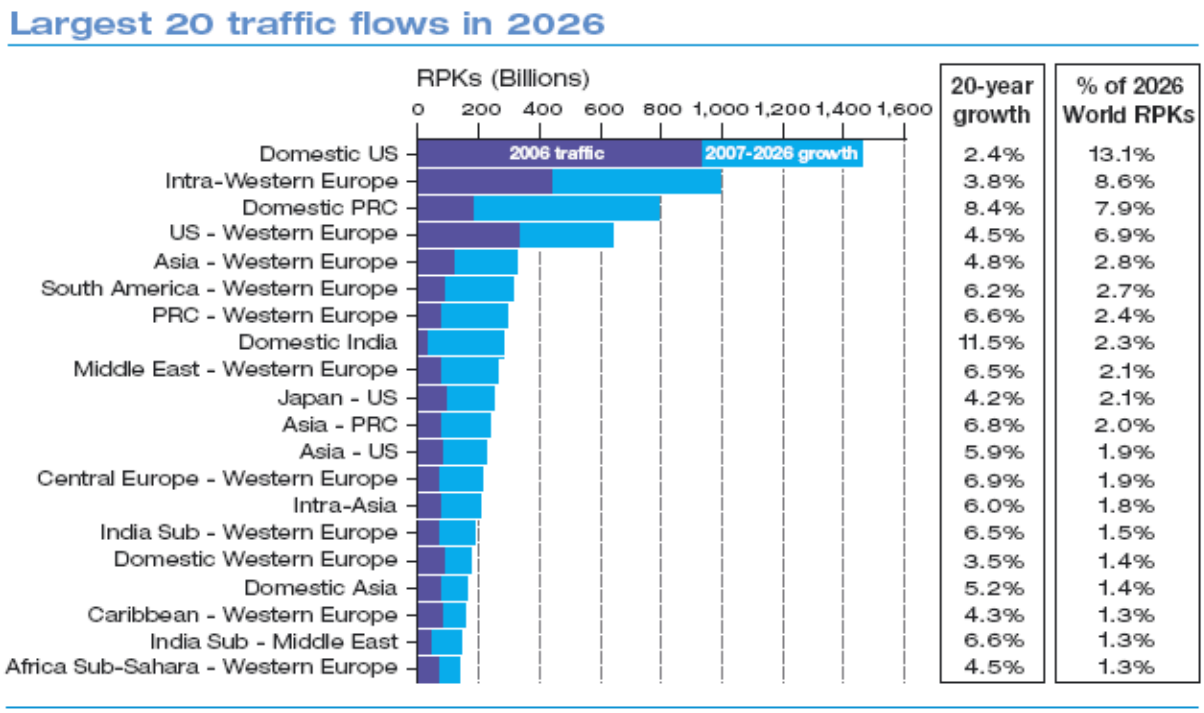


The Boeing's Current Market Outlook, published in October 2007, gives a yearly increase in air traffic of 5.0% (measured in passenger-kilometres, Pkm) in the long-term view from 2007 to 2026 and assuming a growth of the world economy of 3.1% on average. Consequently, worldwide air traffic is expected to grow from 4,238 billion PKM (2006) by the coefficient 2.7 to a volume of almost 11,346 billion Pkm until the year 2026.

When considering the regional spread of global passenger transport (see Figure 4-2), significant differences in growth extents can be seen. Thus, Airbus is expected to increase domestic passenger transport in North America, a fairly mature market, by only 2.4% p.a. until 2026. In contrary, in P.R. China the yearly growth of air traffic is assumed to be approx. 8.4%.

Figure 4-2: Airbus Forecast of Passenger Traffic within and between several World Regions

Source: Airbus 2008



A more moderate forecast, referring to a time horizon until 2025, was published by ICAO in 2007. ICAO assumes an average yearly increase in passenger kilometres of 4.6% in the time span 2005 to 2025. This yields traffic performance of 9180 billion passenger kilometres, based on 3720 billion passenger kilometres in 2005, which approximately corresponds to a 2.5-fold increase. As given in the Boeing-forecast, ICAO also assume a considerably different growth in the individual world regions: Whereas the North American regions only grow moderately by 3.6%, likewise Europe by 4.3%, in the Asia-Pacific region and Middle East considerably dynamical growth of approx. 5.8% is expected.

4.2 European Forecasts

Eurocontrol regularly publish forecasts of flight movements to be expected in Europe. In the short-term prognosis, published half-yearly, the assumed number of flight movements in Europe is given for the forthcoming year. The medium-term prognosis, published once per year, covers a time horizon of seven years. The long-term prognosis (published in a 2 year period) displays the conceivable modes of development by means of scenarios within a 20-year time frame. In the following, the most essential benchmarks of the three recently published prognosis-series are presented.

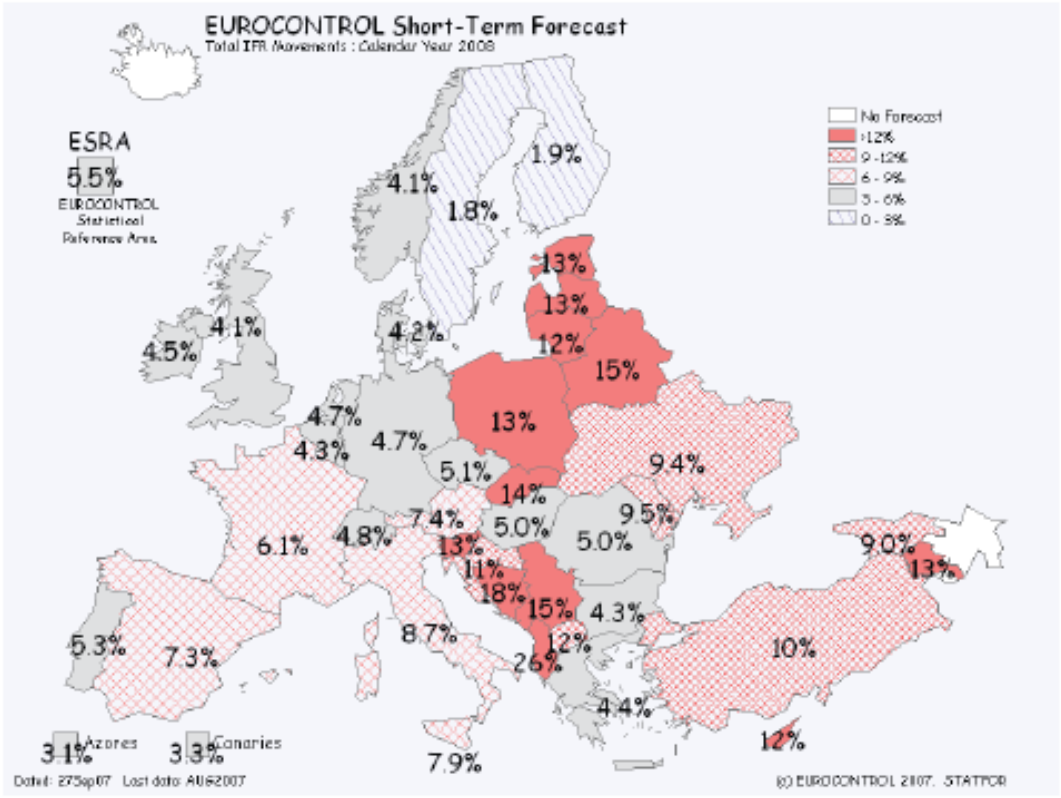
4.2.1 Eurocontrol Short-Term Forecast September 2007

The short-term prognosis, published in September 2007, gives an overview of the performed flight movements (according to IFR) in Europe (Eurocontrol ESRA) in 2007, and also of the potential ones in 2008. Accordingly, a growth of 5.4% in total was assumed for 2007. In 2007, according to current data, 9.7 million flight movements were performed. This corresponds to a growth of 5.3% compared to the preceding year. Thus, the growth, assumed in the short-term forecast for 2007, broadly complies with the actual development.

From 2007 to 2008, a growth of 5.5% is expected, allowing a forecast margin of 4.4 to 5.5%. The expected growth considerably differs regionally, as already experienced in the past. Thus, in the countries Germany, Belgium, the Netherlands, Sweden, Switzerland, the UK and Ireland, growth rates between 4 and 5% are to be expected. In France the expected growth rate is 6.1%, in Spain 7.3% and in Italy 8.7%. Above average growth rates (between 12 and 15%) are shown for the new EU members, the Czech Republic, Poland, Estonia, Latvia and Belarus. In Turkey, Ukraine and Moldova, the expected growth rates amount to approx. 10%. For the South European countries, the growth rate forecast considerably differs, but for the majority of countries, high growth rates are forecasted. Eurocontrol solely assume relatively low growth rates of 1.8 and 1.9% in the countries Sweden and Finland respectively.

Figure 4-3: Eurocontrol Flight-Forecast Growth Rates for 2008

Source: Eurocontrol 2007



4.2.2 Eurocontrol Medium-Term Forecast 2007-2013

Within the scope of the medium-term prognosis, performed by Eurocontrol for the years 2007 to 2013, in addition to a Baseline-Scenario the development alternatives "high" and "low" have also been defined. Eurocontrol assume for the entire forecast period an average yearly growth of 3.4% in the Baseline-Scenario, 4.2% in the High-Scenario and 2.6% in the Low-Scenario. In the forecast year 2013, these growth rates would lead to 11.3 million IFR movements in the Low , 11.9 million in the Baseline , and 12.6 million IFR movements in the High-Scenario. In the decade 2003 to 2013, the total number of IFR movements would increase by approx. 36% in the Low-Scenario, 43% in the Baseline-Scenario and 51% in the High-Scenario.

Table 4-2: Summary of the Eurocontrol Medium-Term Forecast

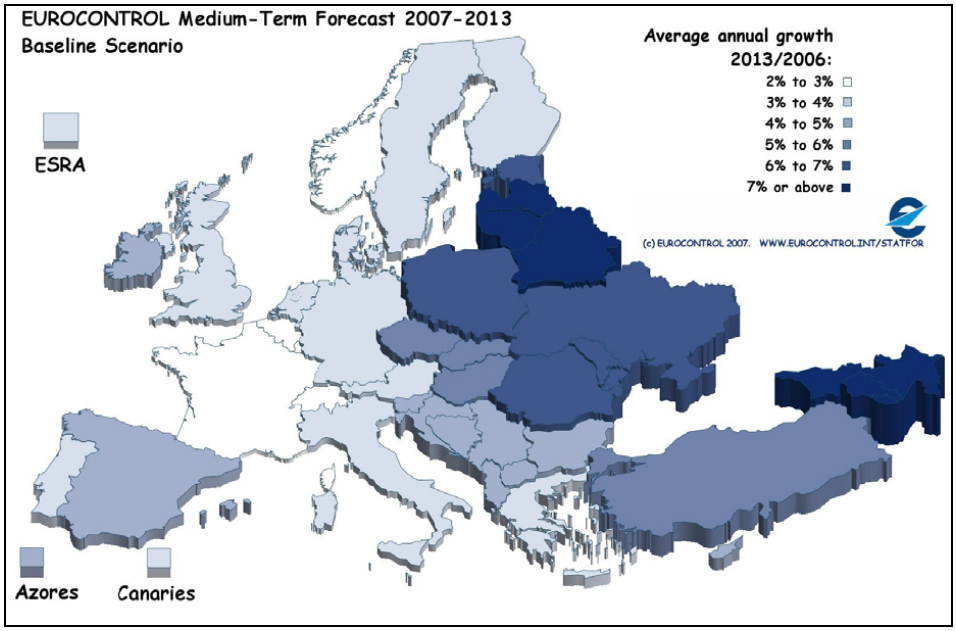
Source: Eurocontrol 2007

IFR Movements (Thousands)												
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average Annual Growth Rate 2006-2013
High					9915	10366	10823	11222	11685	12103	12558	4.2%
Baseline	8344	8745	9088	9438	9787	10125	10463	10816	11196	11571	11935	3.4%
Low					9668	9900	10160	10450	10734	11031	11327	2.6%

When considering the individual countries, the assumption of relatively high yearly growth rates in East Europe becomes obvious. This is probably due to the strongly growing economies of these countries and their adaptation to the West European standard of living in terms of private air travel. For the medium-term and beyond, in the "old" EU member states Eurocontrol expect a moderate increase in flight movements (up to 4%). France and Norway participate to a low extent, Spain and Ireland, however, above average, in the West European flight movement increase.

Figure 4-4: Eurocontrol Medium-Term Forecast Baseline Scenario

Source: Eurocontrol 2007



4.2.3 Eurocontrol Long-Term Forecast 2006-2025

In order to identify long-term development potential of air transport flight movement, Eurocontrol biennially perform a scenario study which applies various expectations as to the development frame of aviation. Thus, for the target year 2025, a spectrum of conceivable ways of development with respect to flight movements are indicated. This development frame varies between 15.5 and 18.9 million flight movements in 2025, starting from about 9 million flight movements in 2005. This rate corresponds to an annual average growth of 2.7% or 3.7% respectively. Referring to the absolute number of flights, this corresponds to a multiplier of 1.7 or 2.1, compared to the initial year. In all scenarios, stronger growth is assumed in the time span until 2012 than in the years between 2012 and 2025. Among other reasons, this is due to increasing saturation tendencies in the West European countries. Furthermore, in the East European countries, the considerably dynamic growth seen during the last years will slow down. Moreover, Eurocontrol emphasize the expected capacity-bottlenecks at European airports. In the strongest growing scenario, in 2025, the number of flight movements is assumed to be approx. 15% below the theoretical value of a bottleneck-generating development.

Table 4-3: Summary of the Eurocontrol Long-Term Forecast 2005-2025

Source: Eurocontrol 2006

IFR Movements (Thousands)									
	2003	2004	2005	2012	2015	2020	2025	Average Annual Growth Rate 2005-2025	Traffic Multiple 2025/2005
Scenario A				12,376	13,895	16,502	18,858	3.7%	2.1
Scenario B				11,652	12,838	15,048	17,253	3.3%	1.9
Scenario C	8,344	8,745	9,088	11,652	12,524	14,729	16,944	3.2%	1.9
Scenario D				11,147	11,938	13,543	15,456	2.7%	1.7

5 Regulatory Developments

The civil aviation sector is an economic activity at global level, constantly faced with new challenges. Because of additional demand for global mobility in 2007, the aviation sector reached high growth rates all over the world.

This development is enabled by the increasing number of direct air services to international destinations, e.g. non-stop flights between South America and the Middle East for the first time in history. The respective States continued to liberalise their air services agreements with their aviation partners around the world. Although full "open skies" are not granted everywhere, the tendency is moving towards an expansion of air traffic between countries: for example, Canada agreed greater flexibility for air services with Mexico and the Unites States of America expanded their agreements with Argentina and China.

In addition, rapidly growing demand will lead to airport and airspace congestion in many parts of the world and are already in many cases stretching air navigation and ground facilities to the limit. The pressure will increase because air traffic is forecast to increase at an annual average global rate of 5.8 per cent over the next three years. While increasing existing airport capacity and creating new airport capacity, the traffic demand requires constant emphasis on safety to ensure that the traffic can continue to grow without putting the travelling public at risk. Aviation's impact on the environment consists of noise and local air quality as major problems for the populations living around airports, and its emissions contribute to climate change.

To address these concerns, all stakeholders are continuing to work towards closer cooperation at international, regional and local levels. In 2007, the 36th IACO Assembly took place in Montreal with 179 participating Member States, 1488 delegates and 39 Resolutions to aim for a further worldwide harmonisation in the aviation sector.

These different challenges and concerns are the global framework for the legislative and regulatory developments in 2007 which will be considered in the following chapter.

5.1 International Aviation

International aviation relations are based on specific authorisations granting traffic rights. These rights, granted by air services agreements between different states, give access to specific routes, stipulate the exact number of airlines and flights and the points that can be served. Each EU Member State has negotiated bilateral aviation agreements with third countries outside Europe. Traditionally these agreements were based on national ownership.

According to the "open skies" judgement of 5 November 2002 of the European Court of Justice, bilateral aviation agreements concluded with the United States were discriminatory, a breach of Community law. This case law also clarified that the Community has certain exclusive responsibilities in external relations in the field of aviation which were traditionally governed by bilateral air services agreements between EU Member States and third countries.

In recent years, the EU has developed a new European external aviation policy which aims at restoring legal certainty and creating new economic opportunities by opening new markets for competition and ensuring fair competition by promoting regulatory convergence in key areas. This approach is based on three pillars:

- All air service agreements of the EU Member States have to be amended to ensure that they are in compliance with Community law. Bilateral air services agreements brought into compliance since 2003 are available on the Commission website[5].
- By 2010, the creation of the Common Aviation Area shall be created by the Community and its neighbours located along its southern and eastern borders to integrate these aviation markets.
- Through starting negotiations of comprehensive agreements with key partners, the EU aims to develop new economic opportunities, to promote global investment opportunities, and to ensure fair competition to produce positive effects for users and operators while ensuring high levels of safety and security.

5.1.1 Horizontal Agreements

A horizontal agreement is an agreement negotiated by the Commission on the basis of a mandate by EU Member States, aimed at bringing all existing bilateral air services agreements between EU Member States and a specific third country in line with Community law. Compared to bilateral negotiations this approach has the advantages of simplicity, cost-effectiveness and speed because the Commission acts as the sole negotiating partner. The amended agreements will guarantee the same rights to all Community operators based on the principles of non-discrimination and freedom of establishment and ensure the legal certainty of aviation relations based on such agreements. It has to be underlined that neither the volume nor the balance of air traffic rights are affected by these amendments and will continue to be negotiated between the partner State and EU Member States.

Since 2004, a total of 700 bilateral agreements have been brought into conformity with Community law. More than 600 of these were brought into compliance with EU law through 36 horizontal agreements.

[5] http://ec.europa.eu/transport/air_portal/international/pillars/doc/asa_table.pdf

5.1.2 Bilateral Agreements

Direct negotiations between each EU Member State concerned and its partner is another possibility to bring existing bilateral air service agreements of the EU Member States into compliance with Community law by amending each bilateral agreement separately. Between June 2003 and December 2007, the method of separate bilateral negotiations led to changes with 53 partner States, representing 107 bilateral agreements corrected.

5.1.3 Common Aviation Area with the EU's Neighbours

As a sectoral contribution to the EU's neighbourhood policy, the cooperation between the EU and its partners located along its borders will continue to open the respective markets and enhance regulatory cooperation and convergence to ensure high levels of safety and security as well as other common standards.

5.1.3.1 European Common Aviation Area (ECAA)

Established in 2006 by the European Community and its Member States and also Norway, Iceland and the countries of South-East Europe, the ECAA will bring together the EU and its partners located along its south-eastern borders. The various parties will share the same market operation rules concerning economics, air traffic management, safety and security and environmental standards based on the full application of the European Community's aviation law.

To provide information to countries which are willing to take on and implement EU law in the field of aviation in order to benefit from ECAA, the Commission published a "Guide to European Community legislation in the field of civil aviation"[6] in June 2007.

In February 2007, a study[7] concerning domestic reforms and regional integration in air transport was published. The study reviews the status of development across the region, the provisions of the ECAA and the reform implications for governments and donors. The annex contains country-specific information on air transport. Furthermore, a second meeting of the ECAA Joint Committee was held in December 2007 in Zagreb highlighting significant progress in the integration through different transitional phases of the Western Balkans into the European Community internal air transport market.

[6]http://ec.europa.eu/transport/air_portal/international/pillars/common_aviation_area/doc/ecaa_handbook_edition_2007.pdf
[7]http://ec.europa.eu/transport/air_portal/international/pillars/common_aviation_area/doc/2007_02_09_see_air_transport_en.pdf

5.1.3.2 Euro-Mediterranean Aviation Agreements

Following the conclusion and successful implementation of the Euro-Mediterranean Aviation Agreement with Morocco, the Council adopted in October 2007 a decision authorising the Commission to open negotiations for global aviation agreements with Jordan. In addition the Commission published a Communication on developing a Common Aviation Area with Israel and requested a mandate from the Council to negotiate an Euro-Mediterranean aviation agreement[8]. The objective is to ensure the harmonisation of regulatory standards and to allow for market opening between the European Community and these two countries.

5.1.3.3 Russia

In March 2007, the Council reached political agreement on a proposal for a decision on the signature and provisional application of an agreement on agreed principles concerning the modernisation of the existing system of utilisation of the Transsiberian routes with Russia. The agreement provides for the abolition of payments for overflights for Community carriers not later than the end of 2013 and ensures that newly operated overflights by Community carriers in the transition period until 2013 will be free of payments.

5.1.3.4 Ukraine

At the end of 2007, the European Union and Ukraine officially opened negotiations on a Common Aviation Area agreement. The agreement is intended to strengthen the aviation relationship between EU and Ukraine to open the respective markets and ensure high levels of safety and security for the benefit of aviation industries and consumers. The final aim is to integrate Ukraine to the single aviation market.

5.1.3.5 Black Sea and Caspian Sea Region

In October 2007, a second meeting of the Regional EU – Black Sea / Caspian Basin Expert Working Group on Civil Aviation was held in Chisinau. Bilateral relations were strengthened during the discussions concerning legal certainty of operations, the vision of a European "Common Aviation Area" and the need to enhance levels of aviation safety and security, notably through technical assistance projects and exchange of expertise.

A number of countries in this region are seen as next possible candidates to participate in the European Common Aviation Area initiative.

[8] http://ec.europa.eu/transport/air_portal/international/pillars/common_aviation_area/doc/israel/comm_en.pdf

5.1.4 Global Agreements

Global agreements with key partner countries in the most dynamic world markets will aim to achieve a comprehensive framework for the air transport industry and the travelling public. As a completely new model of air transport agreement, global agreements follow the twin objectives of market opening while ensuring fair competition and regulatory cooperation in matters such as safety and security. These agreements help to reform international civil aviation by establishing a common skies framework.

5.1.4.1 United States of America

After four years and eleven rounds of negotiation, a comprehensive first-stage air transport agreement between the EU and the United States of America[9] was reached on 2 March 2007, approved by the Council of EU Transport Ministers on 22 March 2007 and signed in Washington on 30 April 2007. The agreement will be applied provisionally from the summer season 2008 on, commencing on 30 March 2008.

In the field of market access, the agreement includes the designation of Community air carriers and allows any EU or US airline to provide services between any city in the EU and in the US and beyond the EU and the US towards third countries without any restrictions on pricing or capacity (unlimited 3rd, 4th and 5th freedom rights). Concerning the 7th freedom right to operate flights between the US and a third country without a requirement that the service starts or ends in the EU, unlimited all-cargo rights and passenger rights to a number of non-EU European countries are granted for EU airlines. In addition, for the first time EU airlines are allowed to participate in US-government-financed air transportation ("Fly America"). Furthermore the agreement enables EU airlines to qualify for antitrust immunity.

Furthermore, the agreement contains rights in the area of ownership, investment and control of airlines, and establishes a close regulatory co-operation in fields such as safety and security, competition, Government subsidies and environment. It also constitutes a Joint Committee to review its implementation and regulatory co-operation.

Article 21 of the air transport agreement refers explicitly to the priority issues for second stage negotiations which will start in May 2008: further liberalisation of traffic rights, additional foreign investment opportunities, effect of environmental measures and infrastructure constraints on the exercising of traffic rights, further access to government-financed air transportation and provision of aircraft with crew. The strictly defined timescale and the possibility to suspend rights underline the importance of reaching a second stage of agreement in order to pursue the benefits of liberalisation on both sides of the Atlantic.

[9] http://eur-lex.europa.eu/JOHtml.do?uri=OJ:L:2007:134:SOM:EN:HTML

The economic impacts of these developments concerning an Open Aviation Area between the EU and the US have been investigated by a study[10] published at the beginning of 2007. While the development of an Open Aviation Area will not be a linear process, the cooperation between the EU and the US will generate significant economic benefits for both partners: the potential traffic growth will create up to 26 millions of additional passengers and an increase in cargo volume which will result in new direct and indirect jobs in the aviation sector. The consumer surplus is estimated to be between € 6 and € 12 billion, while the increase of traffic will require the creation of up to 80 000 new jobs on both sides of the Atlantic. As a direct consequence of the new agreement, several airlines of Star Alliance, SkyTeam and oneworld have filed an application with the US Department of Transportation seeking antitrust immunity on transatlantic routings for their alliances. Some European network carriers immediately announced that they would start services to the US departing outside of their home country (for example Air France: London Heathrow – Los Angeles and BA Openskies: Paris - New York).

5.1.4.1.1 Passenger Name Record (PNR) Data Transmission to the USA

A new agreement was signed between the EU and the United States on the transfer of passenger name record (PNR) data by air carriers to the US Department of Homeland Security[11]. The agreement applies provisionally as for the date of signature (27th of June 2007). It replaces the previous interim agreement of October 2006, which was due to expire on 31 July 2007. The following 19 different PNR items are transferred:

- PNR record locator code
- Date of reservation/issue of ticket
- Date(s) of intended travel
- Name(s)
- Available frequent flier and benefit information (i.e. free tickets, upgrade, etc.)
- Other names on PNR, including number of travellers on PNR
- All available contact information (including originator information)
- All available payment/billing information (not including other transaction details linked to a credit card or account and not connected to the travel transaction)
- Travel itinerary for specific PNR
- Travel agency/travel agent
- Code share information
- Split/divided information
- Travel status of passenger (including confirmations and check-in status)
- Ticketing information, including ticket number, one-way tickets and Automated Ticket Fare Quote
- All baggage information

[10] http://ec.europa.eu/transport/air_portal/international/pillars/global_partners/doc/us/final_report_bah.pdf
[11] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:204:0018:0025:EN:PDF

- Seat information, including seat number
- General remarks including OSI, SSI and SSR information
- Any collected APIS information
- All historical changes to the PNR listed in number 1 to 18

5.1.4.2 Canada

The Commission adopted a communication asking for a mandate to negotiate a comprehensive aviation agreement[12]. In October 2007, the Council authorised the Commission to open negotiations with Canada, aimed at establishing an Open Aviation Area between the EU and Canada, opening market restrictions and achieving a high level of regulatory convergence.

The EU and Canada started negotiations on a broad aviation agreement in November 2007[13].

