

Analyses of the European air transport market

Annual Report 2008



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Annual Report 2008

German Aerospace Center

**Deutsches Zentrum
für Luft- und Raumfahrt e.V.
in the Helmholtz-Association**

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May 2010

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

Document Control Information

Responsible project manager: DG Energy and Transport
Project task: Annual analyses of the European air transport market 2008
EC contract number: TREN/05/MD/S07.74176

Release: 3.6
Save date: 2010-05-05
Total pages: 245

Change Log

Release	Date	Changed Pages or Chapters	Comments
0.03	2009-02-24		1 st Draft Report 2008
0.07	2009-05-13	all	Final Draft Report 2008
1.0	2009-06-17		Final Report 2008
1.1	2009-06-17	format items	Final Report 2008
1.2	2009-06-19	new tables 2-15, 2-16	Final Report 2008
1.3	2009-06-30	summary added	Final Report 2008
2.0	2009-07-24		Working draft
3.1, 3.2	2009-11-09	Chapter 1, 2, and 3	Working draft
3.3	2009-12-29	Chapter 1, 3, and Summary	Full Year Updated Final Report 2008
3.41	2010-03-09		Full Year Updated Final Report 2008
3.5	2010-04-28	minor modifications	Full Year Updated Final Report 2008
3.6	2010-05-05	chapter 3	Full Year Updated Final Report 2008

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Summary

2008 IN A NUTSHELL	WORLD	EUROPE
PASSENGERS	-0.4 %	+0.7 %
PASSENGER KILOMETRES	+1.3 %	+3.7 %
FREIGHT TONNE KILOMETRES	-4.9 %	-2.8 %
AIRCRAFT ORDERS	-47.2 %	-41.3 % (AIRBUS)
TOP AIRPORT - PASSENGERS -	ATLANTA (ATL) 90 million	LONDON (LHR) 67 million
TOP AIRPORT - MOVEMENTS -	ATLANTA (ATL) 979,000	PARIS (CDG) 560,000
SAFETY PERFORMANCE	682 FATALITIES	282 FATALITIES

Sources: Passengers (world): ICAO; Passengers (Europe): Eurostat; Passenger kilometres: ICAO; Freight tonne kilometres: IATA; Aircraft orders: Ascend; Top airports: ACI, Safety: Ascend (by country of accident)

Oil price, credit crunch, recession, slump in demand: Turbulence in the air

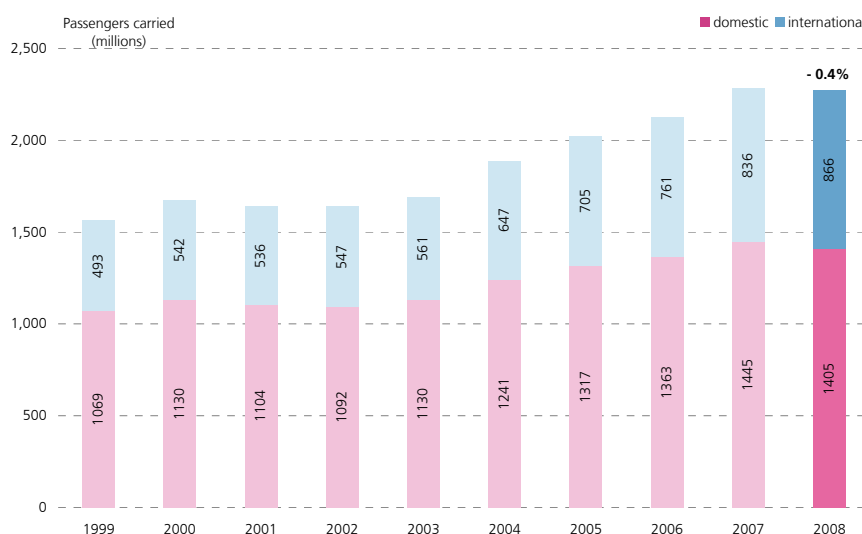
By the end of 2008, the growth of the global economy had come to a halt for the first time since the end of the Second World War. Billions of losses in the banking sector, a stock market crash in September/October 2008 and widespread fear of a recession in 2009 marked the economic development in 2008. Air transport, particularly the cargo traffic, witnessed the drop in demand during the second half of 2008 as a result of these heavy turbulences on the overall global markets.

The economies in the industrial countries had been characterised by high production growth up until the beginning of 2008, but this trend was dampened by the events on the US real estate market in the middle of the year, leading then to a credit crunch and finally to the recession. However, the economic decline did not just impact upon the industrial nations - it also spread to developing countries more and more throughout the year. The only positive development in the second half of 2008 was, from a consumer's point of view, in the oil price and retail prices. While rising resource prices caused an inflation rate of around 4.6% in the industrial countries through to summer 2008, this only amounted to 1.6% in November 2008 and meant a clear relaxation for consumers.