5.1.4.3 China

While China is gradually seeking to open both its domestic and international markets to more competition, the Commission requested a mandate in 2005 to establish a coherent framework in which to develop comprehensive EU-China aviation relations in the future. Negotiations on an EU-China horizontal agreement that will restore legal certainty to bilateral air services agreements started in December 2005. Both parties are committed to concluding the agreement as soon as possible.

5.1.4.4 India

In recent years, India's air traffic market has been among the fastest growing in the world and the country has taken decisive steps towards opening up its aviation market. With such a rapid development, the Indian market is becoming a strategically important market for European airlines, aircraft manufacturers and service providers. Following the first EU-India Aviation Summit at the end of 2006 and the Joint Action Plan of 2005, broad-based dialogues and discussions continued in 2007[14] to strengthen strategic partnership and cooperation in civil aviation, in particular to achieve a horizontal agreement with India to restore legal certainty to the bilateral air services agreements between India and EU Member States.

[12] http://ec.europa.eu/transport/air_portal/international/pillars/global_partners/doc/canada/2007_01_09_communication_2006_0871_en.pdf

[13] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1827&format=PDF&aged=0&language=EN&guiLanguage=en

[14] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1568&format=HTML&aged=0&language=EN&guiLanguage=en

5.1.5 International Civil Aviation Organisation (ICAO)

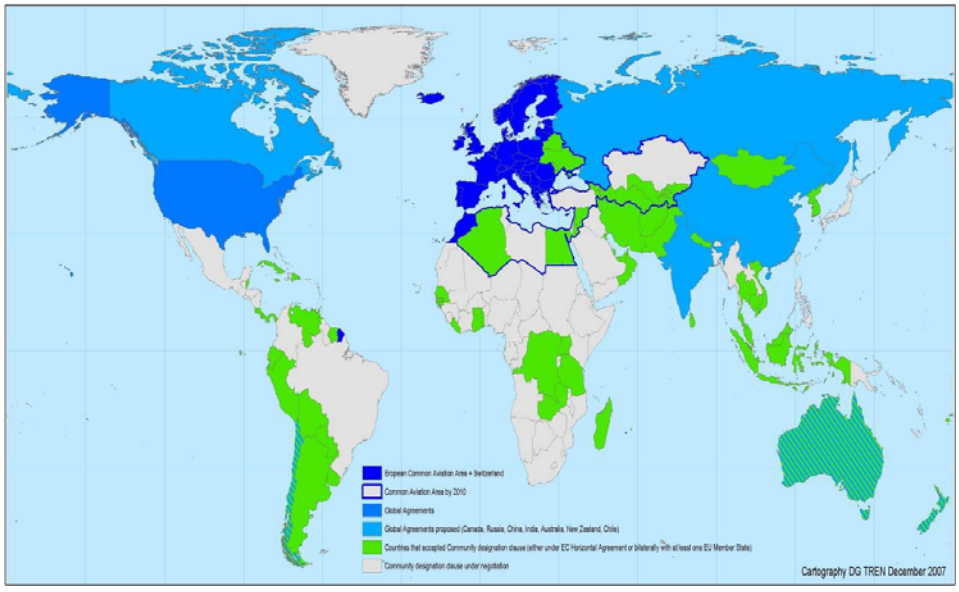
In order to strengthen the EU's relationship with ICAO, the European Commission established an office in Montreal, which was officially inaugurated by Vice-President Jacques Barrot in June 2007.

The Council also adopted a decision authorising the Commission to open negotiations on an agreement regarding aviation security audits/inspections and related matters between the EU and the ICAO. To provide regular, mandatory, systematic and harmonised security audits in order to monitor the application of Annex 17 (Security) to the Chicago Convention, both the ICAO and the EU have acted in parallel in setting up their respective security programmes. This means that the EU Member States are confronted with two monitoring systems for the same issue. The aim of the agreement is to ensure better use of limited resources and to avoid duplication of efforts. The agreement will seek significant reduction of audits to be carried out by ICAO within the territory of the EU by recognising that most standards contained in Annex 17 are also covered by Regulation (EC) No 2320/2002[15] and that the Commission has a mandate to conduct inspections in order to monitor EU Member States' compliance with this Regulation.

The EU and its Member States were also particularly active at the 36th triennial ICAO Assembly (September 2007), where not less than 10 common European working papers were presented covering all major aspects of environment, safety, air traffic management and external aviation relations. The development of these papers was coordinated by the Commission and the respective Presidencies. All European States acted along common lines throughout the Assembly.

Figure 5-1: European Community Aviation Agreements

Source: DG TREN



[15] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:355:0001:0021:EN:PDF

5.2 Internal market

Air transport has traditionally been a highly regulated industry, in which protected and fragmented national aviation markets existed across Europe. In order to create a single market for air transport, the EU internal air transport sector was deregulated in three stages in the 1990s. The internal market removed all commercial restrictions for stakeholders within the EU so that prices have fallen dramatically. European policy has profoundly transformed the air transport industry by creating the conditions for competitiveness and ensuring both quality of service and the highest level of safety.

But the experience of the last decade has shown that some measures of the "third package" consisting of Regulations (EC) No 2407/92, 2408/92 and 2409/92 of 23 July 1992 pertaining to operating licences, the right to operate air services within the EU and the pricing of such services are either not homogeneously applied or need to be clarified or revised.

To solve these problems, in July 2006 the Commission adopted a proposal to modernise and simplify the Single Market legislation for aviation by concentrating the "third package" into one Regulation[16]. It aims at increasing market efficiency, enhancing safety of air services and improving passenger protection by ensuring a consistent application of EU legislation in all EU Member States and a true level playing field for all EU airlines. By removing obsolete measures, the application of the rules should be facilitated.

An intensive discussion was inspired by the Commission's proposal concerning issues including: definitions, requirements for leasing by Community carriers, financial requirements for the validity of an operating licence, provisions on intra-Community air services and provisions on pricing. On 30th November 2007, the Commission welcomed the agreement, reached after less than one year between the Council and the European Parliament on the proposal to modernise the Single Market legislation for air transport[17]. It will be adopted by mid 2008.

5.3 Competition

5.3.1 State Aid

In 2005, the Commission adopted Communication C(2005) 312[18] concerning guidelines on financing airports and start-up aid for new routes from regional airports to amend the application of Articles 87 and 88 of the EC Treaty.

[16] http://ec.europa.eu/transport/air_portal/competition/doc/acte_en.pdf
[17] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1831&format=HTML&aged=0&language=EN&guiLanguage=en
[18] http://europa.eu/eur-lex/lex/JOHtml.do?uri=OJ:C:2005:312:SOM:EN:HTML

According to these rules, several decisions by the Directorate-General Energy and Transport in state aid cases were published in 2007[19]:

Pursuant to Article 88 (2) of the EC Treaty, the Commission has launched formal investigations into suspected state aid cases to airports in Germany (Berlin, Dortmund, Lübeck), Finland (Tampere) and France (Pau) and has sent invitations to submit comments.

The Commission declared granted state aids as compatible with Community law concerning airports in Italy (Tortoli-Airbatax), in Germany (Memmingen, Augsburg, Kiel-Holtenau), in Estonia (Tallinn), in Poland (Lodz, Rzeszow Jasionka Airport), in Sweden (Norrköpping) and in UK (Newquay Cornwall Airport).

In March 2007, the Commission authorised reduced prices to passengers on domestic routes in French Guiana due to their outlying location and their transport difficulties. In December 2007, aid was given in line with Community law in Portugal for air transport in Madeira.

Concerning airlines, the Commission approved state aid granted by Cyprus for the restructuring plan of Cyprus Airways. Also, start-up aids for airlines in Italy (Puglia, Grosseto) and Belgium (Antwerp) respected Community law. Under investigation is the support of airlines at Alghero Airport in Italy.

In several cases, the Commission was engaged in Greek State aid given to Olympic Airways/Olympic Airlines. At the end of 2007, a formal investigation procedure was launched. In September 2007, the Court of First Instance partially annulled the Commission decision on state aid to Olympic Airways concerning non-payment of charges due to Athens Airport and VAT on fuel and spare parts[20].

According to the above-mentioned Communication, EU Member States amended their existing schemes relating to State aid covered by these guidelines to conform to these rules by 1 June 2007.

5.3.2 Infringements

The Commission as the guardian of the EC Treaty is responsible for ensuring that Community law is correctly applied and has therefore the option of commencing infringement procedure against EU Member States.

Concerning air transport in 2007, several cases were brought before the Court of Justice[21]:

[19] http://ec.europa.eu/dgs/energy_transport/state_aid/decisions/decisions_dg_tren_en.htm
[20]http://europa.eu/rapid/pressReleasesAction.do?reference=CJE/07/56&format=PDF&aged=1&language=EN&guiLanguage=en
[21] http://ec.europa.eu/dgs/energy_transport/infringements/transport_proceedings_en.htm#air

In order to guarantee a high and uniform level of safety in European civil aviation, Directive 2004/36/EC harmonises the rules and procedures for ramp inspections of landed third country aircraft and the collaboration concerning this data. Following preliminary proceedings, the Commission took Poland to the European Court of Justice in November 2007 for not having properly transposed the Directive on the safety of third country aircraft using Community airports. By June 2007, the Commission had already decided to take legal action against Greece, Ireland, Italy and Luxembourg for not having communicated their national implementing measures to transpose this Directive.

Because of discrimination between air passengers concerning airport tax levied at Malta International Airport, the Commission decided to take Malta to the Court of Justice. The airport tax is only levied on air passengers beginning an international journey from Malta airport, but not levied if the passenger had started the journey outside Malta.

5.3.3 Merger

According to the EU Merger Regulation, the Commission prohibits the acquisition of Aer Lingus by Ryanair because of expected monopoly on routes to/from Ireland harming consumers[22]. Various remedies to solve the competition issues were rejected.

Other airline mergers in the European Union, namely Flybe – BA Connect, easyJet – GB Airways, Air Berlin - LTU and Air France-KLM – VLM were approved by national authorities. These mergers were not hindered by the application of European competition law.

5.4 Distribution Networks (CRS)

Computerised reservation systems (CRS), also known as global distribution systems (GDS), are distribution networks in the air transport market. These systems act as technical intermediaries between the airlines and the travel agents and are used by travel agents to find up-to-date information of flights and their availability, to compare prices and to make immediate confirmed reservations on behalf of their customers. There are currently three major CRS providers active on the European market with which about half of all bookings are completed: Europe's Amadeus and the American companies Sabre and Travelport.

In 1989, Council Regulation (EEC) No 2299/89[23], last amended in 1999, established a Code of Conduct for CRSs that offer their services in the EU. It was designed in a market context in which the vast majority of airlines bookings were made through CRSs via travel agents, being the only information source and distribution channel. This strong market position implies the risk

[22] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/893&format=HTML&aged=1&language=EN&guiLanguage=en
[23] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989R2299:EN:HTML

of competitive abuse, especially in the case of vertical integration of a CRS owned by an airline called "parent carrier". General competition rules were not sufficient and specific ad hoc rules in the form of a Code of Conduct were necessary to ensure fair competition between air carriers and between CRSs in order to protect the interests of consumers by displaying all available air services in a non-discriminatory way on the travel agencies' computer screen.

In the last years, technology and economics have changed. Through airlines' websites and call centres, other distribution channels are offered to consumers. So many airlines have divested their CRS ownership. Three airlines only hold minority shareholdings in Amadeus, for example. Low cost carriers mostly do not use the services of the CRSs. This rapid development of alternative and less costly booking channels leads to a changed market situation resulting in some inconsistency concerning the Code of Conduct for CRS.

To guarantee a non-discriminatory access to the services, the present Regulation restricts the possibility of differentiations for airlines in offered content for different CRSs and fixes booking prices excluding price competition. This intervention in negotiation freedom inhibits flexible handling for the needs of airlines and travel agents and leads to high distribution costs which make more cost-effective alternative channels even more attractive.

Because of these problems, the Commission initiated a large consultation process for stakeholders examining a possible revision of Regulation (EEC) No 2299/89:.Between 23 February 2007 and 27 April 2007 an open internet consultation was held, followed by a meeting on 2 May 2007 in Brussels in order to give a short overview of the contributions. The results of this process are available for the public[24].

On 15 November 2007, the Commission published a Proposal for a Regulation of the European Parliament and of the Council on a Code of Conduct for computerised reservation systems[25]. The proposal aims to significantly simplify the Code of Conduct and to reinforce competition between the CRS providers while maintaining safeguards against competitive abuse, besides consumer protection and the promotion of rail transport in CRS displays. In detail, the following measures are planned:

- The revised rules introduce negotiating freedom into the CRS market so that CRSs and airlines will be free to agree the booking fees charged by the reservation systems and the data content provided by the airlines. More competition will contribute to higher efficiency in the sector in terms of price and service quality.
- Maintained safeguards should protect against competitive abuse and discrimination by airlines which own or control CRSs. These "parent carriers" have to ensure the supply of neutral information to consumers. Due to Article 2 lit. g) and h) "parent carrier" is any

[24] http://ec.europa.eu/transport/air_portal/consultation/2007_04_27_en.htm
[25] http://ec.europa.eu/transport/air_portal/internal_market/doc/crs/acte_en.pdf

carrier which owns or effectively controls a CRS, while effective control means the possibility of directly or indirectly exercising a decisive influence on an undertaking.

- The provisions should guarantee an unbiased presentation of travel options as well as the display of all applicable air fares to ensure neutral, transparent and comprehensive information for customers. Regarding consumer protection, the new Code of Conduct also provides protection of personal data.
- Finally, the proposal allows rails companies integrated into an air transport CRS pricing freedom in negotiating booking fees. This non-discriminatory treatment gives the possibility to agree a better relation to the value of the mostly cheaper rail-tickets and expand the rail service offers in air transport CRSs.

In line with the codecision procedure, the proposal will now be scrutinised by the European Parliament and the Council.

5.5 Consumer Protection

5.5.1 Passenger Rights in the European Union

Regulatory developments concerning Regulation (EC) 261/2004 are described in chapter 7 concerning consumer issues.

5.5.2 Persons with Reduced Mobility

On 26 July 2007, the provisions of Articles 3 and 4 of Regulation (EC) No 1107/2006 of the European Parliament and of the Council concerning the rights of disabled persons and persons with reduced mobility when travelling by air[26] entered into force to offer persons with reduced mobility non-discriminating access to air transport.

Even though there are genuine and voluntary efforts by most airlines and airports to offer the necessary assistance, these measures are not free-of-charge everywhere and area-wide available. In general, this Regulation gives persons with reduced mobility four basic rights when they use air transport: accessibility, non-discrimination, assistance and information.

In accordance with article 18 (2) of the Regulation, Articles 3 and 4 have applied since July 2007 concerning equal treatment of persons affected by reduced mobility. The provisions prohibit the refusal of carriage or to take bookings on the basis of reduced mobility of the disabled or the elderly by an air carrier or its agent or a tour operator for flights from airports in the EU. Some strict exceptions are described in Article 4 of the Regulation which can be made only for duly justified safety reasons and which result in duties to supply information.

[26] http://ec.europa.eu/transport/air_portal/passenger_rights/doc/2006_1107_reg/2006_07_26_l_1107_en.pdf

In accordance with article 14 (1) of the Regulation, National Enforcement Bodies established by the EU Member States have to ensure that the provisions are applied on their territory. A current list of the different National Enforcement Bodies overseeing the application of the common rules is updated by the Commission[27].

As part of the successive implementation of the Regulation, the two other areas of the Regulation, which will enter into force in July 2008, will allow free-of-charge assistance in all EU airports as well as on board of planes taking off in the EU.

5.5.3 Misleading Airline Ticket Websites

On 14 November 2007, the results of an EU-wide investigation against misleading advertising and unfair practices on airline ticket selling websites were presented to the public[28]. 15 EU national authorities plus Norway, under coordination of the European Commission, investigated websites of leading airlines, low cost carriers and other websites selling airline tickets. The results show that in this highly digitalised market, price indications, contract terms and clarity of proposed conditions have to be improved as they breach EU consumer protection law. Followed by an enforcement phase, the national authorities will ask the companies to comply with current law for national cases, while in cross border cases assistance is given by other authorities via CPC (Consumer Protection Co-operation Network). Four months' notice is given for these improvements. In case of unchanged behaviour, possible follow-up measures can include imposing fines or closing down websites.

5.6 Air Traffic Management

The Single European Sky (SES) initiated by the Commission is intended to change the future structure of air traffic management (ATM) across Europe to meet future capacity and safety needs and to solve the problems of delays and the repercussions for users and airlines. The growing air traffic requires a reinforcement of the framework for safety regulation and safety management. So SES should organise airspace and air navigation at a European rather than at a local level as ATM provides, together with airports, the infrastructure for the air transport system.

[27]http://ec.europa.eu/transport/air_portal/passenger_rights/prm/doc/2006_07_05_national_enforcement_bodies_en.pdf
[28]http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/1694&format=PDF&aged=0&language=EN&guiLanguage=en

5.6.1 Single European Sky (SES)

In December 2007, the Commission presented a first report on the implementation of the Single Sky legislation[29] according to Article 12 (2) of the Framework Regulation[30] adopted as one of four regulations which brought air traffic management under Community supervision in 2004.

A growing air transport industry with more and more participants needs a high performance ATM system to face the considerable increase in traffic by 2020 and the threatening capacity crunch. Despite deficiencies concerning ageing technology, cost-effectiveness and the absence of competition resulting in a lack of investment and modernisation, all causing unnecessary flight length and the ensuing environmental impact, the Commission has pointed out many achievements in the process of harmonising air navigation service provisions:
- A legal and institutional framework guarantees cooperation between EU Member States, Eurocontrol and the industry.
- To ensure safety, separation of air navigation service providers from regulatory bodies has been established parallel to the certification of service providers since June 2007 in accordance with Regulation (EC) No 2096/2005[31].
- The adoption of Regulation (EC) No 1315/2007 on safety supervision in air traffic management[32] stipulates the national supervisory authorities' responsibility to oversee the air navigation service providers.
- A higher level of interoperability has been imposed by adopting Regulation (EC) No 633/2007 and Regulation (EC) No 1265/2007. The former lays down requirements for the application of a flight message transfer protocol for the purpose of notification, coordination and transfer of flights between air traffic control units[33]. The latter stipulates requirements on air-ground voice channel spacing for the Single European Sky[34] as implementation rules specifying the general framework of the Single European Sky legislation in detail.

In the second quarter of 2008, the Commission will publish a legislative proposal for a second Single Sky package, the extension of EASA competencies, especially to expand EASA's scope to the safety of aerodromes, air navigation services and air traffic management, and the SESAR master plan to pursue the construction of the Single European Sky.

Further initiatives of the Commission will also contain many of the ten recommendations made by the High Level Group on the future aviation regulatory framework[35] presented in July 2007.

[29] http://ec.europa.eu/transport/air_portal/traffic_management/ses_review/doc/2007_0845/comm_2007_0845_en.pdf
[30] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:096:0001:0008:EN:PDF
[31] http://europa.eu/eur-lex/lex/LexUriServ/site/en/oj/2005/l_335/l_33520051221en00130030.pdf
[32] http://ec.europa.eu/transport/air_portal/traffic_management/ses/doc/l_29120071109en00160022_en.pdf
[33] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:146:0007:0013:EN:PDF
[34] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:283:0025:0036:EN:PDF
[35] http://ec.europa.eu/transport/air_portal/hlg/doc/2007_07_03_hlg_final_report_en.pdf

Welcomed by the industry, the report prepared the revision of the single European sky legislation and developed a roadmap containing concrete measures on how to boost performance of the air traffic management system. The work of this group will make a decisive contribution to the progress on the Single Sky in 2008.

5.6.2 Functional Airspace Blocks (FABs)

As a key element for the success of the SES, the Commission published a mid-term status report concerning building the Single European Sky through functional airspace blocks (FABs)[36] in March 2007.

As airspace is a common resource and as air traffic control (despite liberalisation in the aviation industry as a single sector) is organised and operated at a national level, this fragmentation has to be improved by the integration across existing national borders through functional airspace blocks (FABs) based on operational requirements (e.g. traffic flows). Therefore, the Commission pursues a policy to create larger airspace blocks working as one single operational entity. This policy aims to enhance current safety standards and efficiency, to optimize the growing capacity requirements, to minimise delays and to lower the costs of air traffic services.

According to Article 5 (4) of Regulation (EC) No 551/2004 the "bottom-up approach" stipulates the responsibility of EU Member States to reach the necessary institutional agreements to reconfigure the upper airspace into FABs. So, discussions have started in all EU Member States and most of the initiatives are in the analysing feasibility phase now[37].

In addition to assistance provided in this early phase, the Commission will assess the progress concerning the establishment of functional airspace blocks through EU Member States and the benefit of the "bottom-up approach" by the end of 2008. If needed, the current legislative framework could be amended.

5.6.3 SESAR

The SESAR project is the European air traffic control infrastructure modernisation programme and constitutes the technological element of the Single European Sky. It will combine technological, economic and regulatory aspects to develop the new generation of air traffic management systems and will use the Single European Sky legislation to synchronise these plans.

The programme consists of three phases: First of all, the Definition Phase (2004-2008) will deliver an ATM master plan defining the content, the development and the deployment plans of

[36] http://ec.europa.eu/transport/air_portal/traffic_management/doc/com_2007_101_en.pdf
[37] See Annex I of COM (2007)101
http://ec.europa.eu/transport/air_portal/traffic_management/doc/com_2007_101_en.pdf

the next generation of ATM systems. Followed by the Development Phase (2008-2013), the project will generate new technological systems and components according to the Definition Phase. Finally, the Deployment Phase (2014-2020) will seek to build the new infrastructure in a wide scale under the responsibility of the industry.

On 27 February 2007, SESAR Joint Undertaking consisting of the European Community and Eurocontrol as founding members and public and private companies were created by Council Regulation (EC) No 219/2007 on the establishment of a Joint Undertaking to develop the new generation European air traffic management system (SESAR)[38]. This legal entity will manage the following Development Phase of SESAR, will coordinate and concentrate all relevant research and development efforts undertaken by its members and it will be responsible for the implementation of the ATM master plan which is the final result of the SESAR Definition Phase. The Joint Undertaking was set up under Article 171 of the Treaty establishing the European Union and shall cease to exist after 8 years.

In its meeting of October 2007, the Administrative Board appointed Mr. Patrick Ky as the Executive Director of the SESAR Joint Undertaking. The Executive Director is responsible for the day-to-day management of the Joint Undertaking and is its legal representative.

After invitations to become members of the SESAR Joint Undertaking, talks with a group of pre-selected candidates were initiated. In March 2007, the Commission published a Communication concerning the state of progress of the project to implement the new generation European air traffic management system (SESAR)[39], in particular to report on the industry's participation in the project development phase.

At the beginning of 2007, Deliverable 2 Report (D2) defining market requirements and an agreed set of challenging requirements for future business needs was discussed until March, when the Feedback Report[40] was made public by SESAR Consortium. In September 2007, the Deliverable 3 Report (D3)[41] concerning ATM Target Concept was published as a response to the performance requirements set in D2. This report forms the Third Milestone Deliverable of the SESAR Definition Phase followed by the Feedback Report[42] in December 2007. As a basis for further developments of the SESAR project, it consists of a concept of operations, architecture for future ATM systems, an outline of total cost and a selection of a viable solution. Work will be continued on the fourth milestone summarized in the Deliverable 4 Report (D4) concerning the selection of best deployment scenario.

[38] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:064:0001:0011:EN:PDF
[39] http://ec.europa.eu/transport/air_portal/sesame/doc/0315_comm_sesar_en.pdf
[40] http://www.sesar-consortium.aero/mediasandfiles/File/05_docs/SESAR_D2%20Feedback%20Report_final.pdf
[41] http://www.sesar-consortium.aero/mediasandfiles/File/05_docs/NewSesar3ForWeb_SESAR3.pdf
[42] http://www.sesar-consortium.aero/mediasandfiles/File/05_docs/SESAR_D3FeedbackReport_Final_V3.pdf

5.7 Airports

After liberalising the access to the air transport market until 1992, the Commission took further measures in the following years concerning connected parts of air transport. The allocation of slots and the ground handling segment were regulated, for example.

5.7.1 "Airport Package"

At the beginning of 2007, the Community airports came into the focus of the Commission through a landmark regulatory package to promote efficient airport operations and the optimal use of scarce capacity[43].

This package focuses on the role of airports in the further development and competitiveness of the European internal aviation market and will mark the future of airport regulation in Europe by ensuring regulatory convergence between EU Member States.

5.7.1.1 Airport Charges

As a key part of the so called "Airport Package", the Commission published a proposal for a Directive of the European Parliament and of the Council on airport charges[44] on 24 January 2007.

The proposal aims to set common principles for the levying of airport charges at Community airports. It should re-define the relationship between airport operators and airport users by requiring the following basic rules which are limited to the definition of a minimum of rules to be respected when charges are adopted. The provisions do not fix a particular charging system and are in line with ICAO settings:
- user-consultation (Article 4 of the proposal): the airport managing body and the air carriers serving the airport should exchange their opinions concerning the charging system at an airport which is going to be established or modified.
- transparency (Article 5 of the proposal): to facilitate the dialogue, each side has to provide information concerning among other things a list of provided services and infrastructure, the method of calculation and an overall cost structure of the airport through the airport managing body and the air carriers´ forecasts, developments and requirements in the future.
- non-discrimination (Article 3 of the proposal): airport charges should not discriminate among airport users or air passengers.
- independent national regulatory authorities (Article 10 of the proposal): each Member State has to designate an authority which has to ensure that the provisions of this Directive are implemented and used in a correct way.

[43] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/78&format=HTML&aged=0&language=EN&guiLanguage=en
[44] http://ec.europa.eu/transport/air_portal/airports/doc/2007_charges_en.pdf

In line with the codecision procedure, on 21 November 2007, the European Parliament's Committee on Transport and Tourism held a vote on the Directive's proposal at first reading. The Council reached a general approach on the Directive's proposal at its 2835th Council meeting.

But there is still a need for discussion on topics including the following:
- Scope of the Directive: two different thresholds subject to the dimension of the airport's annual traffic are being discussed.
- Modulation of charges for environmental and other matters of public interest: Article 3 of the proposal concerning non-discrimination should put the EU Member States in a position to stimulate the use of environmentally-friendly aircraft.
- Implementation: while the Commission suggests a limit of 18 months for implementation into national law, the Council favours an extension up to 36 months.

5.7.1.2 An Action Plan for Airport Capacity, Efficiency and Safety in Europe

On 24 January 2007, the Commission also presented a communication concerning an action plan for airport capacity, efficiency and safety in Europe[45]. While congestion in the air should be solved by SES, airport capacity involving runways and ground infrastructure will become a constraining factor on air transport due to the gap between capacity and demand. Because of the threat to safety, efficiency and competitiveness, a coherent strategy for tackling congestion at European airports is initiated by legislative proposals, financial support and the promotion of more co-ordinated planning.

Following the expressed need for co-ordinated actions during consultations of stakeholders, the Commission published five principal measures which aim to accommodate traffic growth in an environmentally sustainable manner:
- To optimise the use of existing capacity, air traffic flow management between airport slots and flight plans should work in a more consistent way. A harmonized airport capacity and assessment methodology tool should be developed in cooperation with Eurocontrol to establish an inventory of existing/planned capacity. These developments are monitored by a supervisory body on airport capacity.
- To provide a coherent approach to air safety operations at aerodromes, the responsibilities of EASA should be extended to aerodrome safety regulation.
- To promote "co-modality", the integration and collaboration of the transport modes is supported.
- To improve the environmental capacity of airports and the planning framework of new airport infrastructure, the existing rules are to be assessed and recommendations on best practice guidelines for a balanced approach between airport plans and land-use policy is to be developed.

[45] http://ec.europa.eu/transport/air_portal/airports/doc/2007_capacity_en.pdf

- Funded projects developing cost efficient technological solutions are to be implemented.

In October 2007, both the Council[46] and the European Parliament, adopting a non-legislative resolution[47], welcomed the plan of action and supported further measures, while underlining the need for a masterplan for enhanced airport capacity and a coordination with other relevant programmes.

5.7.1.3 Ground Handling Market

The ground handling market which consists of the landside (for example check-in and baggage handling) and the airside (e.g. maintenance, fuelling, catering) services are an important partition in the complex air transport business.

In October 1996 there was the liberalisation of the ground handling market at Community airports by Council Directive 96/67/EC which was to provide a basis for unhampered access to the market, aiming for more competition and reduced costs.

In accordance with article 22 of the Council Directive and within the regulatory package for airports, the Commission published a report on the application of Council Directive 96/67/EC on ground handling on 24 January 2007[48].

This report is the basis for close dialogue between the Commission, the Council and the European Parliament. As part of a revision concerning the simplification and clarification of the text, a future proposal could aim to provide for further liberalisation of the market and regulate current issues which have occurred since the application of the Directive.

This first report demonstrates the positive effects that the initial phase of liberalisation has had on opening up access to ground handling markets at European airports to competition and could be a contribution to solving the capacity problems at congested airports. On the other hand, social issues have to be respected concerning working conditions and wage structure, in order to ensure a high safety level.

In accordance with article 1 (4) of the Council Directive, the Commission has to annually publish a list of Community Airports at which the ground handling market must be opened in conformity with the relevant provision of the Directive. The current list was published on 16 November 2007[49].

[46] http://europa.eu/rapid/pressReleasesAction.do?reference=PRES/07/203&format=PDF&aged=1&language=EN&guiLanguage=fr
[47] http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2007-0433+0+DOC+XML+V0//DE
[48] http://ec.europa.eu/transport/air_portal/airports/doc/2007_groundhandling_en.pdf
[49] OJ C 275, 16 November 2007, Notice No. 2007/C 275/06

5.7.2 Slots

Because of growing air traffic demand during the last decades and lacking airport capacities, there are many congested airports which cannot offer enough landing and take-off possibilities ("Capacity Crunch").

Although only the enlargement of airport infrastructure can solve the lack of airport capacity in the longer term, a coordinated slot allocation should lead to an efficient use of slots in a short and middle-term. Therefore, the Council adopted Regulation (EEC) 95/93, amended by Regulation (EC) 894/2002 and Regulation (EC) 793/2004, to grant a neutral, non-discriminatory and transparent allocation, also regarding new entrants in the market.

On the basis of consultation with EU Member States, national authorities and stakeholders beginning on 23 January 2007 and in accordance with article 14a (1) of Regulation (EC) 793/2004 on common rules for the allocation of slots at Community airports, the Commission adopted a Communication on the application of this regulation on 15 November 2007[50].

All stakeholders reflected that the regulation has achieved some improvements for a more efficient use of scarce airport capacity, although it is almost impossible to quantify the improvements. Nevertheless, some problems still exist and further improvements are necessary:
- New entrants, whose difficult definition in the regulation leads to different interpretations, were only able to obtain a few slots at congested airports so that these rules seem to have only a limited effect on competition. Furthermore, the strict new entrant status limits the amount of slots under these rules and avoids a competitive network-infrastructure.
- Local rules can add more flexibility during the process of slot allocation if they are in line with Community law. The possibility of introducing local guidelines depending on local circumstances should be enlarged and could replace the rules for new entrants.
- The role and position of the coordinators at coordinated airports as neutral and functional independent natural or legal persons seems to be used in different and nonuniform ways in the EU Member States.

Furthermore, the issue of secondary trading has to be discussed on the basis of the study on the impact of the introduction of secondary trading at Community airports[51].

In the future, the Commission will concentrate on the correct implementation of the different provisions which cause problems. Clarification and review can take place.

[50] http://ec.europa.eu/transport/air_portal/airports/doc/2007_11_15_communication_slots_regulation_en.pdf
[51] http://ec.europa.eu/transport/air_portal/airports/studies_en.htm

5.8 Safety

The latest developments concerning safety, notably European Aviation Safety Agency (EASA) and the list of airlines banned within the EU, are described in chapter 10.

5.9 Investigation of Civil Aviation Accidents, Incidents and Occurrence Reporting

While air traffic is expected to grow in the following years and additional measures must be taken to ensure and improve the standards of aviation safety, the Commission is considering revising Council Directive 94/56/EC establishing the fundamental principles governing the investigation of civil aviation accidents and incidents[52] and Directive 2003/42/EC on occurrence reporting in civil aviation[53].

In the process of forming an opinion, three streams of stakeholder consultation have been pursued. While an external consultant prepared an impact assessment study by distributing a detailed questionnaire directly to a number of stakeholders and interviewing a limited number of key stakeholders, the Commission offered public consultation on the web at the beginning of 2007, based on a shorter questionnaire and open to all citizens. The final report was issued by the consultant in July 2007.

The Commission summarised 22 replies received from different stakeholders[54]. Only a minority opposed against the revision pointing out that it is too early to modify the Directives without experience in application. On the other hand, a possible revision is supported because of the needs to simplify and harmonise the rules. In particular, the option to establish a central European Transport Safety Board was discussed controversly and with intensity.

The Commission will proceed to a large consultation of the stakeholders to decide on the detailed provisions that should be included in a possible legislative proposal for the revision of the two Directives.

Concerning occurrence reporting in civil aviation, the Commission adopted two implementing regulations specifying Directive 2003/42/EC in 2007 with the objective of preventing aviation accidents and incidents:

Regulation (EC) No 1321/2007[55] lays down measures concerning integration into a central repository set up and managed by the Commission. It contains relevant safety-related

[52] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31994L0056:EN:HTML
[53] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:167:0023:0036:EN:PDF
[54] http://ec.europa.eu/transport/air_portal/consultation/doc/2007_03_02/summary_paper_en.pdf
[55] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:294:0003:0004:EN:PDF

information exchanged by EU Member States, in accordance with Article 6 (1) of Directive 2003/42/EC. The details for the update of information supplied by the EU Member States will be established by technical protocols agreed by the Commission and each EU Member State.

Regulation (EC) No 1330/2007[56] stipulates measures concerning dissemination to parties interested in information on civil aviation occurrences exchanged by EU Member States according to Article 7 (2) of Directive 2003/42/EC. With the objective of providing such parties with the information they need to improve civil aviation safety, the requests for information are evaluated and recorded by established points of contact.

5.10 Insurance

The Regulation (EC) No 785/2004 on insurance requirements for air carriers and aircraft operators entered into force on 30 April 2007 and imposes minimum insurance requirements for air carriers and aircraft operators in respect of passengers, baggage, cargo and third parties.

Following the terrorist attacks in the US on 11th September 2001, the European Commission has taken an interest in insurance requirements in the aviation industry. In the framework of the common transport policy, and in order to foster consumer protection and avoid distortion of competition between air carriers, the Regulation ensures a proper minimum level of insurance to cover liability of air carriers.

This Regulation applies to all air carriers and to all aircraft operators flying within, into, out of or – to a certain extent - over the territory of a Member State. Article 4 (1) of the Regulation requires both commercial air carriers and general aviation aircraft operators to be insured, to cover the risks associated with aviation-specific liability (including acts of war, terrorism, hijacking, acts of sabotage, unlawful seizure of aircraft and civil unrest)

According to Article 10 (1) of the Regulation, the Commission shall submit a report to the European Parliament and the Council on the operation of this Regulation by 30 April 2008.

Between 21 September 2007 and 22 November 2007, the European Commission launched an open consultation to get comments of interested stakeholders on the operation of the Regulation. On the basis of a discussion paper[57] published by the Commission, 66 responses were sent to the Commission.

[56] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:295:0007:0011:EN:PDF

[57] http://ec.europa.eu/transport/air_portal/consultation/doc/2007_11_17/09_21_discussion_paper_insurance.pdf

6 Environmental development

6.1 The Year in Brief

In January 2007 a broad discussion of the EC's proposal for the inclusion of international aviation into the EU-ETS took place. This was published on December 20th, 2006. According to this proposal, aircraft operators will be obliged to surrender CO_2 allowances for intra-EU flights from 2011 onwards. In 2012, the geographical scope of the scheme is intended to be extended to include all international flights landing at and departing from any airport in the European Union. The European Emissions Trading Scheme for the limitation of CO_2 emissions will not only affect European airlines, but also airlines from third countries.

In February 2007, the ICAO/CAEP 7 (Committee on Aviation Environmental Protection of the International Civil Aviation Organisation) was held in Montreal. An important issue was the possible inclusion of international aviation in the European Emissions Trading System. Concerning the EC's proposal, strongly deviating views of non-EU countries were expressed at the ICAO-CAEP/7 meeting. A number of countries believed that an inclusion of non-EU carriers is only possible on the basis of a mutual agreement, while the European Commission believes an inclusion is possible in the absence of a mutual agreement. Both parties argued on the basis of the Chicago Convention on Civil Aviation. At the same time, ICAO-CAEP delivered a so-called "ICAO Guidance for Emissions Trading in International Civil Aviation". This guidance is for use by ICAO Contracting States, as appropriate, to incorporate emissions from international aviation into Contracting States' emissions trading schemes consistent with the UNFCCC (Parties to the United Nations Framework Convention on Climate Change) process. The guidance was adopted by the ICAO-CAEP/7 in February 2007.

In March 2007, the ICAO Council adopted the "ICAO Guidance on Emissions Trading" after long discussions and the decision to include a foreword expressing the views of most council members that an emissions trading system can only be imposed on carriers of third-countries on the basis of a mutual agreement.

In June 2007, a study by consultants CE Delft on behalf of WWF UK was published. CE Delft analyzed the impact of high levels of auctioning of emission permits on the profitability of the aviation sector. These impacts have been studied by applying the AERO model. On this basis, the consultants concluded that the operating margin of the airlines is hardly affected by auctioning the CO_2 permits, provided that the opportunity costs associated with the expenditures are passed on to the consumers and the opportunity costs from updated benchmarking are cancelled out by the opportunity benefits this allocation method induces.

In July 2007, the consultants Ernst & Young published an impact assessment of the inclusion of aviation into the EU-ETS. This study was prepared on behalf of all the European carrier

associations. The key results of the assessment are as follows: The cost of allowances to permit the anticipated growth until the year 2022 would sum up to €45 billion. This was equivalent to €4 billion per annum, approximately twice the cumulative profit of the sector. Since it was assumed that it would not be possible to pass on the full allowance costs to the passengers, the result would be a reduction in the range and frequency of services, with an adverse effect on peripheral regions. At the end of the day there would be significant reductions in consumer surplus and in job creation. On this basis, the Association of European Airlines (AEA) noted that the aircraft operators did not reject the Commission's proposal but desired changes to certain elements in order to address their concerns.

Also in July 2007, a study by CE Delft and Manchester Metropolitan University (MMU) on "The Impacts of the Use of Different Benchmarking Methodologies on the Initial Allocation of Emission Trading Scheme Permits to Airlines" was published. A benchmark is defined on the basis of the average specific CO_2 emissions of the aircraft operator in the past. This study was prepared on behalf of the UK Department for Transport and the Environment Agency. One of the main findings was that a benchmark for the initial allocation of CO_2 permits on the basis of CO_2 per Revenue Tonne Kilometre has the most favourable impacts on the airlines subject to the EU-ETS.

In September 2007, the 36th Assembly of ICAO was held in Montreal. The update of resolution A35-5 "Consolidated Statement of continuing ICAO policies and practices related to the environmental protection" was discussed under agenda item 17 – Environmental protection. In line with what was expected before, the issue of "mutual agreement" in relation to emissions trading, together with the possible continuation of a moratorium for greenhouse gas charges, were the controversial points in the discussion. The position of the non-European States, that emissions trading can only be applied for other State's airlines on the basis of mutual agreement between States, was not supported by the European States. By the end of the Assembly it eventually proved not possible to reach an agreement on the controversial issues and the Resolution text therefore reflects the position of the majority of States. As a result, Europe could not agree to a Resolution text that urges States to refrain from unilateral implementation of greenhouse gas measures and entered a formal reservation on the relevant part of the Resolution.

In October 2007, the European Parliament published a "Report on the proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community". The rapporteur of this report was Mr Peter Liese. The European Parliament concluded that the EC's proposal for the inclusion of aviation into the EU-ETS will be supported by the EP, but a number of substantial changes have to be made. This report was subject to a number of discussions in and outside of the European Parliament.

On November 13th, 2007, the European Parliament plenary voted on the EC's proposal. The decision was to support the proposal if ambitious ecological improvements will be accepted. Among other suggestions, the European Parliament proposed to auction 25 per cent of the allowances for the aviation sector, while the European Commission initially proposed to auction 3 per cent of the total allowances allocated to the aviation sector. Also, the European Parliament voted for the inclusion of all flights departing from or landing at any EU airport into the EU-ETS by the year 2011, while the Commission favours a two step-approach: to start with the inclusion of intra-EU flights by 2011 and to extend the scope of the scheme by the year 2012.

In late December 2007, the EU Environmental Council reached a political agreement on a draft directive for the inclusion of aviation into the EU Emissions Trading Scheme. The main elements of this draft directive are described and discussed below. The publication of a modified legislative proposal on the inclusion of aviation into the EU-ETS by the European Commission on this basis is expected for spring 2008.

6.2 Emissions Trading Scheme for Aviation

On December 20th, 2006, the European Commission published a proposal for the inclusion of international aviation into the EU-ETS. Since its publication, this proposal is being intensively considered and discussed by a number of both global and European institutions. One year later, on December 20th, 2007, the EU Environmental Council reached a political agreement on this issue on the basis of a modified text tabled by the Portuguese Presidency. According to this agreement, the draft directive would contain the following provisions for the inclusion of international aviation into the existing emission trading scheme:

Aircraft operators will be obliged to hold and surrender allowances for CO_2 emissions. Allowances are required for flights by aircraft with a maximum take-off mass of or above 5,700 kg. Flights performed under visual flight rules, training and check flights, flights by non-EU state aircraft and rescue flights as well as flights performed in the framework of Public Service Obligations on routes within outermost regions are some exemptions from the scheme. Aircraft operators can also be excluded on the basis of a so-called *de minimis clause*: The exclusion of flights performed by a commercial air transport operator which operates less than 243 flights per period over three consecutive four-month periods. Regulations for emissions monitoring and reporting will take effect in 2010 while an emissions cap for all participating aircraft operators will be introduced in 2012.

From January 1st, 2012, the emissions trading scheme will cover all flights departing from or arriving at EU airports. Domestic aviation will be subject to the same rules as international air traffic.

Consequently, the European emission trading scheme will not only affect European airlines but also airlines from third-countries from 2012 onwards. But if any non-EU country introduces alternative measures with similar climate protecting effects, the geographical scope of the emission trading scheme could be modified such that flights arriving from or departing for this particular country are excluded from the scheme.

Further rules in the Commission's proposal, as supported by the Council's political agreement, include the following issues:

The total number of allowances allocated to the sector will be calculated on the basis of the mean average of the annual emissions in the calendar years 2004-2006 by the operators taking part in the scheme.
Initially, allowances will be allocated to aircraft operators mostly free of charge. Only 10 per cent of the initial allocation will be auctioned in the year 2012. For future periods, this percentage may be increased.
The EU Member States will decide how to use revenues generated from auctioning allowances. In general, these revenues should be used to tackle climate change in the EU and third countries and to cover the costs of administering Member States in relation to this directive.
Three percent of the total quantity of allowances to be allocated to the aviation sector will be set aside in a special reserve for certain aircraft operators which are entering the aviation market for the first time or are growing very quickly.
The total number of allowances allocated to each aircraft operator will be determined by a so-called benchmark, which is defined on the basis of the average specific emissions of the operator in the past. The reference of the benchmark is the operator's revenue ton-kilometres that are calculated by multiplying the mission distance (great-circle-distance plus an additional fixed factor of 95 km) by the payload transported (cargo, mail and passengers).
Allowances allocated to aircraft operators can be traded freely within the EU-ETS. In addition, it will be possible for aircraft operators to purchase permits from other sectors or from the project based Kyoto instruments "Joint Implementation" and "Clean Development Mechanism". For the year 2012, aircraft operators may use permits from these project based instruments for up to 15 percent of the total allowances to be surrendered. For subsequent periods this percentage may be different.

The publication of a modified legislative proposal on the inclusion of aviation into the EU-ETS by the European Commission on the basis of the political agreement reached in December 2007 is expected for spring 2008. The aim of the draft directive is to improve the quality of the environment by reducing the growing climate change impact of international aviation. It is also an objective of the proposal to provide a model for aviation emissions trading that can be a point of reference in the EU's contacts with key international partners and to promote the development of similar systems worldwide.

Aviation's NO_x emissions can also contribute to the anthropogenic climate change. In order to also limit aviation's NO_x emissions in the EU in the future, the European Commission is planning to propose a directive in 2008.

6.3 Aviation Noise

In the "Report of the High Level Group for the future European Aviation Regulatory Framework: European Aviation - A framework for driving performance improvement" of July 2007 on aviation noise it is noted that "the Advisory Council for Aeronautics Research in Europe (ACARE) has recently set goals for 2020 which include a 50% reduction of external noise".

On 20 June 2007 the European Parliament issued a "Draft report on airport capacity and ground handling: towards a more efficiency policy (2007/2092 (INI))". Therein the Parliament realizes, "that in the absence of new internationally agreed noise stringency standards before 2010, a new approach to limit the number of people affected by noise will be needed in the mid term and in any case before 2025; (it) invites the Commission to examine the introduction of such a new approach which would be more restrictive, lead to common standards for noise restriction, a level playing field between airports and a generalisation of noise charges schemes; … and the reinforcement of operating restrictions at EU level".

As early as 24 January 2007, the European Commission published a "Communication about an action plan for airport capacity, efficiency, and safety in Europe" (COM (2006)819 final). It is based on the Balanced Approach to Noise, agreed at the 2001 ICAO assembly. In the Directive 2002/30/EC (OJ L 85, 28.3.2002, p. 40) these principles have been incorporated in Community law. The Member States should also have due regard to the provisions of the Ambient Noise Directive (2002/49/EC) which will be reviewed in 2009. Already in 2006 the Commission launched a study "to examine the implementation of the Directive and to analyse the changes that took place with regard to the noise levels at Community Airports since its entry into force" (p. 10 f.). On this basis the Commission prepared in 2007 a report on the implementation, on the basis of which the Commission intends to decide whether a proposal for amending the Directive is required.

2007 also saw the deadline for research proposals of the 7th Research Framework of the EU Commission. Several of the projects include dealing with aviation noise. These projects have to collaborate to fulfil this challenging goal of noise reduction.[58] Current studies dealing with aviation noise are The Greening of Air Transport which analyses the goal of halving the perceived noise. Other studies are X-Noise (www.xnoise.eu), Sourdine II (www.sourdine.org), and Silence-R[59]. These projects are mainly technology oriented.

[58] For a list of calls see
http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.CooperationCallsPage&id_activity=7
[59] See the article about the final meeting of the project on 16.7.2007 at
http://ec.europa.eu/research/transport/news/article_5637_en.html.

In the first paragraph of this chapter the development of ever more stringent measures was mentioned. Noise is predominantly a local problem and needs local measures to reduce its effects on the population without excessively hindering the development of the aviation industry and its contribution to the economy. For this reason, national or supranational regulations cannot give more than some guidelines for measures to reduce noise. Most airports have introduced an individual set of measures more or less appropriate to their specific needs. It has always to be a compromise between the interests of the people living there and the economic needs of the region and the interest of the service providers at the specific airport.

On its website, Boeing provides some interesting information about the measures different airports have taken against noise. The information in this list has to be handled with care because there are certain limitations of the information making a comparison rather difficult. So there is no guarantee that all airports of a country are included – and in some countries it's very obvious that not all airports provided the necessary data. Another limitation can be seen in the missing official definition of the measurements so that it is in the hands of the respective airport how they define their measures. As a further limitation it has to be mentioned that every measure may have a weak or a rather strict expression.

Table 6-1: Applied Noise and Emissions Regulations at Airports 2007; World and Europe

Source: DLR-evaluation of Boeing Company database 01.2008 "Airport Noise and Emissions Regulations"

	World Total	%	Europe Total	%	World ./. Europe Total	%
Number of selected Airports	643	**100**	174	**100**	469	**100**
Applied measurements						
APU Operating restrictions	124	**19**	83	**48**	41	**9**
Airport curfews	233	**36**	112	**64**	121	**26**
Engine run-up restrictions	391	**61**	124	**71**	267	**57**
Noise abatement procedures	482	**75**	140	**80**	342	**73**
Noise budget restrictions	13	**2**	6	**3**	7	**1**
Noise level limits	99	**15**	55	**32**	44	**9**
Noise surcharge	129	**20**	98	**56**	31	**7**
Emissions surcharge	14	**2**	14	**8**	0	**0**
Operating quota	53	**8**	35	**20**	18	**4**
Preferential runways	354	**55**	106	**61**	248	**53**
Chapter 3 restrictions	60	**9**	47	**27**	13	**3**

Taking all limitations into consideration, the preceding table gives a good impression of the distribution of measures worldwide. From this table it is obvious that most airports use more than one measure to reduce the negative impact of noise. It can also be seen that non-European airports concentrate more on technical measures whereas the list of potential measures has a wider range for European airports, including more economic measures.

In the next table we concentrated on European countries where we could assume that the list of participating airports is rather complete or at least representative. The table only contains 12 countries out of a list of 29 countries in total. These 12 countries represent 41% of the countries, but 83% of all the European airports listed in this database.

Table 6-2: Applied Noise and Emissions Regulations at European Airports 2007 (Sample 144 airports from 12 countries)

Source: DLR-evaluation of Boeing Company database 01.2008 "Airport Noise and Emissions Regulations "

	Countries													
	AT	**BE**	**CH**	**DE**	**DK**	**FR**	**GB**	**IS**	**IT**	**LU**	**NL**	**SE**	**Total**	**%**
Number of selected Airports	6	5	6	24	6	22	38	3	18	1	3	12	144	**100**
Applied measurements														
APU Operating restrictions	4	3	5	3	5	8	20	2	14	1	1	6	72	**50**
Airport curfews	5	3	5	21	2	14	27	2	10	1	3	6	99	**69**
Engine run-up restrictions	4	5	3	20	5	13	33	2	13	1	3	4	106	**74**
Noise abatement procedures	4	5	6	16	6	15	34	2	15	1	2	8	114	**79**
Noise budget restrictions		2		1			1				1	1	6	**4**
Noise level limits	2	2	4	5	4	3	14		6		2	5	47	**33**
Noise surcharge	2	3	6	22		17	13		17	1	2	7	90	**63**
Emissions surcharge			3	2		1	2					6	14	**9**
Operating quota		4		2	3	3	17				1	1	31	**22**
Preferential runways	4	4	4	11	3	15	16	3	12		1	9	82	**57**
Chapter 3 restrictions	1	4		12	3	7	10			1	1	2	47	**28**

Comparing the results of all participating European airports with those of the 12 countries it can be seen that the difference in usage of noise abatement measures is minor. It is only perceivable that airports of the 12 countries remarkably often have a noise surcharge, and the small number of airports having an emission surcharge are all from these 12 countries. The preferential runway choice, in contrast, is found more often at airports in those countries where not all airports have participated.

With regard to some specific information on these 12 countries, it can easily be seen that also some countries' minor airports contributed to Boeing's database. That is the only way to explain why there are e.g. 5 airports in Belgium or 6 in Switzerland. Surprisingly the differences between the number of measures used does not differ very much, on average all airports have 4.9 measures, those in France 4.4, in Germany and Italy 4.8 and in Great Britain 4.9 – a very small dispersion around the mean. Remarkable is also that those measures which are so far relatively seldom have no concentration in certain countries. This can be seen with noise budget restrictions or the emission surcharges. In Germany and in Italy nearly all airports have a noise surcharge on the landing fee, whereas in GB most airports use noise abatement procedures and engine run-up restrictions. In France and in Sweden there are no predominant measures.