Annual results

Air Traffic

2008 had two sides for world aviation. The first half of the year featured the growth characteristic of the previous years. The opposite was the case for the rest of the year: passenger numbers dropped drastically. The beginning of the effects of these turbulent times in the middle of the year approximately levelled off the annual result in global aviation. All in all, 0.4% fewer passengers than in 2007 were recorded in global air traffic according to the ICAO (2007 vs. 2006: +6.2%). With this, around 2.3 billion passengers were achieved. The number of passenger kilometres performed rose in comparison to the previous year by 1.3% to 4,283 billion pkm (2007: +6.6%). Global domestic services even declined (-1.9%). Only international traffic still grew (3.4%).



The regions of the world were differently affected by the events of 2008. Measured in revenue passenger kilometres (RPKs) and posted by IATA, air traffic especially shrank in Africa (-4.0%). Above average growth was, however, observed in the Middle East (+7.0%) and Latin America (+10.2%). Europe's air traffic growth of 3.7% (according to ICAO) or 1.8% (according to IATA) was of a moderate level.

The air cargo sector was distinctly marked by global decline. Measured in freight tonne kilometres, the market shrank by 4.0% (IATA numbers). Cargo traffic in Europe recorded a drop of -2.8% following years of continued growth. The decline in Latin America was especially severe: -13.5% was recorded compared to the previous year. Only the Middle East bucked the global trend and even managed to grow strongly by +6.3%.

Airlines

The airlines' supply, measured by the number of seats offered, was continually adjusted to the demand expectations in 2008. The Full Service Network Carriers slightly reduced their capacity offered by 1%, the Regional Carriers by as much as 5%. The Holiday/Charter Carriers reduced their supply by around 25% in response to the increasing sales decline throughout 2008. Only the Low Cost Carriers significantly extended their network on the price-sensitive market, which was surely promoted by the crisis-induced increase in price-awareness. Airlines like Ryanair and easyJet offered an average of 14% more seats Europe-wide compared to the previous year despite the challenging market conditions.

For the 50 largest European Full Service Network Carriers, the load factor was 76.9% in 2008 (2007: 77.3%). The 25 largest Low Cost Airlines of the EU Member States achieved a seat load factor of 76.4% (2007: 79%), compared to the 25 largest EU Regional Carriers which only achieved 75.1% (2007: 77.1%). The Holiday/Charter Airline business model achieved the highest seat load factor with 86% (based on the 15 largest airlines concerned) (2007: 84.1%).

Top 20 airlines worldwide

2008

Rank 2008	Airline	Region	Mill PAX	change	Mill RPK	change
1	American Airlines	North America	92.8	-5.5%	212,098	-4.8%
2	Air France-KLM Group	EU	73.8	0.8%	207,242	3.2%
3	United Airlines	North America	63.2	-7.7%	177,171	-6.2%
4	Delta Air Lines	North America	71.7	-34.3%	170,147	-13.4%
5	Continental Airlines	North America	48.7	-4.5%	133,297	-1.7%
6	Lufthansa	EU	57.0	1.1%	125,955	7.1%
7	Southwest Airlines	North America	102.0	0.0%	118,543	1.7%
8	Northwest Airlines	North America	48.9	-8.9%	115,332	-1.9%
9	British Airways	EU	32.3	-3.3%	110,831	-3.0%
10	Emirates Airline	Middle East	22.4	9.5%	100,672	11.2%
11	US Airways	North America	54.8	-5.3%	97,506	-1.5%
12	Singapore Airlines	Asia	19.1	0.7%	93,626	3.0%
13	Cathay Pacific	Asia	25.0	7.1%	90,975	11.2%
14	China Southern Airlines	Asia	58.2	2.3%	83,117	1.9%
15	Japan Airlines International	Asia	46.9	-1.7%	82,122	-5.2%
16	Qantas	Australia	24.5	-2.7%	81,438	-3.5%
17	Air Canada	North America	23.2	-1.2%	74,731	0.2%
18	Air China	Asia	34.2	-1.6%	66,019	-1.4%
19	Ryanair	EU	57.7	13.3%	61,983	21.9%
20	ANA - All Nippon Airways	Asia	48.6	-4.0%	58,858	-3.9%

The continuing expansion of networks stagnated in 2008 for the first time in years. The opening of new routes had exceeded the routes closed since 2002, but in 2008 they were both about equal in absolute terms. There were, nevertheless, differences when considering the type of airline. Low Cost Carriers (LCCs) dominated in the number of routes opened, whereas many of the routes closed had been offered by network airlines. One example of this is the United