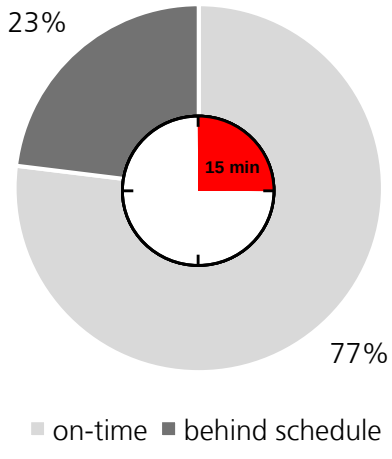
7 Consumer Issues

7.1 Punctuality

The measurement of delay is dedicated to giving an impression of the performance of the transport mode aviation and is therefore of major interest for consumers.

Delay means that the actual time of departure or arrival lies behind the published schedule. Beyond a certain limit however, a delay is referred to as an unpunctuality. A delayed flight becomes an unpunctual one when the actual time of arrival or departure is more than 15 minutes after the scheduled time. Pulling up at or leaving the parking position is the reference time for arrival or departure. Delays to an aircraft that is ready for take-off that occur after leaving the parking position are therefore not regarded as delayed departures.

Passengers are particularly aware of delays in arrival, as these jeopardise their ability to catch connecting flights or take advantage of other arrangements for continuing the journey. From an operational point of view, both delays and early arrival/departure can cause numerous problems with the allocation of resources, in very busy airports or airspace for example. The flight schedules published by the airlines therefore include extra periods of time to ensure a minimum level of punctuality. These time buffers are added to the ideal, undisturbed flight times, taking into account mainly empirically derived knowledge about the actual distribution of block times (the period of time between leaving the parking position at the starting airport and arrival at the parking position at the destination airport). Fluctuations in the actual duration of flights over the course of a season result from diverse influencing factors that cannot be anticipated exactly, for example weather conditions, different flight paths and levels, air traffic control measures and different amounts of time taken to carry out clearance processes. The time buffers therefore moderate the number of actual ‘delays’, albeit at the cost of additional scheduled waiting time that the passenger must spend in the air traffic system.



7.1.1 Actual Punctuality

Overall European air traffic punctuality in 2007 corresponded to the level in the previous year of just below 80%. Data provided by the Association of European Airlines (AEA) was referred to as the European reference. The AEA currently includes 31 airlines, most of which are Full Service Network Carriers.

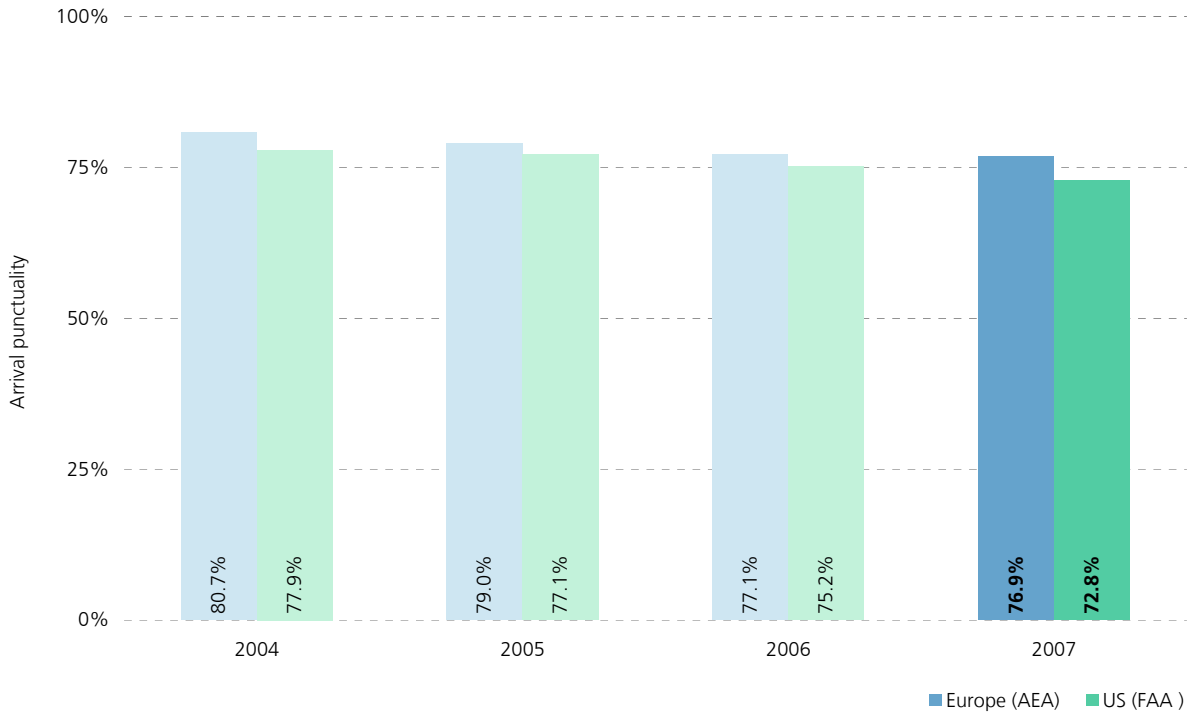
Figure 7-1: Three out of four flights arrived on time in 2007

Source: AEA

The AEA airlines achieved in 2007 a punctuality of about 77% for all operations. For comparison, levels of punctuality in the largest domestic air traffic market in the world, the USA, are shown in Figure 7-2. The data used here does not originate from a private association, but rather the Federal Aviation Authority (FAA). All domestic flights to and from major US airports analysed by the FAA are taken into account. A direct comparison of the cumulative values suggests that for many years the European airlines have been slightly more punctual than the airlines in the USA, however the AEA figures also include all long haul flights, which has a skewing effect on the punctuality statistics (long haul flights are not included in the FAA data).

Figure 7-2: Punctuality: US vs. Europe

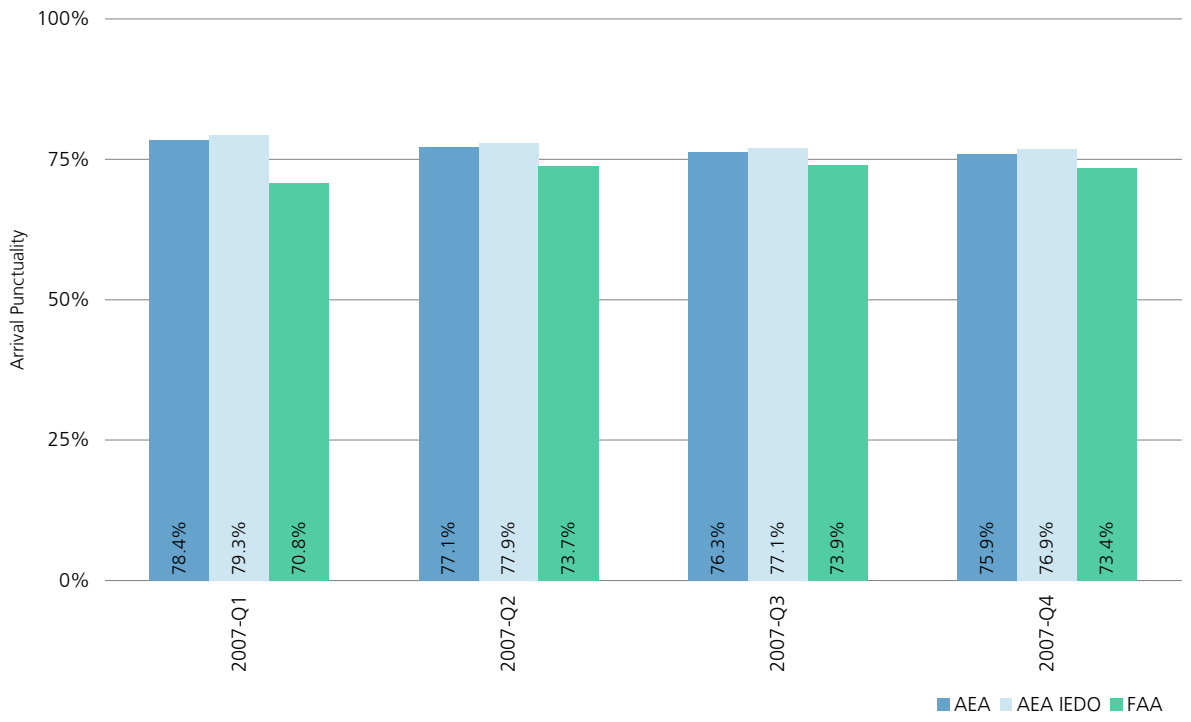
Source: AEA, FAA



The greater punctuality of the AEA airlines becomes obvious when, similarly to the US figures, only domestic flights are taken into consideration. This is illustrated by the quarterly figures from the AEA and FAA, as shown in Figure 7-3. AEA punctuality on short and medium haul flights is shown in light blue, with overall values for the AEA shown in dark blue. The superior punctuality of the European FSNCs in comparison to the North American airlines is also evident in the quarterly representation.

Figure 7-3: Quarterly punctuality performances (AEA and FAA numbers)

Source: AEA, FAA



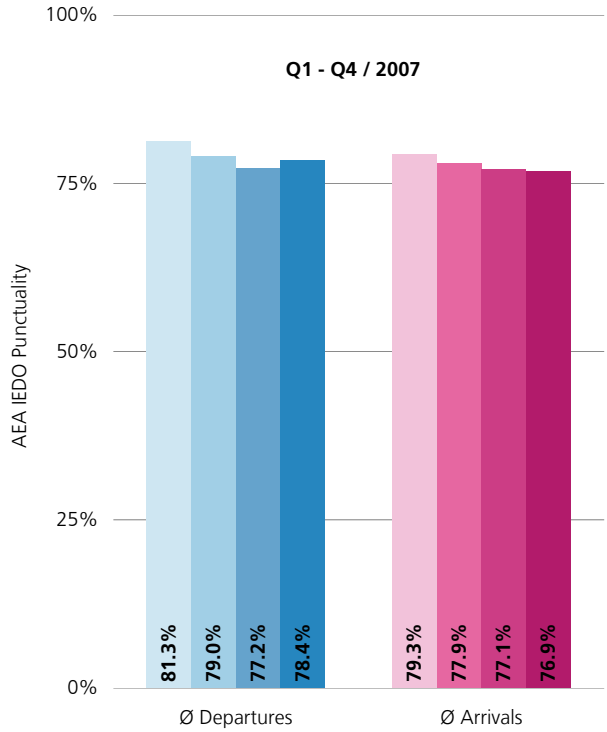


Figure 7-4: Quarterly departure vs. arrival punctuality of the AEA-Airlines (IEDO flights)

Source: AEA

The punctuality achieved can also be considered separately on a departure and arrival basis. From a consumer's point of view, arrival punctuality is probably more important than the question of whether the flight took off on time or not. Nonetheless, all compensation that may be due under Regulation 261/2004 with regard to a delay is based on a delay from the place of departure. As illustrated in Figure 7-4, departure punctuality was on average slightly better than arrival punctuality. There was therefore a tendency for time to be lost whilst flying to the destination airport. This was however not the case in the third quarter, when overall arrival punctuality was nearly congruent with departure punctuality. Time normally lost was therefore either caught up in

flight or additional time was allocated for turnaround. This effect could theoretically also be attributable to an adjustment of the turnaround plans and the buffer times for schedule stabilisation contained therein. This is however unlikely given the large number of flights taken into consideration (>4 million movements in 2007).

In Figure 7-5, arrival punctuality is shown separately for short and medium haul (AEA says IEDO for Intra-European and Domestic) and long haul services. This reflects the individual punctuality performance profiles for both services. Long haul flights are generally characterised by lower punctuality rates than short or medium haul flights. Although it is possible to partially compensate for departure delays by increased speed during long haul flights, this may be hampered by unfavourable weather conditions (a headwind, for example) or flight control restrictions.

One of the main reasons for the susceptibility of long haul flights to being delayed is their integration into a hub and spoke network. Many smaller feeder aircraft are required at the hub airport in order to fill a large long haul plane. The probability of a long haul jet being subject to delay therefore increases with the number of feeder aircraft carrying transfer passengers and freight that have to be waited for. Long haul flights also tend to operate mainly between very busy hub airports, which can also help to explain the inferior punctuality.

Figure 7-5: AEA arrival punctuality performances of short/medium haul vs. long haul services

Source: AEA

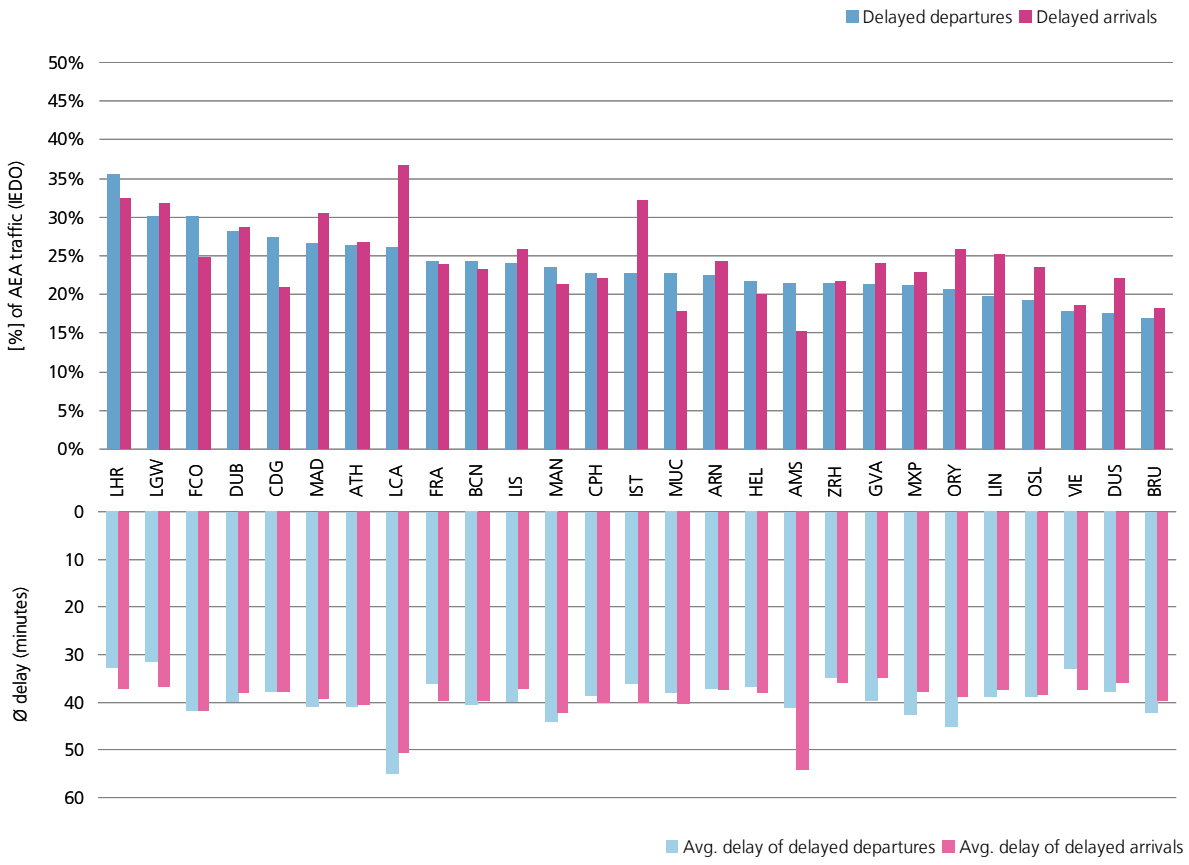
The following section provides a more detailed analysis of the data than the highly aggregated punctuality figures considered above. This focuses on selected airports in Europe that feature regular flights by AEA airlines, namely:

AMS Amsterdam, ATH Athens, ARN Stockholm, BCN Barcelona, BRU Brussels, CPH Copenhagen, DUB Dublin, DUS Dusseldorf, FRA Frankfurt, GVA Geneva, HEL Helsinki, IST Istanbul, LCA Larnaca, LIS Lisbon, LGW London Gatwick, LHR London Heathrow, MAD Madrid, MAN Manchester, LIN Milan Linate, MXP Milan Malpensa, MUC Munich, OSL Oslo, CDG Paris Charles de Gaulle, ORY Paris Orly, FCO Rome Fiumicino, VIE Vienna, ZRH Zurich

Again, the data presented relates to the punctuality achieved by IEDO flights without long haul services included. The higher long haul traffic delay rates are largely due to reasons that cannot be assigned to the airport area and which would therefore limit the comparability of the values. The precise reasons for specific conditions at individual airports cannot be deduced from the statistics. It is however discernable, giving due consideration to seasonal influences, that significant differences exist across Europe as a whole. Analysis of whether delays to departing or arriving traffic represent the larger category can indicate the respective cause of the delays. The average delay for unpunctual arrivals and departures in the first quarter of 2007 was a good 40 minutes, which fell slightly to 39 minutes in both cases in the second quarter. During the third quarter, the average waiting time for delayed departures dropped to 38 minutes, while the cumulative delay for arrivals remained at around 39 minutes. Last quarter of 2007 showed an average of slightly above 40 minutes for both late arrivals and late departures.

Figure 7-6: Proportion of delayed flights (IEDO) and average delay per delayed flight at selected airports in 2007

Source: AEA



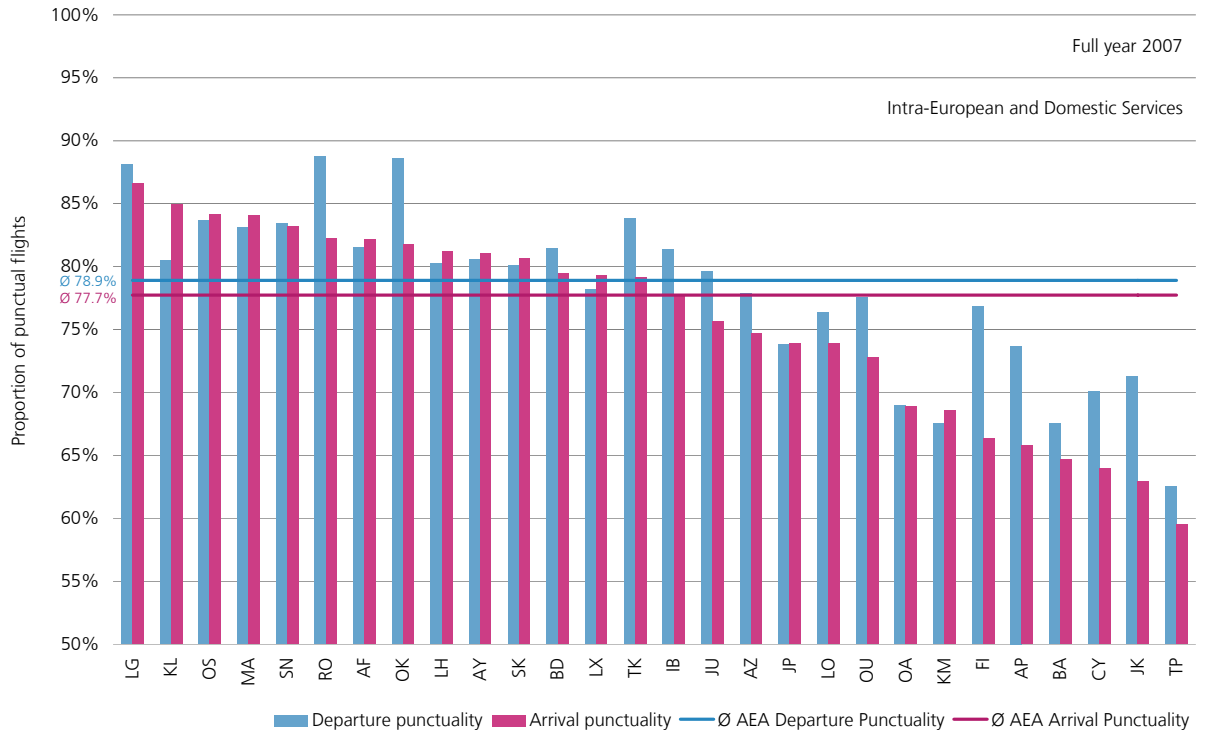
In addition to considering delays at particular airports, it is also worth taking a look at the punctuality performance of the airlines. Taking the AEA airlines as an example shows that there are also significant differences in punctuality between the airlines. Since not all AEA airlines provide long haul services, only the relevant IEDO flights are compared. Luxair (LG) was

repeatedly the most punctual AEA airline with an arrival punctuality of just under 90% in 2007. The least punctual airlines on the other hand only managed to obtain punctuality scores of just over 50%. An interesting point is the fact that departure and arrival punctuality become similar to each other at approximately 77% by the third quarter. At the start of the year, departure punctuality was as high as 81.3%, while arrival punctuality was at 79.3%.

A different association, the European Regions Airline Association (ERA), reports an overall annual departure punctuality of a good 84% (2006: 83%), based on data for its 31 member airlines for the year 2007.

Figure 7-7: AEA-Airline punctuality performances (IEDO) in 2007

Source: AEA



7.1.2 ATFM Delays

The Central Flow Management Unit (CFMU) at Eurocontrol is responsible for the provision of an efficient ATFCM service within the ECAC States. Air Traffic Flow and Capacity Management (ATFCM) is one of the constituent parts of Air Traffic Management (ATM) and the CFMU provides an ATFCM service to airspace users throughout Europe.

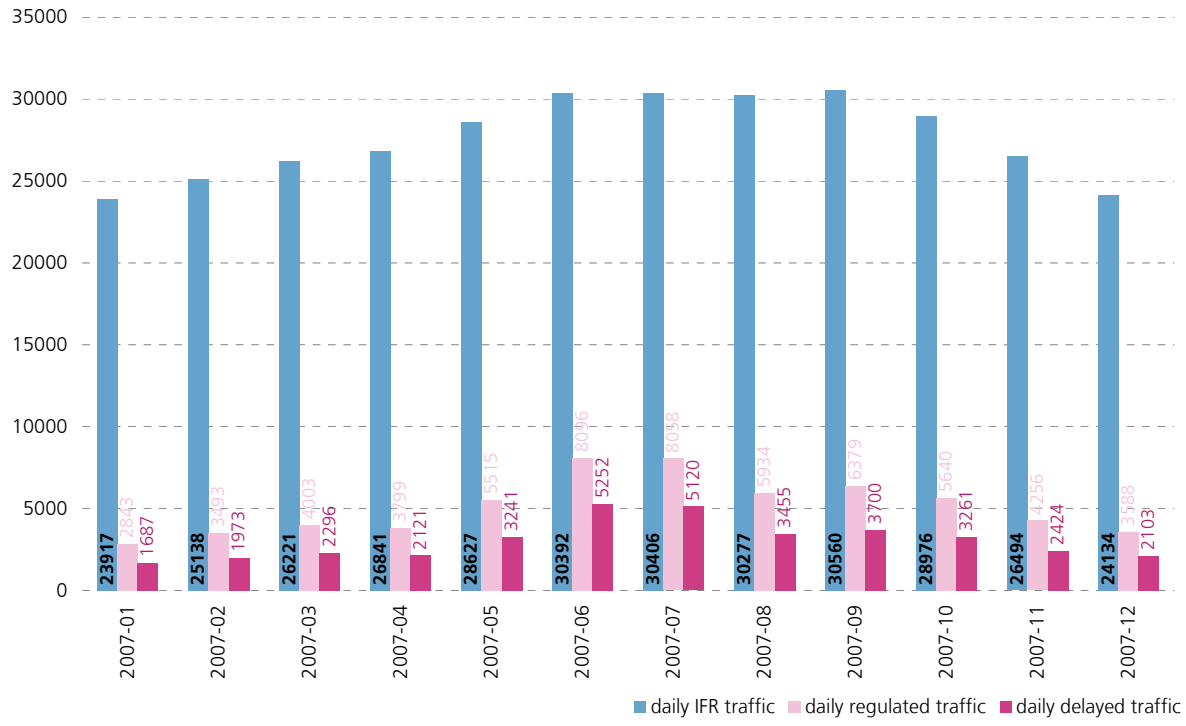
The CFMU is responsible for management of air traffic in Europe and therefore monitors resource allocation for aircraft in the air and at destination airports. If the CFMU determines that more resources (airspace or airport capacity) have been requested locally than are available, then

it regulates traffic by keeping aircraft that are ready for take-off at the departure location on the ground until the requested resources are actually available.

The monthly figures from the CFMU for 2007 are shown in Figure 7-8. The number of regulated flights represents all flights that were allocated a slot (irrespective of the length of any delay). The number of delayed flights represents the number of aircraft that were actually delayed due to ATFCM (irrespective of the length of the delay). The chart clearly shows a disproportionately high increase in daily regulated traffic and the number of delayed flights during the busiest months in the summer. The annual proportion of ATFM-delayed traffic in 2007 lies with 11% slightly above the previous years (2006: 9.9%).

Figure 7-8: Number of daily regulated and delayed flights per month in 2007

Source: Eurocontrol: CFMU ATFCM Public Report December 2007. Brussels, Belgium 2008



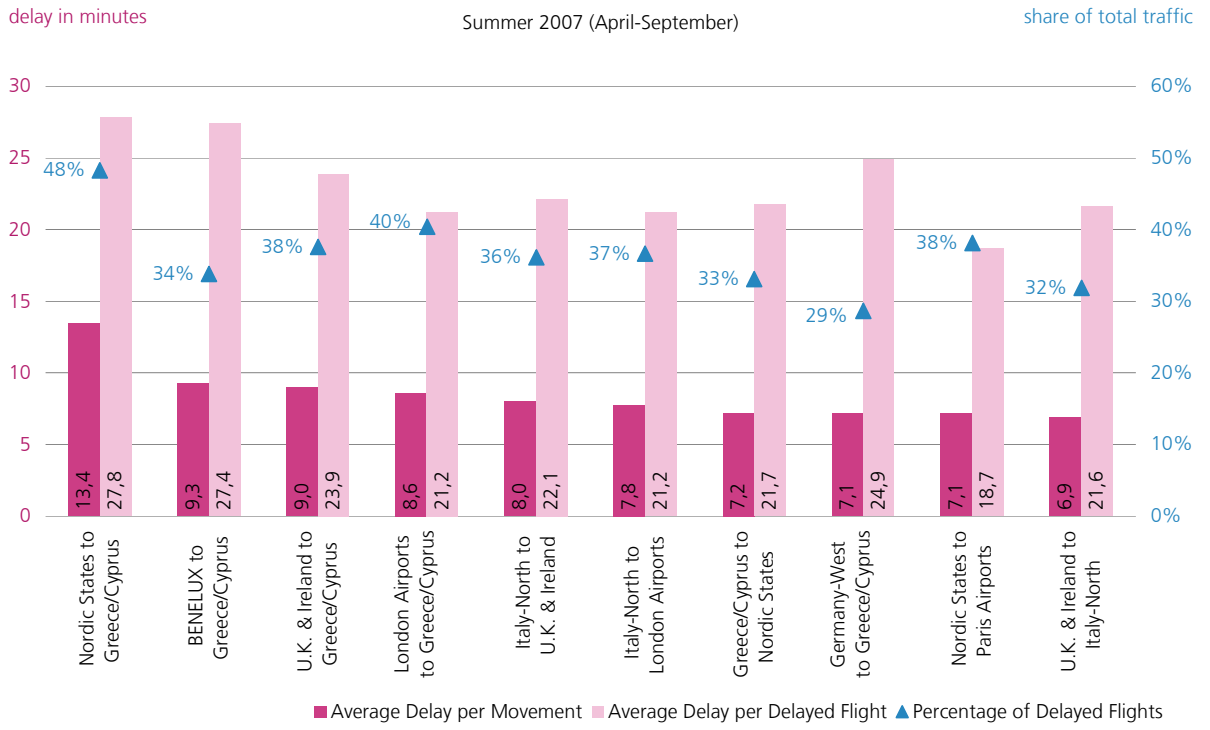
Most Affected Traffic Flows

The effects of traffic flow control can be demonstrated on the basis of data provided by Eurocontrol. The most affected traffic flows in Europe are shown in Figure 7-9. This analysis considers traffic levels during the summer of 2007, which is IFR traffic between April and September 2007. It is clearly evident that the traffic flows most often affected by delays due to capacity bottlenecks are those running from north to south. Flows to Greece/Cyprus feature most strongly here, which is hardly surprising in view of the amount of holiday traffic to the warm water regions of Europe. The 'front-runner' in terms of CFMU regulation was the flow from Scandinavia to Greece/Cyprus, with an average ATFM delay across all flights of over 13

minutes. The average delay for all flights delayed by at least 15 minutes – over 48% of the total traffic on this route – was almost 28 minutes.

Figure 7-9: Most affected traffic flows Summer 2007

Source: Eurocontrol/CODA: Delays to Air Transport in Europe – Summer 2007. Brussels, Belgium. 2007



7.2 Delayed Baggage

After a delay limit of up to 21 days, as it is defined in the Montreal Convention, an airline must treat a bag as lost. In general, this makes a difference to how airlines settle claims. "There are no set rules for how airlines must assess baggage claims", states the Airport Users Council (AUC). For delayed baggage, some airlines offer immediate payments as a replacement for emergency purchases (e.g. such as toiletries or underwear). Some will pay a set daily amount but only for a pre-defined period of time. But others will not make cash payments in advance, preferring to pay back expenses on essential items on seeing the receipts. In general, most airlines favour to cover essential expenditure resulting from the delay until the baggage is delivered.

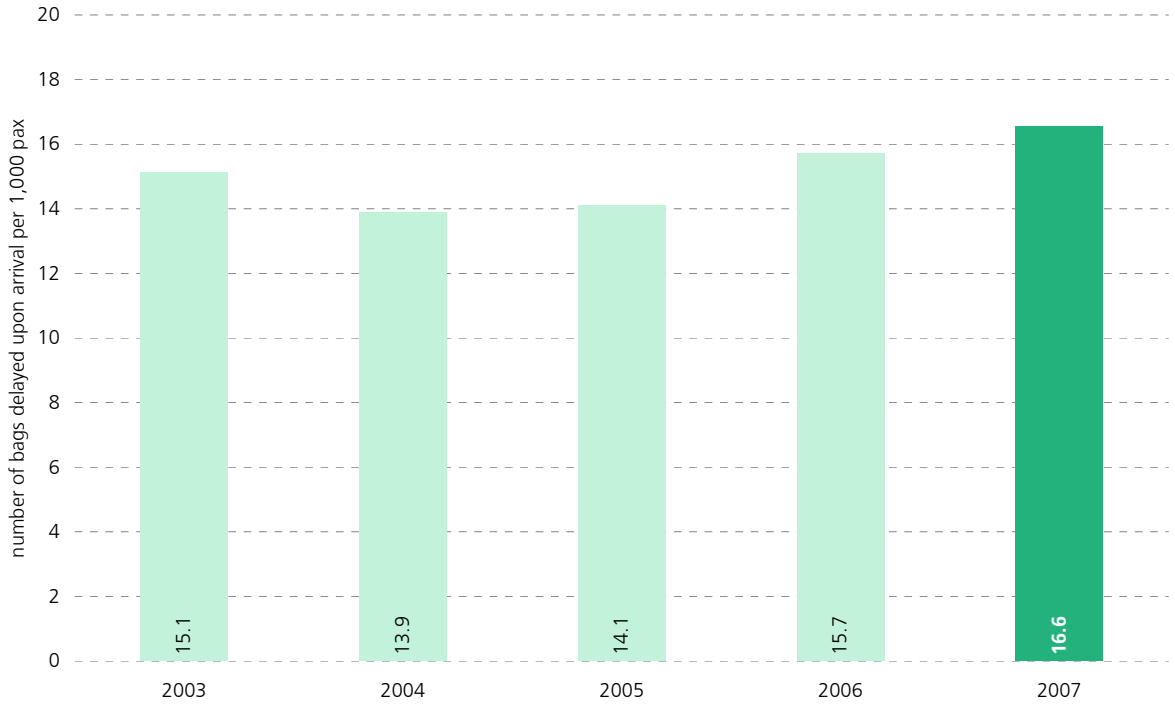
Unhappily, accompanied baggage does not always arrive late but also sometimes not at its intended destination. Or, if it does arrive, it might turn up dented, totally damaged or incomplete. When this happens, an airline is responsible for the damage under the Montreal Convention. The Convention does however place a maximum limit on the airline's liability of 1,000 Special Drawing Rights (SDRs) per passenger. The value of one SDR in terms of US Dollars is newly determined on a daily basis by the International Monetary Fund (IMF). The value bases

on the current exchange rates of the currencies contained in the SDR's basket (currently USD 44%, EUR 34%, JPY 11% and GBP 11%).

The AEA reports regularly on the number of delayed baggage items. Twenty four airlines provided related data for 2007. During this period, 377,301,582 passengers were enplaned by these airlines, but 6,246,820 pieces of baggage were delayed in reaching their owners. This figure is based on all baggage for which a report was made. Information about subsequent delivery and/or compensation is not available. The following diagram illustrates the figures for the relative frequency of such reports lodged with the participating AEA airlines over the last few years.

Figure 7-10: Delayed baggage history

Source: AEA



Among the participating AEA airlines in 2007, late arrival of baggage is particularly frequent with TAP Portugal (27.8 delayed bags per 1,000 passengers) and British Airways (26.5 delayed bags per 1,000 passengers). An average of 16.6 delayed bags per 1,000 passengers was recorded for all AEA airlines over the same period. The quarterly AEA data indicates that delays traditionally increase in the third quarter – with nearly 19 bags delayed per 1,000 passengers in 2007 - which includes the high traffic volumes in the summer season.

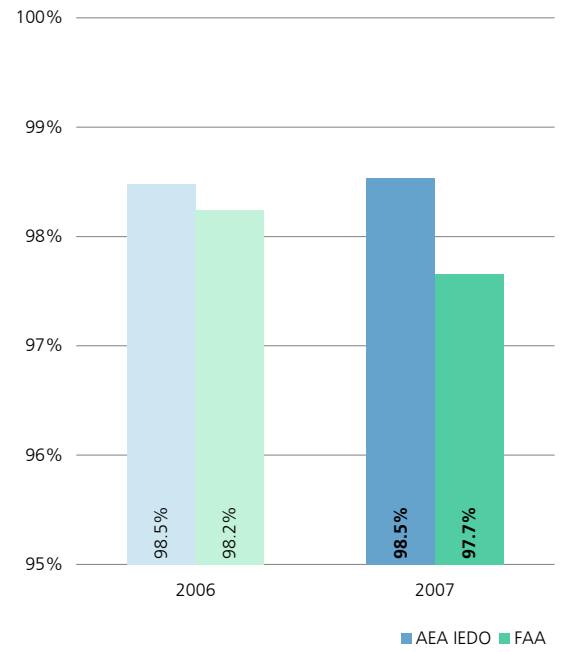
7.3 AEA Flight Regularity

Flight regularity measures the share of scheduled flights that actually operated. As given by the AEA, individual flights are sometimes cancelled because of low productivity, but a flight may also be cancelled due to bad weather, for technical reasons or other operational constraints. All

changes in schedule up to 3 days before the planned day of operation are taken into consideration. A retrospective view can be used to give an indication of the flight reliability that can be expected in the next season. A total of approximately fifty-eight thousand AEA flights out of the 4.124 million scheduled services were cancelled during the four quarters of 2007. That is about the same flight regularity as in 2006.

Figure 7-11: Flight regularity, AEA quarterly 2006-2007

Source: AEA



In comparison with the FAA's figures for the US, it is apparent that flights are cancelled slightly more often in North America than is the case for comparable flights in Europe. Instead of 98.5% regularity, a rate of only 97.7% (domestic traffic from/to major US airports) is achieved in the United States of America.

Figure 7-12: Flight regularity, AEA short/medium haul services vs. FAA

Source: AEA, FAA

7.4 Air Passenger Rights in the European Union

Regulation (EC) 261/2004[60] of the European Parliament and of the Council establishing common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights, and repealing Regulation (EEC) No 295/91, entered into force on 17 February 2005.

The main objective of this Regulation is to improve the situation for passengers if their journey is disrupted and to ensure they receive a higher level of protection. In the event of denied boarding or cancellation of flights, passengers' rights include reimbursement of their tickets, alternative transport to their destination, and a financial compensation (staggered up to 600€ for flights of over 3500 km). In additional to that, meals, refreshments, means of telecommunication and hotel accommodation, if necessary, must be made available.

Extraordinary circumstances can only be invoked by airlines not to pay financial compensation in case of cancellation. They hold the burden of proof in such context. Member States are required to ensure and supervise general compliance by their air carriers with this legislation and to lay down rules on penalties applicable to infringements that are effective, proportionate and dissuasive.

On 4 April 2007 the Commission published a communication to the European Parliament and the Council pursuant to Article 17 of the Regulation on the operation and the results of this Regulation[61].

Although improvements have been made for the passengers and the denied-boarding compensation system has been improved in comparison to the repealed Regulation (EEC) No. 295/91, further important steps need be taken to ensure that airlines apply the rules more consistently and that these rules are better enforced by the Member States.

The Commission is therefore focussing its work on a number of different areas: improving enforcement, clarifying the interpretation of certain aspects of the Regulation, establishing clarity between delays and cancellations (because different rights are awarded to passengers depending on the circumstances), and enhancing the role of the National Enforcement Bodies that oversee the application of the common rules.

- Improvement of enforcement
Because the Regulation does not cover in detail the competencies and tasks to be fulfilled by the National Enforcement Bodies, passengers' rights are applied in an inconsistent way.

[60] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:046:0001:0007:EN:PDF
[61] http://ec.europa.eu/transport/air_portal/passenger_rights/doc/2007/com_2007_0168_en.pdf

The Commission also wants to promote close communication with and between the National Enforcement Bodies. This takes the form of a "code of good practice" aimed at improving aspects not covered by the Regulation (e.g. timescales for processing of complaints, quality of statistics, language issues, transferral of complaints between National Enforcement Bodies). With regard to the Member States, the Commission has emphasised its option to initiate infringement proceedings if enforcement seems to be ineffective at national level.

In 2007, the European Court of Justice declared that, by failing to lay down the penalties for infringements of the provisions of the Regulation, two Member States (Case C-264/06[62] Commission of the European Communities versus Luxembourg and Case C-333/06[63] Commission versus Sweden) have failed to fulfil their obligation under Article 16 of this Regulation.

- Clarification of the unclear aspects of the Regulation
As one item, the scope of the Regulation remains inexplicit with regard to its application to that part of a journey with a Community Carrier that was started in a Member State but is the continued abroad between two non-EU-countries. This is the reason behind a reference for a preliminary ruling of the European Court of Justice[64].

Despite explanations and examples of extraordinary circumstances in the recital clauses of the Regulation[65], it seems to be debatable if technical problems constitute extraordinary circumstances avoiding the carrier to pay financial compensation under Article 5 (3) of the Regulation.

- Distinction between delays and cancellations
In the absence of a precise differentiation being specified by the Regulation, some operators have deemed certain events to be classed as long delays rather than cancellations in order to avoid potential claims for compensation from passengers, which would only allowed in case of cancellation.

Various National Courts have requested that the European Court of Justice make a ruling on the differentiation. On 19 October 2007, the Court ordered that cases C-402/07 and C-432/07, which concern the same subject matter on the interpretation of Article 2 lit. l) and Article 5 (1) lit c), be merged[66].

[62] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:046:0001:0007:EN:PDF
[63] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:046:0001:0007:EN:PDF
[64] Case C-173/07 - http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2007:155:0009:0009:EN:PDF
[65] Recital (14) and (15) of Regulation (EC) 261/2004
[66] Text only available in French or German: http://curia.europa.eu/jurisp/cgi-bin/form.pl?lang=en&Submit=Rechercher&alldocs=alldocs&docj=docj&docop=docop&docor=docor&docjo=docjo&numaff=C-432/07&datefs=&datefe=&nomusuel=&domaine=&mots=&resmax=100

To assist in the short term, the Commission has also developed updated information material to provide information to passengers and to encourage the above developments. The Commission also maintains an up-to-date list of the different National Enforcement Bodies responsible for overseeing the application of the common rules[67]. The Commission has also strengthened its cooperation with the European Parliament. During a discussion between Commissioner Barrot and Members of the Committee on Transport and Tourism on 8 May 2007, the MEP advocated the speedy modification of the Regulation. The Commission seems to favour cooperation with the National Enforcement Bodies and the airlines as a first step to improving the effectiveness of the Regulation. The Commission could then initiate infringement procedures against Member States.

The result of these discussions between National Enforcement Bodies and airlines are published on **http://apr.europa.eu**

It consists of:

- Understanding between NEB – NEB on complaint handling procedures
- Understanding between NEB – Airlines on procedures
- Answer to Questions on the application of Regulation 261/2004
- EU Complaint Form for air passengers

7.4.1 Implementation of Air Passenger Rights

Regulation (EC) 261/2004 establishing common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights is applicable to all cases in which flights are cancelled, departures are delayed or boarding is denied. A large increase in air passenger rights related cases has been reported by the European Consumer Centres since the introduction of Regulation (EC) No 261/2004 on 17 February 2005.

The Montreal Convention chiefly regulates the liability of airlines in cases of damaged or lost luggage, as well as in cases of economic damage caused by delay to a flight. The Montreal Convention is only enforceable through the legal system and is not linked to Regulation (EC) 261/2004. This means that the National Enforcement Bodies are not responsible for issues covered by the Montreal Convention.

National Enforcement Bodies ([EC]261/2004)

Specific National Enforcement Bodies are responsible for monitoring the correct implementation of Regulation (EC) 261/2004. The National Enforcement Bodies inform dissatisfied air passengers about their rights and are authorised to impose penalties on airlines violating the Regulation as a future deterrent. These bodies are however not directly responsible for enforcement of claims

[67] http://ec.europa.eu/transport/air_portal/passenger_rights/doc/2005_01_31_national_enforcement_bodies

for compensation and assistance resulting from the Regulation. It is the customer's own responsibility to assert his/her rights by way of legal action in case of unresolved issues.

Table 7-1: National Enforcement Bodies regarding Regulation (EC) 261/2004 on passenger rights

Source: DG TREN

Member States	Organisation	Contact details
Austria	Bundesministerium für Verkehr, Innovation und Technologie Postfach 3000 Radetzkystraße 2 AT - 1030 WIEN	Tel. : +43 1-71162/9204 (Monday-Thursday: 9 - 12 am) Fax: +43 1-71162/9699 fluggastrechte@bmvit.gv.at
Belgium	Direction générale 'Transport aérien' *Directoraat-generaal 'Luchtvaart'* CCN - 2ème étage - *2de verdieping* Rue du progrès 80 Bte 5 *Vooruitgangstraat 80 Bus 5* BE - 1030 BRUXELLES - *BRUSSEL*	Tel. (*NL* + EN): +32 2 277.44.04 /+32 2 277.44.05 Tel. (FR + EN): +32 2 277.43.99 / +32 2 277.44.00 Fax : +32 2 277.42.58 passenger.rights@mobilit.fgov.be
Bulgaria	General Directorate Civil Aviation Administration Ministry of Transport of the Republic of Bulgaria 9, Diakon Ignatii Str. BG - SOFIA 1000	Tel. : +359 2 937 10 47 Fax : +359 2 980 53 37 caa@caa.bg
Cyprus	Department of Civil Aviation 16 Griva Dhigeni Avenue CY - 1429 NICOSIA	Tel. : +357 22 404102 Fax : +357 22 766552
Czech Republic	Civil Aviation Authority Airport Ruzyně CZ - 160 08 PRAHA 6	Tel.: +420 225 422 267 Fax: +420 225 421 990 caa@caa.cz
Denmark	Statens Luftfartsvæsen (CAA-Denmark) Box 744 DK - 2450 KOBENHAVN SV	Tel. : +45 3618 6000 Fax : +45 3618 6001 dcaa@slv.dk
Estonia	Tarbijakaitseamet (Consumer Protection Board) Kiriku 4 EE - 15071 TALLINN	Tel. : +372 6201700 Fax : +372 6201701 info@consumer.ee
Finland	Consumer Ombudsman & Agency Haapaniemenkatu 4 A, Box 5 FI - 00531 HELSINKI Consumer Disputes Board P.O. Box 306 FI - 00531 HELSINKI Finnish Civil Aviation Authority Ilmailutie 9A, Vantaa P.O.Box 186 FI - 01531 VANTAA	Tel. : +358 9 77261 Fax : +358 9 7726 7557 posti@kuluttajavirasto.fi www.kuluttajavirasto.fi Tel. : +358 10 36 65200 kril@oikeus.fi www.kuluttajariita.fi Tel.: +358 9 4250 11 Fax : +358 9 4250 2898 www.ilmailuhallinto.fi www.civilaviationauthority.fi
France	DGAC Direction de la régulation économique Bureau de la facilitation et des clients du transport aérien (DRE/C2) 50, rue Henry Farman FR - 75720 PARIS CEDEX 15	Tel. : +33 1 58.09.39.79 Fax : +33 1 58.09.38.45 http://www.dgac.fr/html/oservice/regl_message.htm
Germany	Luftfahrt-Bundesamt (LBA) Hermann-Blenk-Str. 26 DE - 38108 BRAUNSCHWEIG	Tel. : +49 531-2355-100 Fax : +49 531-2355-707 fluggastrechte@lba.de

Member States	Organisation	Contact details
 Greece	Hellenic Civil Aviation Authority P.O.B. 73751 EL - 16604 HELINIKO	Tel. : +30 210 891.6000 Fax : +30 210 894 4279
 Hungary	[Enforcement] Polgári Légiközlekedési Hatóság (PLH) Budapest, Ferihegy I HU - 1675 BUDAPEST, PF 41 Tel. : +36 1 296-9502 Fax : +36 1 296-8808 ugyfelszolgalat@caa.hu	[Passenger Complaints] Nemzeti Fogyasztóvédelmi Hatóság 1088 Budapest József krt.6. Tel.: +36 1 459 4800 Fax: +36 1 210 4677 www.nfh.hu nfh@nfh.hu
 Ireland	Commission for Aviation Regulation 3rd Floor Alexandra House Earlsfort Terrace IE - DUBLIN 2	Tel. : +353-(0) 1-6611700 Fax : +353-(0) 1-6611269 (General) info@aviationreg.ie www.aviationreg.ie
 Italy	L'Ente Nazionale per l'Aviazione Civile Viale del Castro Pretorio, 118 IT - 00185 ROME	Tel. : +39 06 44596-1 **Fax : +39 06 44596331** cartadiritti@enac.rupa.it
 Latvia	Consumer Rights Protection Centre 41/43 Elizabetes str., LV - 1010 RIGA	Tel. : +371 7287730 Fax : +371 7338024 tpkc@apollo.lv
 Lithuania	Civil Aviation Administration Rodūnės kelias 2 LT - 02188 VILNIUS	Tel. : +370 5 2739038 Fax : +370 5 2739237
 Luxembourg	Direction de la Consommation du Ministère de l'Economie et du Commerce extérieur 6, Boulevard Royal LU - 2449 LUXEMBOURG	Tel. : +352 478 41 35 Fax : +352 460.448 passagersaeriens@eco.etat.lu http://www.eco.public.lu
 Malta	Department of Civil Aviation Luqa Airport MT - LUQA, CMR 02	Tel. : +356 21 249 170 Fax : +356 21 239 278 civil.aviation@gov.mt www.dca.gov.mt
 Poland	Civil Aviation Office ul. Zelazna 59 PL - 00-848 WARSAW	Tel. : +48 (22) 520 72 00 Fax : +48 (22) 520 73 00 http://www.ulc.gov.pl/ kancelaria@ulc.gov.pl
 Portugal	Instituto Nacional de Aviação Civil (INAC) Rua B, Edifícios 4, 5 e 6 Aeroporto da Portela PT - 1749-034 LISBOA	Tel. : +351(21)842-3500 Fax : +351(21)847-3585
04/04/2007:  Romania	National Authority for Consumer Protection Georges Clemenceau Street, No. 5, Sector 1 RO - 010295 BUCHAREST	Tel. : +4021 312 1275 Fax : +4021 314 3462
 Slovakia	Slovenská obchodná inšpekcia (Slovak Trade Inspectorate) ústredný inšpektorát (Central Inspectorate) Prievozská 32 SK - 827 99 BRATISLAVA 27	Tel. : +421 2 58272 203, +421 2 58272 240 Fax : +421 2 53414 996 helena.molekova@soi.sk
 Slovenia	Ministry of Transport Directorate of Civil Aviation Aviation Inspection Department Langusova 4 SI - 1535 LJUBLJANA	Tel. : +386 (4) 206 15 85; +386 (1) 47 34 600 Fax : +386 (1) 43 16 035 dunja.lujic-ferjancic@gov.si; stanislav.krivec@gov.si http://www.mzp.gov.si

Member States	Organisation	Contact details
Spain	Dirección General de Aviación Civil Sección de Atención al Usuario Paseo de la Castellana, 67 Despacho A-259 ES - 28071 MADRID	Tel. : +34 91 597.83.21 Fax : +34 91 597.86.43 http://www.mfom.es/
Sweden	Consumer Protection Agency *Visiting address*: Lagergrens Gata 8 *Postal address*: Box 48, SE - 651 02 KARLSTAD	Tel. : +46 54 - 19 41 50 Fax : +46 54 - 19 41 95 konsumentverket@konsumentverket.se www.konsumentverket.se
The Netherlands	Inspectie Verkeer en Waterstaat Postbus 575 NL - 2130 AN HOOFDDORP	loket@ivw.nl
United Kingdom	Air Transport Users Council Room K705 -- CAA House 45-59 Kingsway UK - LONDON WC2B 6TE Civil Aviation Authority CAA House 45-59 Kingsway UK - LONDON WC2B 6TE	Tel. : +44 20 7240 6061 Fax : +44 20 7240 7071 Tel. : +44 20 7379 7311 Fax : +44 20 7944 2190

Other Countries	*Organisation*	*Contact details*
Norway	Luftfartstilsynet CAA Norway P.O Box 243 NO-8001 BODØ	Tel : +47 75 58 50 00 Fax : +47 75 85 50 05 postmottak@caa.no
Switzerland	Office Fédéral de l'Aviation Civile CH - 3003 BERNE	Tel. : +41 31 325 80 39/40 Fax : +41 31 325 80 32 passengerrights@bazl.admin.ch

7.4.2 European Consumer Centre Network

Consumer associations (European Consumer Centres) are an alternative choice available to customers who have been disappointed by a transportation provider. The European Consumer Centre Network (ECC-Net) assists consumers with cross-border disputes within the European Internal Market in particular. ECC-Net actually consists of national centres in 27 European countries. This Network is co-financed by the European Commission (Health and Consumer Protection Directorate-General) and by each of the Member States.

A large increase in the number of cases relating to air passenger rights is recorded by ECC-Net every year. While a total of 2,716 cases were recorded in 2005, the number had risen to 4,901 cases by 2006. 2,979 of the cases involved a concrete complaint. Most of these complaints concerned baggage problems (32.8%), followed by cases involving cancellations (26.3%), delays (15.6%) and denied boarding (6.5%). It is surprising that the majority of enquiries received related to baggage, despite the fact that Regulation (EC) 261/2004 does not cover baggage problems, with baggage issues instead falling within the scope of the regulations of the Montreal Convention.

ECC-Net registered as many as 1,500 complaints and disputes during the first 6 months of 2007. Since this period does not include the peak travel period, a further increase of reported problems must be anticipated. It should also be noted that ECC-Net only accepts cross-border consumer cases. This means that ECC-Net does not record those cases in which the consumer and airline originate from the same country.

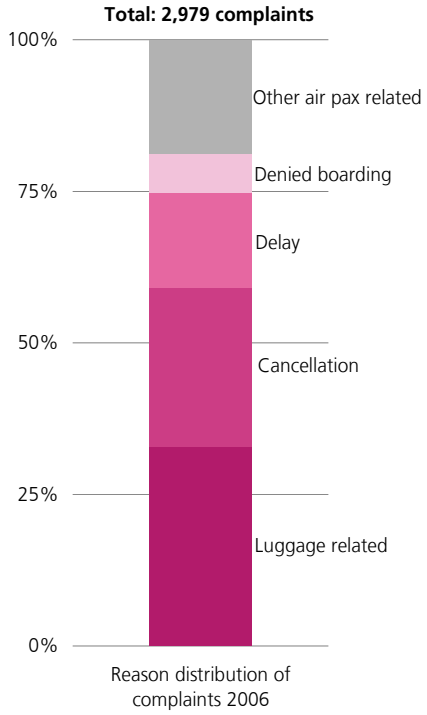


Figure 7-13: Various reasons for complaints in 2006

Source: ECC-Net: Air Passenger Rights: Consumer complaints 2006. December 2007

The number of enquiries concerning air transport related complaints received by ECC-Net from different European countries varies. Most of the complaints come from Ireland, Sweden and Germany. The ECC-Net cannot explain why the complaint frequency is not proportional to the total number of passengers from individual countries. It is worth noting that more complaints are received from countries with relatively low populations (such as Ireland, Sweden and Norway) than from, for example, the UK, the country with the largest number of passengers. ECC-Net suspects that the reason the Irish file the most complaints may be linked to the fact that the largest European low-price airline is based in the country. Consequently, local media reports about customer rights are likely to be particularly detailed. A further factor is that the Irish tend to travel by air due to their geographical position separate from the European mainland. High complaint rates are also generally associated with well-developed Alternative Dispute Resolution systems, good domestic law coverage and a healthy culture of pursuing complaints.

Country of consumer	total	share
Ireland	424	16%
Sweden	396	15%
Germany	274	10%
Spain	223	8%
Italy	207	8%
Belgium	193	7%
Poland	162	6%
Portugal	105	4%
Austria	104	4%
France	76	3%
Norway	70	3%
UK	69	3%
Greece	57	2%
Luxemburg	43	2%
Lithuania	40	2%
Finland	37	<1%
Denmark	24	<1%
Netherlands	18	<1%
Latvia	13	<1%
Slovakia	12	<1%
Czech Republic	11	<1%
Estonia	10	<1%
Hungary	10	<1%
Malta	9	<1%
Cyprus	9	<1%
Bulgaria	3	<1%
Slovenia	2	<1%
Switzerland	2	<1%
Iceland	1	<1%
Outside EEA	20	1%
unknown	6	<1%
TOTAL	**2630**	**100%**

Table 7-2: Complaints registered by ECC-Net per country

Source: ECC-Net

7.5 Hidden Charges

When drawing up their prices, the extent to which airlines make use of the options available to them to charge for certain services separately varies, even in cases where these services were previously part of the service provided or were not normally stated separately before. This gives airlines the opportunity, in the face of increasing competition, to offer an apparently very competitive price for the basic service. The excluded services are then charged to those customers who actually want to or have to use these services. This division of charges leads to certain loss of clarity in the pricing, especially as the extra charges are often only stated in the small print. The Airport Users Council (AUC) refers to four typical supplemental charges of which customers should be particularly aware. Such charges may become due when gift vouchers are used to buy air tickets, if an application is made for a refund of taxes and charges, or when contacting the airline by telephone. In this context it is notable that the revised "third package" (concerning Regulations (EC) No 2407/92, 2408/92 and 2409/92) imposes the publication of all-inclusive prices with clear indication of the attached conditions in order to allow consumers to effectively compare ticket prices.

7.6 Refund of Taxes, Fees and Charges

In 2002 the majority of EU airlines agreed to abide by the European Civil Aviation Conference's Passenger Service Commitment (ECAC-PSC), since which time the airlines have generally been prepared to refund taxes, fees and charges (TFCs). This agreement is particularly significant for non-refundable tickets of the type typically sold in the lower price segment. Non-refundable tickets often have a very low basic price, which is naturally excluded from any refund. The taxes, fees and charges declared separately however often add up to the largest proportion of the total

cost of the ticket. Since these TFCs are stated separately, the customer is justified in expecting that these be refunded if the ticket is not used (source: Airport Users Council AUC). Some airlines however charge a standard fee for these refunds. These standard fees – often hidden in the small print – are sometimes so high that a refund is no longer worth claiming. This mechanism allows the airlines to keep down the number of refund applications, meaning that they retain the TFCs.

7.7 Persons with Reduced Mobility: Regulation (EC) 1107/2006

About 10% of European inhabitants are considered to have reduced mobility. A mandatory regulation is now in force that ensures their more equitable treatment in air transportation. For this Regulation, please refer to point 5.5.2 in the "Regulatory" chapter.

7.8 Cabin Seating

When planning an air trip the customer is often to decide between offers of two or more airlines. Besides the prices, times and associated services, as for example lounge utilisation or bonus points, the customer may factor seat comfort into consideration. A very important influence on seat comfort is gained by the dimension seat pitch. The seat pitch is defined as the interspace between the seat rows. In difference to the dimension "legroom", the seat pitch indicates the distance between same seat shapes of back-to-back installed seat rows. According to the most commonly used booking categories, the four classes Economy, Premium Economy, Business and First are plotted with their spans in Figure 7-14.

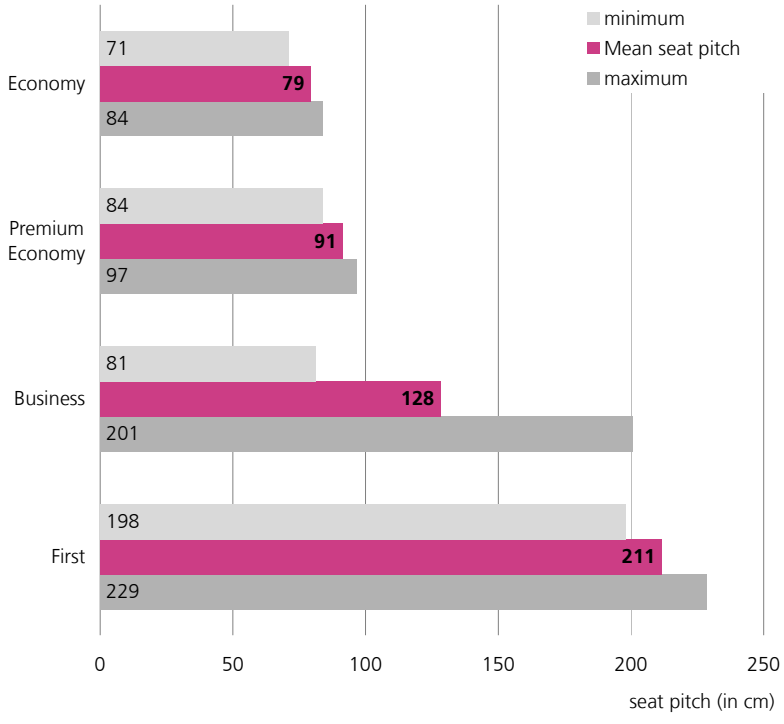


Figure 7-14: Range of seat pitches used by European airlines

Source: Skytrax, January 2008

As shown in the Figure, the seat pitches tend to increase with higher categories. But there are differences within and overlaps between categories too. The biggest differences must passengers accept who have booked Business class tickets. As indicated by Skytrax, customers are to expect seat pitches between narrow-gauged 81 centimetres (Air Malta) and luxury 201 centimetres (Virgin Atlantic). The mean value for the Business class is 128 cm which is close to the median value 127 cm. This closeness of values indicates that the distribution has no significant outliers.

Airline	First	Business	Premium Economy	Economy
specifications in centimetres				
Aer Lingus		132		81
Aegean Airlines		84		81
Aeroflot		157		81
Air France	208	155		79
Air Madrid		119		81
Air Malta		81		76
Alitalia		140		81
Austrian Airlines		155		81
Belair		107		79
British Airways	198	185	97	79
BMED		127		81
bmi British Midland		152	97	81
bmi baby				74
Britannia Airways			89	76
Cyprus Airways		107		81
Czech Airlines		119		81
Delsey Airlines		157		81
easyJet				74
Eos Airlines		183		
Estonian Air		84		84
Excel Airways		114	86	76
Finnair		160		81
First Choice (long haul)			91	84
First Choice (short haul)			84	71
flyBe				79
GB Airways		86		79
Iberia		152		81
Icelandair		99		79
Iceland Express				79
JAT Airways		91		81
K L M		152		79
Lauda Air		127		79
L'Avion		119		
LOT Polish Airlines		145		81
LTU International		107		76
Lufthansa	229	152		81
Luxair		81		81
Malev Hungarian		102		81
Meridiana		81		81
Monarch Airlines			86	74
MyTravel Airways			89	76
Olympic Airways		147		84
PGA Portugalia		84		81
Ryanair				76
SN Brussels Airlines		157		79
SAS Scandinavian		152	94	81
Silverjet		168		
Snowflake				79
Spanair		114		79
Swiss	211	122		79
Tarom Romanian		107		81
TAP Air Portugal		147		84
Thomsonfly (long haul)			94	84
Thomsonfly (short haul)			86	74
Thomas Cook			97	76
Turkish Airlines		137		81
Ukraine Int'l		86		76
Virgin Atlantic		201	97	79
Virgin Express				76

Table 7-3: Seat pitches used by European airlines

Source: Skytrax

8 Aircraft and Engine Manufacturers

8.1 Highlights of 2007

Airbus: A380 Delivery

With a delay of about 18 months, Airbus handed over the first A380 to Singapore Airlines on 15th October 2007 in Toulouse. Entry into service took place a few days later on 25th October with a flight from Singapore to Sydney. Airbus expects to deliver 6 A380 aircraft in 2008 to both Emirates and Singapore Airlines. In 2007, the European manufacturer received 33 new orders for the A380, with British Airways (12 units) and Emirates (11 units) as largest customers in 2007. Among the customers is also the Saudi-Arabian Prince Alwaleed who ordered one A380 as private jet.

Airbus: Milestone 5,000th Delivery

On 14th December 2007, Airbus celebrated the delivery of its 5000th aircraft, an A330-200 for Australian operator Qantas. Starting in 1974 with the first delivery of an A300, it took Airbus 19 years to deliver its 1000th aircraft. Only six years later, in 1999, this number was doubled, with another three years for the next thousand aircraft. Aircraft production continues to accelerate and with a potential production rate of about 50 aircraft per month, it is likely to take less than two years until the next milestone with the 6000th delivery will be reached. With an order backlog of 3613 aircraft at the end of 2007, even the 10,000th delivery is on the horizon.

Boeing: 787 Rollout

On 8th July 2007, Boeing presented its newest widebody aircraft, the B787 ('Dreamliner') to the public. This event marked the first rollout of an all new type since the 777 in the mid-90s. This aircraft is already, ahead of its first flight, facing strong demand from airlines around the world. With 363 orders in 2007, the order book stood at 817 units at the end of 2007. The 787 project also has high relevance for suppliers from the European Union, with a relatively high share of European suppliers and project partners. For instance, major fuselage components are manufactured by Alenia of Italy, Latecoere of France and Saab of Sweden. Messier-Dowty from France supplies the landing gear and Thales several electrical power components. Besides engines from US-manufacturer General Electric, customers may choose Trent1000 engines made by Rolls Royce in Derby (United Kingdom).

As the development of a new aircraft is among the most challenging industrial endeavours, unforeseen delays in the development have also hit Boeing with its 787. In autumn 2007, the first flight had to be delayed for about 6 months, apparently due to some shortages of supply materials and required improvements in the flight control software.

Sukhoi Superjet Rollout
26th September 2007 constituted a significant date for the Russian aerospace industry. For the first time in years, a new aircraft, the Sukhoi Superjet, was presented to the public. The aircraft is placed in the growing market segment of aircraft with 75 to 100 seats, designed to replace aging soviet type aircraft and also intended for the export market, increasing competition in the duopoly market currently dominated by Bombardier and Embraer. At the end of 2007, the order book stood at 74 firm orders. In this project, European partners also play an important role. Prime project partners and suppliers are Alenia with a 25% share in the Sukhoi Civil Aircraft Corporation (SCAC), Thales, which provides the flight instrumentation and Liebherr (climate packs and flight control systems). The aircraft is powered by the SaM-146 engine, developed jointly by Snecma and Saturn NPO.

Chinese Regional Jet Rollout
Also in China, a new regional jet model was presented to the public, the ARJ21 "Xiangfeng"/"Flying Phoenix". Rollout took place 21st December 2007. The aircraft was developed to a large extent by Chinese Corporations and will be powered by General Electric CF34 engines. European participation in this new development was relatively small compared to the Sukhoi Superjet or the Boeing 787.

Airbus Final Assembly Line in China
On 15th May 2007, construction for the new A320 final assembly line started in the Chinese city of Tianjin. The first aircraft from this new line shall be delivered in 2009, in 2011 production rate should be set at four aircraft per month.

8.2 Aircraft Market Overview

8.2.1 Aircraft Orders Overview

The strong demand for passenger aircraft, which emerged in the last couple of years, continued in 2007, breaking all records formerly set. Particularly demand by low cost airlines and by airlines based in emerging markets contributed to growing order books for airframe and engine manufacturers. Particularly the market for single-aisle jets over 100 seats was very strong and Boeing and Airbus combined were able to pick up more than 1800 orders in 2007 for the A320 family and the Boeing 737.

2007 was the most successful year for aircraft manufacturers in terms of new aircraft orders. More than 3500 passenger aircraft have been ordered. In addition to this, almost 1100 business jets and 222 cargo aircraft orders were recorded. The surge in orders is not yet fully reflected in deliveries. 1181 passenger aircraft were delivered, which is about the same level as seen in the boom years before 2001.

Figure 8-2: Passenger aircraft orders and deliveries from 1998 to 2007

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

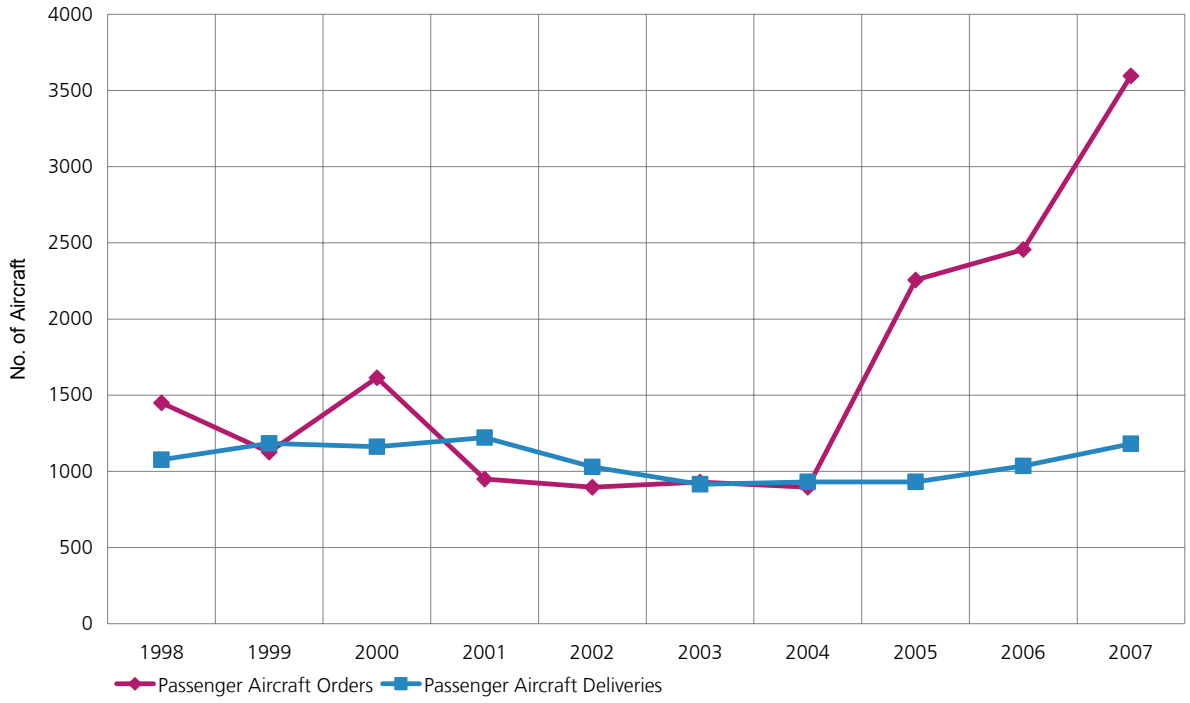


Table 8-1: Geographical Breakdown Origin of Commercial Passenger and Cargo Aircraft Orders by Operator Area

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Operator Area	Total Aircraft	Percentage Share
North America	873	25.0%
Asia	828	23.7%
Europe	815	23.3%
Thereof:		
- EU-27	577	16.5%
- Rest of Europe	238	6.8%
Middle East	534	15.3%
Latin America and Caribbean	231	6.6%
Australasia	155	4.4%
Africa	62	1.8%
Subtotal	3498	100.00%
Unknown area	245	
Total	3743	

North America was the most important market for commercial passenger and cargo aircraft in 2007, leading with a 25.0% share ahead of Asia. The third most important market is geographical Europe, with 815 orders and a share of 23.3%. More than 70% of the orders from operators in Europe came from Member States of the European Union.

8.2.2 Aircraft Orders by Market Segments, Manufacturers and Types

On the market for widebody jets operating economics due to increases in fuel prices favoured the demand for twin-engine jets, particularly the Airbus A330 and Boeing 777. On the other hand, the four-engine Airbus A340 achieved only limited sales (14 units), while not a single unit of the passenger version of the B747-400 has been sold for years now. Strong demand could be seen for the Airbus A350 and Boeing 787 due to increased operational economies in comparison to their respective successor types. 2007 marked a breakthrough in sales for the A350XWB with a total of 290 orders.

Manufacturer	No of Aircraft Ordered	Value in million US-$ (in 2007 list prices)
Airbus	1555	180,723
Boeing	1398	168,549
Bombardier	250	7567
Embraer	179	6586
ACAC	100	3000
ATR	105	1845
Ilyushin	43	793
Viking Air	26	83
Xian	22	132
Tupolev	19	836
Antonov	18	244
Sukhoi	12	300
Utility Aerospace Industries	10	68
Aircraft Industries - Let	3	3
Yunshuji	3	12
Total	3743	370,741

Table 8-1: Cargo and Passenger Gross Aircraft Orders by Manufacturer 2007

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

In 2007, Boeing received not a single order for the 747-8 passenger version by an airline. However, 24 cargo versions and one business jet version have been sold. With Airbus, the A380 received 32 orders, among them an order for 12 units by British Airways. By the end of 2007, 14 airlines plus ILFC as an aircraft leasing company and the Saudi-Arabian Kingdom Holding as operator of the private jet for Prince Alwaleed have committed to buy 189 A380s.

The competition in new orders and deliveries of Airbus vs. Boeing, highly acclaimed by the public and aviation stakeholders was very closely decided only in the last quarter of 2007. Airbus received 1555 orders in 2007, compared to 1389 for Boeing. At list prices, the orders for Airbus have a value of 180.7 billion US-$, the value of aircraft ordered with Boeing amounted to 168.5 billion US-$. The biggest single orders for Airbus came from Arabian carriers: Emirates ordered 50 A350-900,

with a total list price value of 10.8 billion US-$, followed by an order of Qatar Airways for 40 A350-800 at a list price value of 7.6 billion US-$. The biggest single orders for Boeing were placed by leasing company ILFC for 49 787-8 with a value of 7.9 billion US-$ and again Qatar Airways for 30 787-8 and 4.9 billion US-$ order value at list prices. In addition to the firm orders, customers also placed options/letters of intent, which are not considered in this summary.

Table 8-2: Gross orders of Airbus aircraft, breakdown by type

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Aircraft Type	2007	2006	Percentage Change
A318/319/320/321	1017	723	+40.7%
A330-200/-300	136	105	+29.5%
A330-200F	66	0	-
A340-300/-500/-600	14	15	-6.7%
A350XWB	290	2	-
A380	32	17	+88.2%
Total	1555	862	+78.9%

Table 8-3: Gross orders of Boeing aircraft, breakdown by type

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Aircraft Type	2007	2006	Percentage Change
B737NG (-600/-700/-800/-900/-900ER)	832	739	+12.6%
B747-400F/ERF	0	12	-
B747-8/-8BBJ	0	24	-
B747-8F	24	36	-33.3%
B767-300ER	3	10	-70.0%
B767-300ERF	33	0	-
B777-200/-200ER/-200LR/-300/-300ER	115	44	+161.4%
B777-200LRF	28	33	-15.2%
B787	363	160	+127%
Total	1389	1058	+31.3%

The breakdown by aircraft of both Boeing and Airbus reveal their particular strengths and weaknesses in the market. Airbus has sold only very few A340s. It is perceived that Boeing's 777 model, which offers variants with about the same payload/range capabilities as the A340, operates more fuel efficiently, as it has only two engines compared to four on the A340. Boeing's new 747-8 model has not achieved a single order for the passenger version in 2007 after Lufthansa became launch customer in 2006. The last order for the passenger version of the 747-400 was made in the year 2002. Here as well it is perceived that airlines prefer large versions of the 777 (-300 and -300ER) with a slightly lower maximum payload/maximum number of seats as twin-engined jet over the four-engined 747.

When looking at aircraft orders made in 2007, it is also important to mention the cancellations of firm orders that occurred. Airbus had to cope with 117 cancellations throughout 2007, of which 72 were attributable to the A350, 26 to the A340 and 10 to the A380. Boeing, however, only had to accept 10 cancellations.

Table 8-4: Order backlog (commercial customers) at 31st December 2007 for passenger and cargo aircraft

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Manufacturer	No. of Aircraft	Value in million US-$ (in 2007 list prices)
Airbus	3105	352,679
Boeing	2091	322,252
Embraer	430	15,982
Bombardier	270	8293
ACAC	135	4050
Tupolev	77	3351
ATR	178	2927
Sukhoi	98	1975
Ilyushin	94	1856
Antonov	112	1576
Utility Aerospace Industries	46	311
Xian	46	276
Viking Air	26	83
Yunshuji	8	30
Aircraft Industries - Let	2	2
Total	6718	715,642

Among the airlines from EU-27, the Lufthansa Group ordered the largest number of new aircraft in 2007, with 86. The majority of these orders is for smaller regional and short-haul aircraft. Lufthansa is followed by British Airways with 56 new aircraft orders. Other than Lufthansa, the majority of orders by the carriers from the UK came for long-haul aircraft, such as the newly developed Boeing 787 and also the Airbus A380. The largest order from a low cost carrier came from the Hungarian airline Wizz Air for 50 Airbus A320.

Table 8-5: Major new Aircraft Orders by Airlines from EU-27

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Operator	Total No. of Aircraft ordered 2007	Type Split
Lufthansa Group	86	30x Embraer 190LR (Lufthansa Cityline)
		20x Airbus A321 (Lufthansa)
		15x Bombardier CRJ 900 (Lufthansa Cityline)
		9x Airbus A330-300 (Swiss)
		6x Airbus A319-100 (Lufthansa)
		2x Airbus A320-200 (Swiss)
		4x Airbus A320 (Lufthansa)
British Airways	56	16x Airbus A320-200
		16x Boeing 787-9
		12x Airbus A380-800
		8x Boeing 787-8
		4x Boeing 777-200ER
Wizz Air	50	50x Airbus A320-200
Air France-KLM	45	14x Embraer 190LR
		10x Boeing 737-700 (KLM)
		9x Boeing 777-300ER (Air France)
		6x Embraer 170LR
		2x Airbus A380-800 (Air France)
		2x Boeing 777-300ER (KLM)
		2x Airbus A330-200 (KLM)
easyJet	35	35x Airbus A319-100
airberlin	35	25x Boeing 787-8
		10x Bombardier Dash8-400
Ryanair	27	27x Boeing 737-800

Orders for General Aviation Aircraft

Other than the market for regional, short to medium and long-haul aircraft, which are dominated by very few aircraft manufacturers, the market for aircraft used in general aviation is increasingly diverse in both the number of manufacturers and the types and sizes of aircraft available. The market as depicted in Table 8-6 covers a range from the very light jet with a maximum take-off weight of less than 4000kg for 4-6 passengers up to the Boeing 747-8BBJ with a maximum take-off weight of more than 440,000kg and an interior space that could seat more than 500 passengers in a commercial airline configuration.

Table 8-6: Orders for Business Jets 2006/2007

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Manufacturer	No. of Business Jets ordered in 2007	No. of Business Jets ordered in 2006	Percentage change
Cessna	370	223	+65.9%
Eclipse Aviation	179	161	+11.2%
Embraer	170	231	-26.4%
Hawker Beechcraft	136	208	-34.6%
Bombardier	57	188	-69.7%
Adam Aircraft Industries	50	147	-66%
Grob Aerospace	35	0	-
Airbus[1]	33	20	+65%
Dassault Aviation	22	169	-87.0%
Boeing[2]	24	20	+20%
Gulfstream Aerospace	15	36	-58.3%
Israel Aerospace Industries	2	32	-93.8%
Honda	1	0	-
Diamond Aircraft Industries	1	20	-95%
Total	1095	1455	-24.7%

[1] The 2007 figure for Airbus includes two A330 and four A340 to be configured as business jets
[2] The 2007 figure for Boeing includes one 747-8 and five 787 to be configured as business jets

8.2.3 Aircraft Deliveries by Market Segments, Manufacturers and Types

Airbus delivered ten aircraft more than Boeing. The final count stood at 445 versus 435 deliveries to commercial operators in 2007. However, when it comes to the value of delivered aircraft, Boeing is slightly ahead, as the Chicago-based company delivered 325 single-aisle jets and 110 widebodies, while Airbus delivered 361 single-aisle jets and 84 widebodies. Translated into the value of the delivered aircraft at list prices, those delivered by Boeing had a value of 48.6 billion US-$, compared to 40.8 billion US-$ for Airbus.

Table 8-7: Passenger and Cargo Aircraft Deliveries to Commercial Operators by Manufacturer 2006/2007

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Manufacturer	2007	2006	Percentage Change
Airbus	445	424	+4.9%
Boeing	435	379	+14.8%
Embraer	124	99	+25.3%
Bombardier	112	115	-2.6%
ATR	42	24	+75%
Harbin Embraer Aircraft Industry	7	4	+75%
Tupolev	6	2	+200%
Ilyushin	4	4	+/- 0%
Xian	4	5	-20%
Aircraft Industries - Let	4	2	+100%
Antonov	1	1	+/- 0%
Total	1184	1059	+11.8%

Table 8-8: Values of Passenger and Cargo Aircraft Deliveries by Manufacturer at Average List Prices 2006/2007 in million US-Dollars

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Manufacturer	2007	2006	Percentage Change
Boeing	48,608	40,911	+18.8%
Airbus	40,765	40,610	+0.4%
Embraer	3767	2610	+44.3%
Bombardier	3478	3171	+9.7%
ATR	716	430	+66.7%
Tupolev	227	51	+345.1%
Ilyushin	105	34	+213.1%
Harbin Embraer Aircraft Industry	88	88	+/-0.0%
Xian	36	30	+20.0%
Antonov	9	9	+0.0%
Aircraft Industries - Let	4	2	+100.0%
Yunshuji	0	10	-100.0%
Total	97,803	87,956	+11.2%

Aircraft Type	2007	2006	Percentage Change
A300-600RF	6	9	-33.3%
A318/319/320/321	361	331	+9.1%
A330-200/-300	66	61	+8.2%
A340-300/-500/-600	11	23	-54.2%
A380	1	0	-
Total	445	424	+5.0%

Table 8-9: Deliveries of Airbus aircraft to Commercial Operators, breakdown by type

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Table 8-10: Deliveries of Boeing aircraft to Commercial Operators, breakdown by type

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Aircraft Type	2007	2006	Percentage Change
B717	0	5	-100%
B737NG (-600/-700/-800/-900/-900ER)	325	285	+14.0%
B747-400F/ERF	16	14	+14.3%
B767-300ER	8	7	+14.3%
B767-300ERF	3	3	-
B777-200/-200ER/-200LR/-300/-300ER	83	65	+27.7%
Total	435	379	+14.8%

With the delivery of an A300-600RF to FedEx on 17th July 2007, Airbus ended production of the very aircraft type, which actually was the first model with which the company entered the market for large jetliners in 1974. The example of the A300, which was in production for 34 years shows the long product life cycle in the aircraft industry. Throughout 2007, an average of almost one aircraft of the A320 family was delivered per day. Aircraft of this family were the most frequently built type in 2007 (361 units), followed by the B737NG (325 units).

The strong demand from low cost carriers and carriers from emerging markets is also reflected in deliveries. Biggest customers as far as deliveries from Airbus are concerned are TAM Linhas Aereas from Brazil with 20 aircraft delivered in 2007, easyJet with 16 aircraft and China Southern with 16 aircraft. Boeing's largest customers are Southwest Airlines (37 deliveries in 2007), Ryanair (35) and Jet Airways, China Southern and GOL Linhas Aereas (15 aircraft each).

The market for regional jets has recently been developing into larger aircraft sizes. The smallest types (e.g. CRJ 200 and ERJ135) with 30-50 seats have seen a strong decline in demand while larger types (75-120 seats) have seen increasing demand. This is also reflected in the number of delivered aircraft. Bombardier delivered 59 CRJ regional jets for airline use, all of the larger CRJ-700 and -900 type. Embraer delivered 125 regional jets to airlines, all belonging to the 170/175/190/195 types. The Chinese joint venture of Embraer and Harbin delivered seven smaller ERJ-145s to Chinese customers.

Due to high fuel prices, turboprop aircraft have recently experienced a renaissance. While the boom in smaller regional jets that were introduced at the end of the 1990s ended with high fuel prices, demand has increased for fuel-efficient turboprop aircraft. The market for turboprops is similar to the markets for larger single aisle, twin aisle and regional jets as it is dominated by only two major manufacturers: ATR, a company jointly owned by Alenia from Italy and EADS, and Bombardier from Canada. Orders in 2007 have considerably increased in comparison to 2006. ATR picked up 105 orders in 2007, up from 68 in 2006, while Bombardier received 88 orders in 2007 compared to 49 in 2006. Bombardier delivered 53 Dash-8 aircraft in 2007 compared to 45 in 2006 to commercial operators, ATR delivered 40 ATR42 and 72 aircraft after 24 in 2006.

Freighters also continue to be in strong demand. Most notably, Airbus' A330-200F (65t payload) will become an important product in the small widebody freighter segment, replacing older A300s and B767s. Airbus received 66 orders in 2007 for its new freighter, which is scheduled to enter service in the second half of 2009. For Boeing, an important step was the order from UPS at the end of January for 27 B767-300ER freighters, which will enable Boeing to keep the production line for this type of aircraft open until a final decision is made for the new tanker aircraft for the US Air Force. This tender represents one of the largest military aircraft purchasing competitions in the world with an estimated value of 40 billion US-$. Airbus is also competing with its A330 type.

In the market for large midsize-freighters, Boeing received 28 orders for its 777-200LRF, primarily from leasing companies. The aircraft is placed in a market where a strong demand can be expected, as it will replace older MD-11s and 747-200F. Entry into service is expected for the fourth quarter 2008.

In March 2007, Airbus postponed the development of the freighter variant of the A380. Important customers such as FedEx and UPS cancelled their orders after Airbus announced that it could not hold the expected delivery schedule for 2012.

An important element in the freighter market is also conversions from passenger variants. In 2007, a total of 130 passenger aircraft were converted into freighters. Aircraft chosen for

conversion had an average age of 17.6 years and were in most cases too expensive to operate as passenger aircraft.

Table 8-11: Conversions of Passenger Aircraft into Freighters 2007

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Aircraft Type	No. Of Conversions in 2007
Airbus A300/A310	18
ATR 42/72	6
Bae ATP	9
Boeing 737	30
Boeing 747	25
Boeing 757	8
Boeing 767	8
Boeing (McDonnell-Douglas) DC-10	1
Boeing (McDonnell-Douglas) MD-11	12
Bombardier CRJ200	2
Embraer EMB-120	1
Fokker 50	1
Ilyushin 62	1
Saab 340	8
Total	130

Deliveries of General Aviation Aircraft

The market for general aviation aircraft is very heterogeneous and the range of aircraft in this market segment stretches out from small, one-engine piston aircraft up to specially customised jets like the Airbus A319CJ or the Boeing 737BBJ. Occasionally, aircraft manufacturers even receive orders for large intercontinental wide-body jets to be customised as private jets. The market leader in the segment of small piston-engine aircraft up to business jets being capable of intercontinental flights is the Cessna Aircraft Company, based in Wichita, Kansas. Cessna delivered 1274 aircraft in 2007. The total number of 4272 general aviation aircraft produced in 2007 splits into 2417 single-engine piston aircraft, 258 multi-engine piston aircraft, 459 turboprops and 1138 business jets. The type with the highest number of aircraft produced in 2007 was the SR22 with 588 units, manufactured by the Duluth, Minnesota based manufacturer Cirrus, followed by the Cessna Skyhawk 172/172S SP with 373 units. The most important market for general aviation aircraft is North America with 3425 deliveries, followed by geographical Europe with 712. 36 aircraft were delivered to South America and 99 to the rest of the world.

Table 8-12: General Aviation Aircraft Manufacturers

Source: General Aviation Manufacturers Association

Rank	Manufacturer	No. of General Aviation Aircraft Delivered	Total Value of General Aviation Aircraft Delivered in Mio. US-$
1	Bombardier	226	5200
2	Gulfstream Aerospace Corp.	138	4828
3	Cessna Aircraft Company	1274	3909
4	Dassault Falcon Jet	70	2317
5	Hawker Beechcraft Corp.	351	1889.3
6	Embraer	36	889.7
7	Airbus	12	600
8	Raytheon Aircraft Company	79	378
9	Boeing	7	345
10	Cirrus Design Corporation	710	338.3
11	Pilatus	92	307
12	Diamond Aircraft	471	185
13	Piper Aircraft, Inc.	221	174.4
14	Piaggio Aero	21	130
15	Eclipse Aviation	98	121.3
16	Columbia Aircraft	152	77.7
17	Socata EADS	17	46
18	Mooney Aircraft	79	42.9
19	Pacific Aerospace Ltd.	10	15
20	American Champion Aircraft	70	7.6
21	Sino Swearingen	1	6.6
22	Liberty Aerospace	38	6
23	Maule Air, Inc.	36	4.5
24	Adam Aircraft	3	3.6
25	Alpha Aviation	13	2.1
26	Quest Aircraft Company	1	1.3
27	Gippsland Aeronautics	17	n.a.

8.3 Engine Market Overview

As the demand for new aircraft was surging in 2007, the demand for engines was also very strong. The European aeronautical industry is also very well positioned on the engine market. The biggest manufacturers are MTU from Germany, Rolls Royce from the United Kingdom and Snecma from France.

As the development of new engines is very expensive, usually consortia form and share the risks of development. The most successful consortia on the engine market are CFM International, a joint venture between General Electric and Snecma and International Aero Engines, a cooperation between Rolls Royce, Pratt&Whitney, MTU and JAEC. The companies cooperating in these consortia have been successfully working together for several decades. Among the newer engine consortia are the Engine Alliance, a joint venture between GE and Pratt&Whitney for the development of the GP7000 engine used for the Airbus A380 and PowerJet, a cooperation between Snecma and NPO Saturn from Russia. This consortium is working on the SaM-146 engine, which will power the Sukhoi SuperJet.

The engine market for different airframe types shows a heterogeneous picture: While for some types two or even three rivalling manufactures offer their engines, for other airframe types only one family of engines is available. To the first group belong for instance the A320 family with engines available from IAE and CFM and the A330 (engines from GE, Pratt & Whitney and CFM). To the latter group belong the Boeing 737 family (sole engine supplier CFM), the Airbus variants A340-500 and -600 (sole supplier Rolls Royce) and the larger Boeing 777 variants (-200LR and -300ER) with General Electric as the only engine supplier.

An interesting new development has occurred with the Boeing 787, which has engines available made either by General Electric or Rolls Royce. With this type, it will be possible to interchange the engine type on a specific airframe without the need of a lengthy recertification process. This makes the 787 a very flexible asset on the second hand market, as airliners can be sold from GE to Rolls Royce engine users and vice versa while maintaining the commonality of a single engine type and the resulting cost savings in spare parts logistics and maintenance crew training.

The engine aftersales market is gaining increasing importance. For instance, International Aero Engines offers for its V2500 engine family, which is used for the Airbus A319/320/321, a program called "Select" designed to increase maintenance intervals and to increase fuel efficiency by the introduction of improved parts into the existing engine population. Interestingly, several manufacturers have also begun to build spare parts for engines from competing manufacturers – a fact that further underlines the importance of the aftersales market.

Table 8-13: Engine and Market Share Breakdown on Aircraft Ordered in 2007 (without spare engines)

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Engine Manufacturer	Engines ordered	Engine Manufacturer Share of total no. of engines on ordered Aircraft in 2007
CFM International	2350	36.4%
General Electric	1558	24.1%
Rolls Royce	950	14.7%
International Aero Engines	632	9.8%
Pratt & Whitney	540	8.4%
Klimov	196	3.0%
Aviadvigatel	132	2.0%
Engine Alliance	68	1.1%
PowerJet	24	0.4%
Walter	6	0.1%
Subtotal Announced Engine Orders	6456	100.0%
Unannounced	1038	
Total No. Of Engines on ordered Aircraft	7494	

The highest number of engines to be installed on newly ordered aircraft in 2007 comes from CFM with 2350 engines, which represents 36.4% of all engines to be installed on new aircraft. CFM benefited from the strong demand for the standard single-aisle aircraft from Boeing and Airbus, as this manufacturer provides engines for the 737 and the A320 family. Moreover, the CFM56 engine can also be used on the A340-200 and -300, which however only accounted for four sold airframes and 16 engines to be installed. For the Boeing 737, CFM is the exclusive engine provider. The main airframe types to be equipped with engines from General Electric will be regional jets from Embraer and Bombardier as well as the top of the market 777 models 777-300ER and -200LR, where it is exclusive provider. Number three on the list, Rolls Royce,

benefited in 2007 strongly from the position as exclusive engine provider for the A350XWB. 558 of 950 or almost 60% of Rolls Royce's total orders account for the Trent 1700 engine for the A350XWB.

As it is possible to order the airframe without committing to a specific engine at the time of ordering, the buyers still have to decide on the engine for a significant number (1038 or almost 14% of the total orders) of airframes.

Table 8-14: Engine and Market Share Breakdown on Aircraft Delivered in 2007 (without spare engines)

Source: Analysis of DLR Air Transport and Airport Research based on data provided by Ascend

Engine Manufacturer	Installed Engines on Delivered Aircraft	Engine Manufacturer Share of total no. of engines on ordered Aircraft in 2007
CFM International	1092	44.9%
General Electric	646	26.6%
International Aero Engines	278	11.4%
Pratt & Whitney	250	10.3%
Rolls Royce	128	5.3%
Aviadvigatel	29	1.2%
Walter	8	0.3%
Total	2431	100%

Also for the aircraft delivered in 2007, CFM International was the No. 1 engine supplier with 10 engines. This represents 44.8% of all jet and turboprop engines installed on newly delivered aircraft. 650 of their engines are installed on Boeing 737 aircraft, 434 on Airbus A318/319/320/321 with the remaining eight on two A340s. CFM is followed by General Electric, which delivered 366 engines for regional jets of Embraer and Bombardier, 140 CF6 engines used on Airbus A300 and A330 as well as the Boeing types B747 and B767. The remaining 140 engines are the GE90 type, installed on Boeing 777 aircraft.

9 Employment in European Air Transport

The following analysis of employment trends with respect to the European air transport sector is based on the European Union Labour Force Survey (LFS). Data on employment trends of the economic sector, air transport, and the entire national economy have been provided by the Statistical Office of the European Communities (EUROSTAT) in cooperation with the German Federal Statistical Office.

9.1 Basic Concepts and Definitions of the EU Labour Force Survey

The survey[68] is intended to cover the whole of the resident population, i.e. all persons whose usual place of residence is in the territory of the Member States of the European Union, excluding the population living in collective households.

The definitions of employment (and unemployment) used in the EU Labour Force Survey closely follow those adopted by the 13th International Conference of Labour Statisticians.

A person (15 years and above) is considered as having an employment if he or she did any work for pay or profit during the reference week. "Work" means any work for pay or profit during the reference week, even for as little as one hour. Pay includes cash payments or "payment in kind" (payment in goods or services rather than money), whether payment was received in the week the work was done or not. Also counted as working is anyone who receives wages for on-the-job training, which includes the production of goods or services.

This definition reveals the economic view of the Labour Force Concept. The objective is collecting even minimal contributions to the value added.

9.2 Definition of Air Transport in the Scope of National Accounts

In the National Accounts air transport covers the following areas, according to the Statistical Classification of Economic Activities[69]^[70]:

- Scheduled air transport: passengers and goods
- Non-scheduled air transport: passengers and goods (regular and occasional charter flights, helicopter services, sightseeing flights, etc.)
- Space transport: satellite and spacecraft launches as well as transportation of persons and payload

[68] European Communities: The European Union labour Force survey. Methods and definitions 2001. Luxembourg 2003
[69] European Commission: EU Labour Force Survey database. User guide. Luxembourg 2007
[70] Statistisches Bundesamt: Klassifikation der Wirtschaftszweige mit Erläuterungen. Ausgabe 2003. Wiesbaden. 2003

9.3 Employment Trends in European Air Transport

The year 2001 was a significant milestone for international air transport. After the terror attacks in the United States of America on September 11th, 2001 and the arising worldwide economic slump, air transport demand decreased drastically. In 2004, air transport demand slowly started to recover and in 2006 again reached the level of 2000.

This development has also been reflected – time-shifted – by the employment trends of airlines. The peak was reached in 2001. The subsequent cut of employment continued until 2006. Only in 2006, a rise of employment rates was seen. However, the absolute level has not (yet) reached that of 2001 (Table 9-1).

Table 9-1: Number of Employees (1.000) – Air Transport

Source: EUROSTAT: Special Analysis of EU Labour Force Survey

	EU-27	EEA	D	F	UK	I
1995	356	366	75	62	45	26
1996	363	372	75	51	39	33
1997	386	396	75	57	47	46
1998	395	408	79	55	46	37
1999	408	420	77	61	48	36
2000	428	440	78	70	56	41
2001	454	467	87	78	42	46
2002	439	449	84	83	43	54
2003	408	418	83	63	48	45
2004	412	422	76	66	47	40
2005	402	410	82	69	46	33
2006	422	430	87	56	51	33

From 1995 to 2001, the employment development in air transport in the EU-member states was significantly more dynamic than that of the total sectors. Whereas, in this time frame, air transport increased employment by 4.1% yearly, the total sectors only showed a yearly growth rate of 1.0%.

Subsequently, the development changed significantly. In the air transport sector between 2001 and 2006 the number of employees yearly decreased by 1.5% in the EU-member states, whereas it grew by 0.9% in total (Table 9-2).

Table 9-2: Number of Employees (1.000) – National Economy

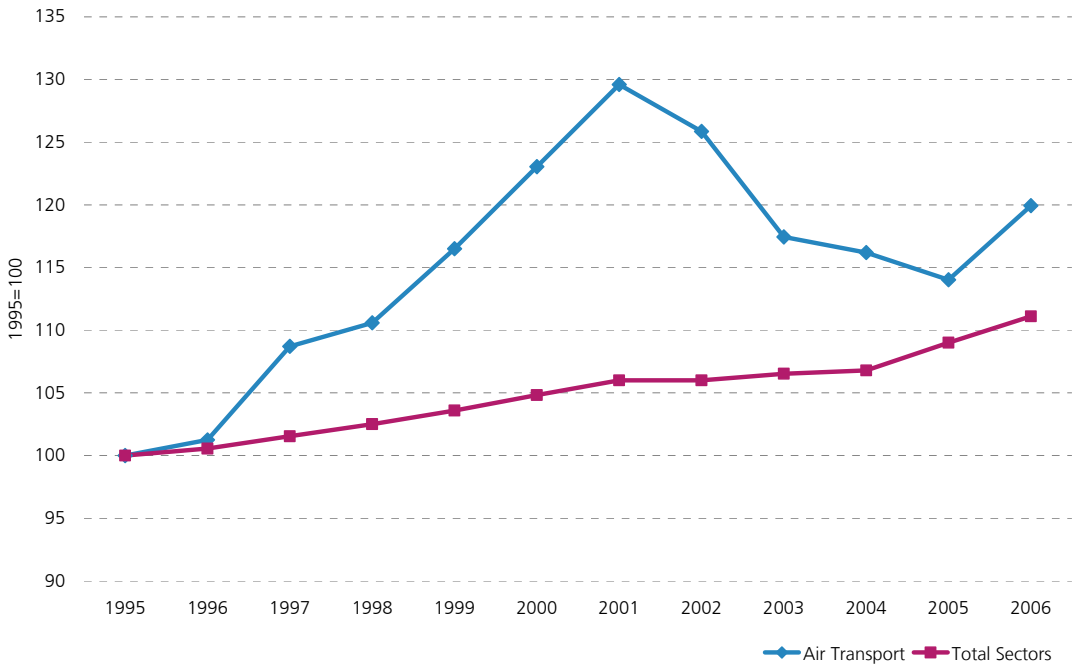
Source: EUROSTAT: Special Analysis of EU Labour Force Survey

	EU-27	EEA	D	F	UK	I
1995	192.455	194.626	35.778	21.904	35.986	19.974
1996	193.544	195.792	35.629	22.019	26.276	20.093
1997	195.436	197.741	35.925	21.954	26.740	20.181
1998	197.282	199.659	35.626	22.243	27.050	20.354
1999	199.366	201.762	36.085	22.502	26.724	20.614
2000	201.751	204.172	36.321	23.119	27.082	20.927
2001	204.010	206.435	36.522	23.671	27.326	21.371
2002	203.995	206.436	36.209	23.877	27.477	21.755
2003	205.033	207.450	35.919	24.259	27.740	22.055
2004	205.544	207.966	35.455	25.005	27.923	22.434
2005	209.789	212.225	36.650	24.574	28.179	22.559
2006	213.843	216.354	37.374	24.765	28.333	22.985

In the entire time frame, the employment rate (1.7%) in the air transport sector yearly increased slightly faster than that of the national economy (yearly 1.3%) (Figure 9-1).

Figure 9-1: Number of Employees (EU 15) – Air Transport, national Economy

Source: EUROSTAT: Special Analysis of EU Labour Force Survey



The employment portion of air transport is small with respect to the entire national economy. In 1995 it reached 0.18%, grew to 0.22% until 2001 and again decreased to 0.20% until 2006.

Also in big EU-countries like Germany, France, UK and Italy similar developments were seen. 2001 was the busiest year in all four states, apart from UK, where employment cuts already started in 2001 and France starting in 2003. Subsequently, employment rates continuously dropped until 2005 and rose again in 2006. In France, decrease of employment even continued in 2006. Solely in Germany, the level of employment almost reached the one of 2001, whereas in the other states it was significantly lower. This applies for the UK in the year 2000.

9.4 Coherence with other Employment Estimates[71]

Key concepts used in national accounts, such as domestic employment, have no correspondence in the EU-LFS, which uses instead number of persons employed based on residency within the national border (national employment). There are also differences in coverage, where the EU-LFS covers the age group 15 and older in private households only, while the national accounts cover all persons regardless of age or residence. In addition, The EU-LFS doesn't consider conscripts and unpaid trainees as employed whereas these are explicitly or implicitly accounted for in the national accounts. The reference period for the measurement could also contribute to some differences. The LFS represent one average week in the year with all the weeks of the year measured. When data is derived from administrative sources or establishment surveys the reference period is usually different, the month, the whole year or a single day within the year or month.

It should be recognised that the coverage, measurement and conceptual differences mentioned above only account for a relatively small part of the difference between the estimates. As a rule of thumb, relative differences of more than 1.5% need to be explained by other reasons. This would concern 12 participating countries. Germany and Italy are responsible for the bulk of the absolute difference between the national account estimates and the LFS, with Bulgaria showing the highest relative discrepancies. Six countries have discrepancies of more than 5%.
The reasons for the disparities, either in levels or in direction of the employment growth are not fully known. Some indicative reasons can, however, be mentioned: national accounts may use different sources to LFS (or LFS combined with other sources) to estimate employment. National accounts may introduce adjustments to reach consistency between the employment reported by its sources and other related variables (like salaries or production). The national accounts approach of comparing and combining different sources is also more prone to underreporting or systematic biases than LFS.

[71] Eurostat: Quality Report of the European Union Labour Force Survey 2005. Luxembourg 2007

The discrepancies between the Labour Force Concepts of national accounts and LFS increase further when considering market sectors like air transport in this report. The following table demonstrates this fact with the example of Germany (Table 9-3).

Table 9-3: Number of Employees (1.000) – German Air Transport

Sources: EUROSTAT: Special Analysis of EU Labour Force Survey, Statistisches Bundesamt[72]^[73]

	Labour Force Survey	National Account
1995	75	47
1996	75	46
1997	75	46
1998	79	46
1999	77	49
2000	78	52
2001	87	53
2002	84	52
2003	83	53
2004	76	51
2005	82	
2006	87	

Thus, the data used in this report is not directly comparable with that used in the national accounts. The LFS data have been chosen, since they are more comprehensive and up-to-date than the national accounts data.

[72] Statistisches Bundesamt: Fachserie 18. Reihe S.26: Volkswirtschaftliche Gesamtrechnungen. Inlandsproduktberechnung. Revidierte Jahresergebnisse 1991 bis 2004. Wiesbaden. 2005
[73] Statistisches Bundesamt: Fachserie 18. Reihe 1.4: Volkswirtschaftliche Gesamtrechnungen. Inlandsproduktberechnung. Detaillierte Jahresergebnisse 2006. Wiesbaden. 2007

10 Safety

10.1 Air Transport Safety

Safe operations remain the most important element of the air transport system. Continuous efforts are undertaken by all stakeholders of the air transport system to guarantee safe operations. This becomes particularly challenging as airports and airspace become more populated due to the strong growth of air transport movements in the past years. The following chapter provides an overview of notable events in the area of air transport safety in the year 2007 as well as statistical data related to safety, events concerning the list of airlines banned from EU airspace and developments at the European Aviation Safety Agency (EASA).

10.2 Notable Events

The worst accident in 2007 happened in Brazil at Sao Paulo Congonhas Airport on 17th July. 181 passengers, 6 crew and 12 people on the ground were killed, as an A320 of TAM Linhas Aereas overran the runway on landing in wet conditions and hit a cargo building. A fire broke out after the impact and destroyed both the aircraft and the building. Contributing to the accident were the weather conditions at the time of the accident, an ungrooved runway surface which had been resurfaced shortly before and a defective right thrust reverser, which was not available for landing. Two other accidents claimed more than 100 lives: On 1st January 2007, a Boeing 737-400 of the Indonesian carrier Adam Air crashed into the sea off the coast of Makassar with 102 fatalities and on 5th May 2007, a Boeing 737-800 of Kenya Airways crashed immediately after take-off near Douala (Cameroon), claiming 114 lives of passengers and crew.

The Canadian manufacturer Bombardier reported several technical problems on its Dash 8 regional turboprop aircraft type which have raised public concerns over the safe operation of this aircraft type. Six occurrences were reported at airports in EU Member States where the landing gear could not be properly extended prior to landing. Fortunately, no fatalities were reported in these incidents. While the manufacturer is confident of solving the technical issues, SAS has decided to withdraw all aircraft of this type from service. In total, 108 Dash 8 aircraft were in service with operators based in Member States of the European Union at year end 2007.

The worst accident in terms of material damage happened on 15th November 2007, when an Airbus A340-600 in the livery of Etihad Airways hit a concrete barrier in Toulouse during engine test runs only a few days before delivery. The aircraft was damaged beyond repair, five of the crew aboard where heavily injured.

10.3 Safety Performance

Figure 10-1: Global Passenger and Crew Fatalities in Air Transport Accidents 1997-2007

Source: DLR Analysis based on Ascend Online Fleets

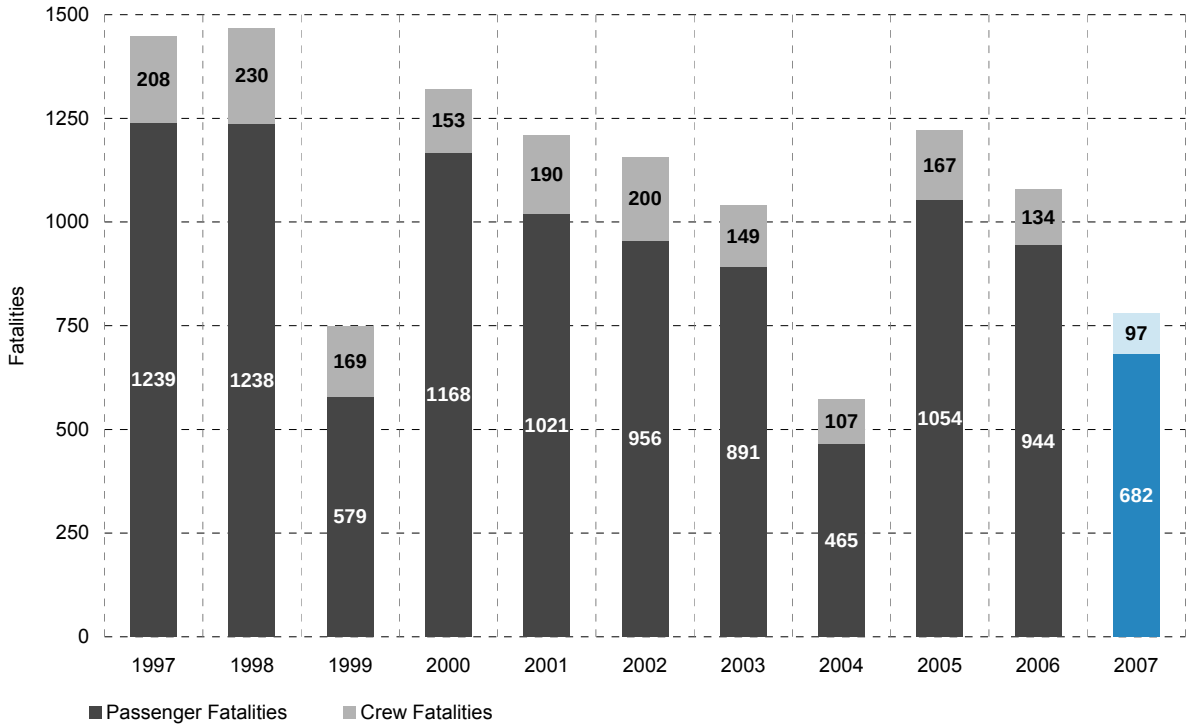


Figure 10-1 presents the long-term development of passenger and crew fatalities in air transport accidents 1997-2007. 2007 was a relatively safe year in comparison to the last years, 779 people died in air transport accidents globally. This compares to an average of 956 between the years 1997 and 2006. Of those people killed in air transport accidents, 631 were passengers on commercial flights.

A traditional indicator for the analysis of air transport safety is the number of fatal accidents per million departures. According to the air transport information service ASCEND, 0.69 fatal accidents happened per million departures globally in 2007, which corresponds to about 1.5 million flights per fatal accident. Historically, this is an excellent value, as the average over the past 10 years is close to 1.0.

Also the number of passengers killed per million passengers carried is relatively low compared to the long-term average. In 2007, the passenger fatality rate was 0.24 per million carried, compared to an average of 0.32 for the time since 2000 and 0.56 during the 1990s.

The long-term view since 1990 in the following figure shows two opposing trends: The number of flights grew considerably from 25.4 million in 1990 to 36.1 million in 2007, which is an increase of more than 42%. The number of revenue passenger kilometres was even more than

double from 2612 billion in 1990 to 5324 billion in 2007. At the same time, both the accident rate measured by fatal accidents per million and the number of passengers killed per billion RPKs declined considerably.

Figure 10-2: Long-term trend of fatal accidents and passengers killed in commercial aviation

Source: Ascend

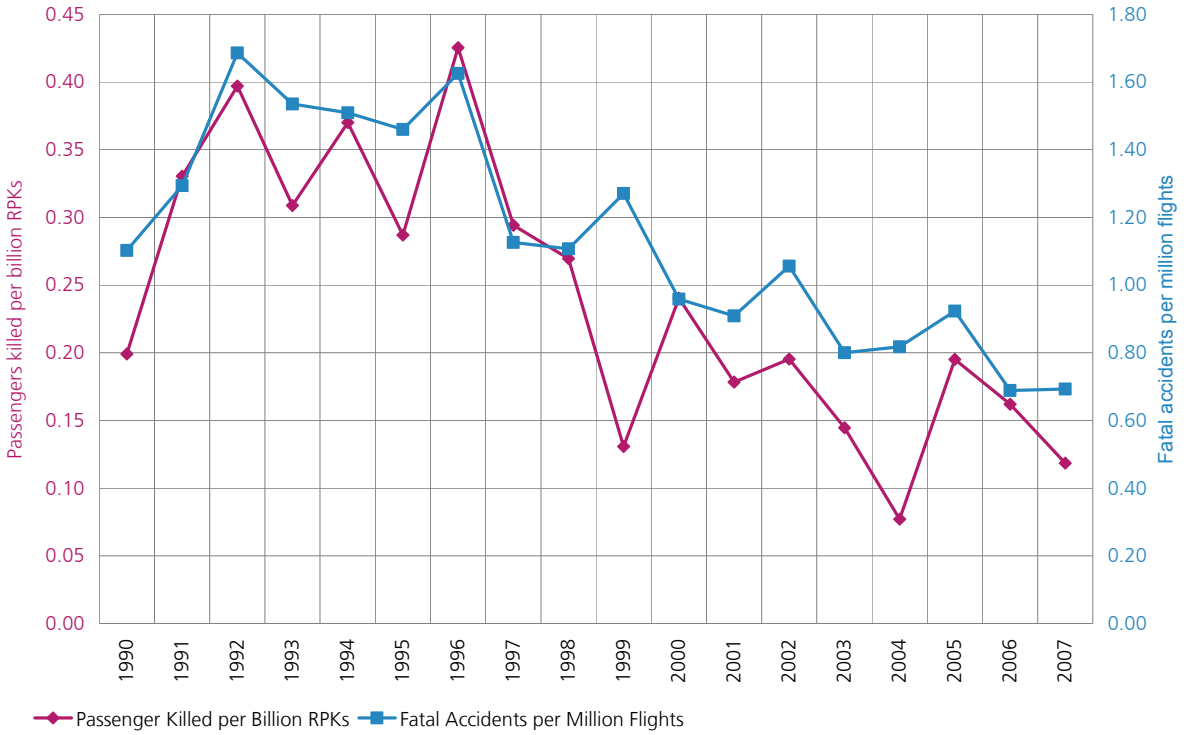
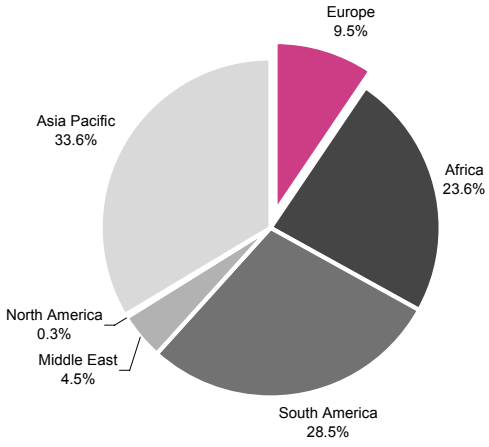
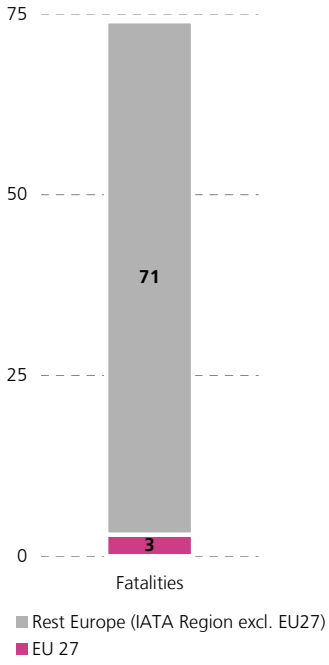


Figure 10-3: Geographical Distribution of Air Transport Accident Fatalities in 2007 (IATA Regions)

Source: Ascend Online Fleets





The geographical distribution of fatal accidents reveals that 2007 was a particularly positive year for air transport in Europe and in North America. In the

European Union, commercial scheduled air transport did not result in a single fatality. The three fatalities listed in the table below occurred during fire fighting actions in Greece and Italy. When widening the view to geographical Europe (in the definition of IATA Regions), a total of 74 fatalities occurred in 2007, of which 56 were passengers on commercial, scheduled flight operations. In North America, two fatalities were recorded. Aviation safety hotspots remain areas where a weak regulatory environment and difficult economic conditions prevail. This is particularly the case for several countries in Africa (175 fatalities), Asia Pacific (263 fatalities) and South America (225 fatalities). In the Democratic Republic of the Congo alone, 39 persons died in six fatal aviation accidents.

Table 10-1: Air Transport accidents with fatalities in 2007

Source: DLR Analysis, based on Ascend Online Fleets

Date	Location	Aircraft Type	Airline/Operator	Passenger and Crew Fatalities
01 January 2007	off Makassar, Indonesia	Boeing 737-400	Adam Air	102
09 January 2007	Balad, Iraq	Antonov An-26	Aeriantur-M Airlines	34
07 March 2007	Yogyakarta, Indonesia	Boeing 737-400	Garuda Indonesia	21
17 March 2007	Samara, Russia	Tupolev Tu-134	UTAir	6
23 March 2007	near Mogadishu, Somalia	Ilyushin Il-76TD	Trans Avia Export Cargo Airlines	11
30 March 2007	Gasmata, Papua-New Guinea	Embraer EMB-110 Bandeirante	Airlink (PNG)	2
05 May 2007	near Douala, Cameroon	Boeing 737-800	Kenya Airways	114
06 May 2007	50sm SE of Nakhl, Egypt	de Havilland DHC-6 Twin Otter	French Air Force	9
17 May 2007	near Kilambo, The Democratic Republic Of The Congo	Let L-410 Turbolet	Safe Air Company	3
24 May 2007	near Pampa Hermosa, Peru	de Havilland DHC-6 Twin Otter	Peruvian Air Force	13
21 June 2007	near Kamina, The Democratic Republic Of The Congo	Let L-410 Turbolet	Karibu Airways	1
23 June 2007	Al-Naeem, Yemen	de Havilland DHC-6 Twin Otter	Yemenia	1
25 June 2007	near Sihanoukville, Cambodia	Antonov An-24	PMT Airlines	22
28 June 2007	M'Banza Congo, Angola	Boeing 737-200	TAAG - Angola Airlines	5
29 June 2007	Bouake, Cote Ivoire	Fokker 100	Government of Ivory Coast	4
08 July 2007	Muncho Lake, Canada	de Havilland DHC-6 Twin Otter	Liard Air	1
17 July 2007	Sao Paulo, Brazil	Airbus A320-230	TAM Linhas Aereas	187
23 July 2007	Shinele Town, Ethiopia	Antonov An-26	Djibouti Airlines	1
23 July 2007	near Eramo di Sant' Erasmo, Italy	Canadair CL-415	SOREM	1

23 July 2007	near Styra, Greece	Canadair CL-415	Greek Air Force	2
29 July 2007	Moscow, Russia	Antonov An-12	Atran	7
09 August 2007	Moorea, French Polynesia	de Havilland DHC-6 Twin Otter	Air Moorea	20
22 August 2007	near Sao Jose dos Pinhais, Brazil	Embraer EMB-110 Bandeirante	Two Taxi Aereo	2
26 August 2007	near Kongolo, The Democratic Republic Of The Congo	Antonov An-32	Great Lakes Business Co	10
07 September 2007	Goma, The Democratic Republic Of The Congo	Antonov An-12	Galaxy Kavatsi	8
16 September 2007	Phuket, Thailand	McDonnell-Douglas MD-82	One-Two-Go	90
20 September 2007	near McGrath, USA	Shorts SC.7 Skyvan	Arctic Circle Air Service	1
24 September 2007	Malemba Nkulu, The Democratic Republic Of The Congo	Let L-410 Turbolet	Karibu Airways	1
04 October 2007	Kinshasa, The Democratic Republic Of The Congo	Antonov An-26	Malift Air	17
08 October 2007	near Cubarral, Colombia	Let L-410 Turbolet	Nacional de Aviacion Colombia	18
04 November 2007	Sao Paulo, Brazil	Learjet 35	Reali Taxi Aereo Ltda	2
30 November 2007	near Isparta, Turkey	McDonnell-Douglas MD-83	Atlasjet Airlines	57
26 December 2007	Almaty, Kazakhstan	Canadair Challenger	Jet Connection Businessflight	1
30 December 2007	near Sabang, Indonesia	A.S.T.A. (GAF) Nomad	Indonesian Navy	5
Total				779

Damages and Hull Loss Statistics

Besides the tragic loss of human lives, air transport accidents are usually associated with high material damages for airlines, insurance companies and third parties. In 2007, the total amount of hull losses and liabilities amounted to US-$ 1.70bn according to the aircraft insurance analysts Aon. This compares to US-$ 1.29bn for the preceding year. Overall, this safety record did result in losses for the insurers, as insurance premiums amounted to only US-$ 1.5bn. The following table provides a recount of the most expensive accidents in 2007 in terms of material damage. The two materially most expensive accidents fortunately did not result in a single fatality.

Table 10-2: Accidents with highest monetary aircraft damages in 2007

Source: Ascend Online Fleets

Accident Date	Aircraft Type	Operator	Accident Location	Estimated Damage in million US-$
15.11.2007	Airbus A340-600	Airbus	Blagnac Airport,Toulouse,France	126.8
09.11.2007	Airbus A340-600	Iberia	Mariscal Sucre International Airport, Quito, Ecuador	60.7
05.05.2007	Boeing 737-800	Kenya Airways	(near) Douala,Cameroon	40.9
20.08.2007	Boeing 737-800	China Airlines	Naha Airport, Okinawa, Japan	34.2
17.07.2007	Embraer 190	AeroRepublica Colombia	Simon Bolivar Airport, Santa Marta, Colombia	28.4
17.07.2007	Airbus A320	TAM Linhas Aereas	Congonhas International Airport, Sao Paulo, Brazil	23.9
26.10.2007	Airbus A320	Philippine Airlines	Butuan Airport, Butuan City, Philippines	22.4
12.08.2007	de Havilland Dash 8	Jeju Air	Kimhae International Airport, Pusan, South Korea	19.2
13.02.2007	Canadair Challenger 800	Clear Sky Holdings LLC	Vnukovo Airport, Moscow, Russia	19.0
19.04.2007	Airbus A300	Qatar Airways	Nadia International Airport, Abu Dhabi, United Arab Emirates	15.5

10.4 List of Airlines Banned within the EU

Based on EU Regulation 2111/2005, which came into force in January 2006, the European Commission, in close cooperation with the authorities responsible in the Member States, has the right to ban operators from operating in EU airspace should common safety criteria be violated. In 2007, this list was updated several times.

In March 2007, operational restrictions were imposed on Pakistan Airlines. In July, these restrictions were modified, allowing operations into the Community with specific Boeing 747 and Airbus 310 aircraft in addition to its Boeing 777 fleet authorised before.

In July 2007, all Indonesian air carriers were banned from EU airspace, as the country could not guarantee a safe regulatory environment. The impacts, however, were limited, as no Indonesian carrier flew on a regular basis with scheduled flights to the EU.

In addition to restrictions and bans imposed by the EU, bilateral consultations resulted in preventive safety measures being adopted unilaterally by some national civil aviation authorities, in particular:

- The Russian Federation decided to prohibit all operations to the EU by four local passenger airlines (Kuban Airlines, Yakutia Airlines, Airlines 400, Kavminvodyavia) and imposed restrictions on the operations of six other operators (Gazpromavia, UTAir, KrasAir, Atlant Soyuz, Ural Airlines and Rossiya) limiting the number of aircraft used for such flights.

- Bulgaria decided to extend the measures imposed on local cargo carriers by revoking the certificates of Air Sofia, Bright Aviation Services, Scorpion Air and Vega Airlines, suspending Air Scorpio and prohibiting operations of Heli Air Services in EU Member States as well as in Iceland, Norway and Switzerland.

- The Republic of Moldova withdrew the certificates of eight carriers (Valan, Pecotox, Jetline International, Jetstream, Aeroportul Marilescu, Aeronord, Grixona and Tiramavia) which were not subject to an appropriate safety oversight.

At the end of 2007, the list of airlines banned within the EU contains 147 carriers that have been banned from operations into EU airports. In addition to the listed carriers, a general ban for all carriers certified by the authorities of the Democratic Republic of Congo, Equatorial Guinea, Indonesia, the Kyrgyz Republic, Liberia, Sierra Leone and Swaziland exists. On three operators, operating restrictions have been imposed, which means that the entire fleet with the exception of certain aircraft was banned from operating in EU airspace.

10.5 EU-OPS (EU Operations)

At the end of 2006, Regulation (EC) 1899/2006[74] amended existing regulations to harmonise technical requirements and administrative procedures in the field of civil aviation and entered into force on 16 January 2007.

Transferring most parts of Joint Aviation Requirements Operation (JAR-OPS) applicable to commercial transportation by aircraft, these EU Operations (EU-OPS) are added to Regulation (EC) 3922/1991 as a new Annex III. Because of dynamic changes and developments in this technical area, an early adoption of new rules is possible by the assistance of the Committee within comitology procedure.

Due to Article 2 (2) of Regulation (EC) 1899/2006, Annex III shall apply with the effect from 16 July 2008.

10.6 The European Community SAFA Programme

Following its transfer from ECAC/JAA to EC competence on 01 January, 2007 was the first full year whereby responsibility for the management and further development of the **EC SAFA**

(Safety Assessment of Foreign Aircraft) programme was assumed by the European Commission assisted by the European Aviation Safety Agency (EASA) whose role focuses upon the operational management of the Programme on behalf of the same Commission in accordance with Commission Regulation 768/2006 EC.

Whilst EU Member States are legally bound to conduct ramp inspections under the so-called 'SAFA Directive' (2004/36/EC), the continued participation of the non-EU ECAC Member States, and thus the pan-European dimension of the programme, has been assured through the signature of a Working Arrangement between each of these individual States and EASA. Including the EU-27 therefore, the EC-SAFA programme boasts a total of **41 Participating States** by the end of 2007.

Following the seamless transfer of the Programme to EC competence, 2007 was an important year since it also saw the Commission introduce two important legislative proposals designed to improve and enhance the efficacy of the Programme. Both instruments are foreseen for adoption in early 2008 and consist of:

- a Commission Directive amending Annex II to Directive 2004/36/EC regarding the criteria for the conduct of ramp inspections on aircraft using Community airports;

and

- a Commission Regulation implementing Directive 2004/36/EC as regards the prioritisation of ramp inspections on aircraft using Community airports.

10.7 The European Aviation Safety Agency (EASA)

Air safety is concerned with the rules for the construction and use of aircraft as well as the licensing of staff involved in the operation and maintenance of aircraft and equipment. Therefore, a high and uniform level of safety can be best attained by common action on Community level and by the adoption of common safety rules concerning products, persons and organisations. At the same time a common safety regulatory framework was adopted, the European Aviation Safety Agency (EASA) as an independent safety regulator was created by so-called "basic regulation" Regulation (EC) No 1592/2002 of 15 July 2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency (EASA)[75].

In November 2005, the Commission published a proposal for a Regulation amending Regulation (EC) No 1592/2002[76]. Under the regulation establishing EASA, the agency had been given certification and rulemaking responsibilities with respect to airworthiness while the new proposal extends the responsibilities of EASA concerning the common safety rules to air

[74] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1899:EN:HTML
[75] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:240:0001:0021:EN:PDF
[76] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0579:FIN:EN:PDF

operations, pilot licensing and the safety of third country aircraft. It also aims to strengthen inspections and penalties in the event of non-compliance with these rules and, in the light of experience, to improve the operation of EASA.

During 2007, the proposal was discussed by the European institutions according to the codecision procedure. While the Council agreed a common position in October 2007, the European Parliament proposed amendments to this common position at its 2nd reading. On 19 December 2007, the Commission adopted an opinion[77] on the European Parliament's amendments.

Also in 2007, several Commission Regulations were adopted:

- Commission Regulation (EC) No 593/2007 on the fees and charges levied by the European Aviation Safety Agency[78],

- Commission Regulation (EC) No 334/2007[79] amending the Basic Regulation in relation to ensure compliance with environmental protection requirements contained in Annex 16 to the Chicago Convention,

- Concerning Airworthiness & Environmental Certification: Commission Regulation (EC) No 375/2007[80] and No 335/2007[81] amending Commission Regulation (EC) 1702/2003 laying down implementing rules for the airworthiness and environmental certification of aircraft and relating products, parts and appliances, as well as for the certification of design and production organisations and

- Concerning Continuing Airworthiness: Commission Regulation (EC) No 376/2007[82] amending Commission Regulation (EC) No 2042/2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks

The Agency prepares drafts of opinions in order to assist the European Commission in its preparation of proposals for basic principles, applicability and essential requirements. The Agency also prepares Guidance Material relating to the application of implementing rules set out in Article 13 of the Basic Regulation. In 2007 and in accordance with the Agency´s Rulemaking procedure, five opinions have been submitted to the European Commission[83].

[77] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0864:FIN:EN:PDF
[78] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:140:0003:0020:EN:PDF
[79] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_088/l_08820070329en00390039.pdf
[80] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_094/l_09420070404en00030017.pdf
[81] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_088/l_08820070329en00400042.pdf
[82] http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_094/l_09420070404en00180019.pdf
[83] http://www.easa.eu.int/home/rg_opinions_main.html

All the other Agency measures[84] according to Article 13 of the basic regulation and notices of proposed amendments (NPAs) especially concerning the extension of the EASA system to the regulation of Air Traffic Management and Air Navigation Services (ATM/ANS) [85] are collected on the EASA website[86].

[84] http://www.easa.eu.int/home/rg_agency_measures.html
[85] http://easa.europa.eu/ws_prod/r/doc/NPA/NPA%202007-16.pdf
[86] http://www.easa.europa.eu/home/r_npa.html and http://www.easa.europa.eu/home/r_archives.html

11 Annex

11.1 Abbreviations

€	Euro
abbr	abbreviation
ACARE	Advisory Council for Aeronautics Research in Europe
AEA	Association of European Airlines
ASK	available seat kilometre
ATFCM	Air Traffic Flow and Capacity Management
ATFM	Air Traffic Flow Management
ATFQ	Automatic Ticket Fare Quote
ATM	Air Traffic Management
AUC	Airport Users Council
AVSEC-QCC	Aviation Security - Quality Control Centre
BAA	British Airport Authority
ca.	circa
CAEP	Committee on Aviation Environmental Protection (of the → ICAO)
CFMU	Central Flow Management Unit
CIS	Commonwealth of Independent States
CO_2	Carbon Dioxide
DHS	U.S. Department of Homeland Security
DLR	Deutsches Zentrum für Luft- und Raumfahrt (German Aerospace Center)
EASA	European Aviation Safety Agency
e.g.	exempli gratia
EC	European Community
ECC-Net	European Consumer Centre Network
EEA	European Economic Area
ePass	electronic Passport
ERA	European Regions Airline Association
etc.	et cetera
EU	European Union
EU-ETS	EU Emissions Trading Scheme
EUR	Euro
FAA	Federal Aviation Authority (of the USA)
FSNC	Full Service Network Carrier
FTK	freight ton kilometre
GBP	Pound sterling
i.e.	id est
IATA	International Air Transportation Association

ICAO	International Civil Aviation Organisation
IEDO	Intra-European and Domestic (Flights)
IFR	Instrument Flight Rules
IMF	International Monetary Fund
JPY	Japanese yen
Kb	Kilo Byte
LCC	Low Cost Carrier
No	Number
NO_x	Nitrogen Oxide
Pax	Passenger
PRC	People's Republic of China
PNR	Passenger Name Record
RPK	revenue passenger kilometre
SDR	Special Drawing Rights
TFCs	taxes, fees and charges
TFTK	Taken Freight Tonne Kilometres
UK	United Kingdom
UNFCC	United Nations Framework Convention on Climate Change
USA	United States of America
USD	United States dollar
VAT	value added tax

11.2 Geographical Coverage Information

	European Union			European Economic Area	EUROCONTROL Statistical Reference Area	International Civil Aviation Organization (Europe)
	EU 25	EU 27	EU Candidate Countries	EEA	ESRA	ICAO Europe
composition valid from	*2004*	*2007*	*actual*	*1994*	*2002*	
Albania						x
Algeria						x
Andorra						x
Armenia						x
Austria	x	x		x	x	x
Azerbaijan						x
Belarus						x
Belgium	x	x		x	x	x
Bosnia and Herzegovina						x
Bulgaria		x		x	x	x
Croatia			x		x	x
Cyprus	x	x		x	x	
Czech Republic	x	x		x	x	x
Denmark	x	x		x	x	x
Estonia	x	x		x		x
Finland	x	x		x	x	x
France	x	x		x	x	x
Georgia						x
Germany	x	x		x	x	x
Greece	x	x		x	x	x
Hungary	x	x		x	x	x
Iceland				x		x
Ireland	x	x		x	x	x
Italy	x	x		x	x	x
Kazakhstan						x
Kyrgyzstan						x
Liechtenstein				x		
Latvia	x	x		x		x
Lithuania	x	x		x		x
Luxembourg	x	x		x	x	x
Malta	x	x		x	x	x
Moldova					x	x
Monaco						x
Montenegro						x
Morocco						x
Netherlands	x	x		x	x	x
Norway				x	x	x
Poland	x	x		x		x
Portugal	x	x		x	x	x
FYR Macedonia			x		x	x
Romania		x		x	x	x
Russian Federation						x
San Marino						x
Serbia						x
Slovakia	x	x		x	x	x
Slovenia	x	x		x	x	x
Spain	x	x		x	x	x
Sweden	x	x		x	x	x
Switzerland					x	x
Tajikistan						x
Tunisia						x
Turkey			x		x	x
Turkmenistan						x
Ukraine						x
United Kingdom	x	x		x	x	x
Uzbekistan						x

11.3 List of figures

11.4 List of tables