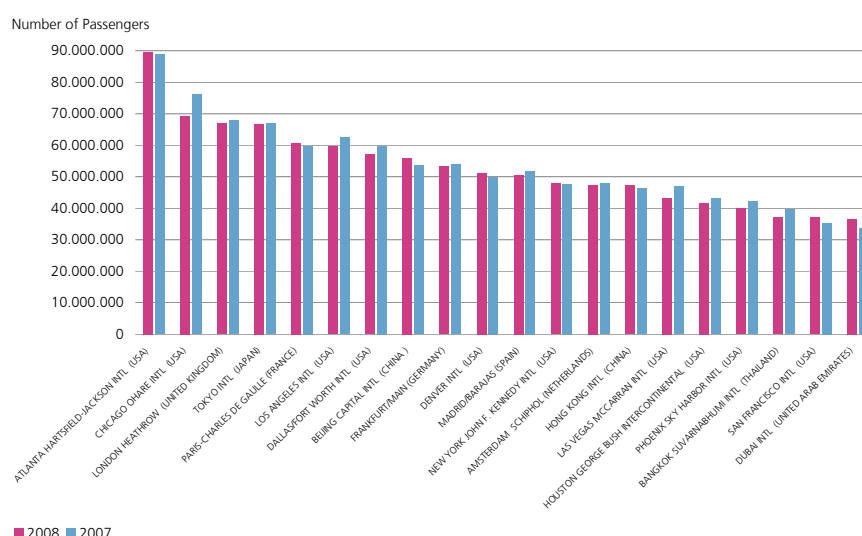
Kingdom (the largest national passenger market in the EU) where of 273 newly created routes 236 were offered by LCCs but of 280 closed routes only 68 were attributed to LCCs.

Operating a successful business was much more difficult for the airlines in 2008 than in the preceding growth years due to the aforementioned exceptional circumstances. On the cost side, the airlines were confronted with ups and downs in fuel costs like never before. After starting the year with about 295 US-cents per gallon in January 2008, speculation drove the kerosene price to a peak of over 400 US-cents per gallon during the main holiday season of 2008. At the end of the year, the price sank again to around 150 US-cents per gallon – the lowest value in years. But the decisive dampener for the airlines came with the decline in demand starting in the second half of the year. The airlines' reaction to this included capacity reduction and a postponement of long-term investment plans. With the capacity reductions, airlines were able to maintain seat load factors. The financial markets' expectations regarding the future developments in commercial air transport in the form of share prices reflect investors' crisis-awareness. In correlation with the stock market trend for all other industries, the airlines' share prices devalued in some cases very heavily.

It is more evident than ever that the strategy of a network carrier is to be a part of one of the three large global airline alliances. The dynamic growth figures in offered seats seem to support this. As all three major alliances accepted new members in 2008, their capacities grew considerably compared to a year earlier. Star Alliance (+16%), Skyteam (+13%) and Oneworld (+19%) all increased their number of worldwide weekly flights offensively. As the number of airlines not associated with any alliance shrank, the capacity of unaffiliated airlines was reduced by 20% on average.

Airports

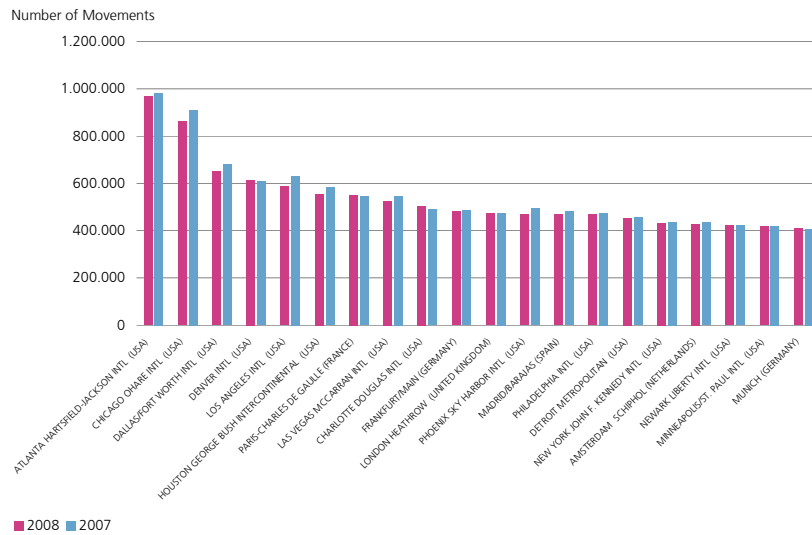
As reported by the Airports Council International (ACI), 2008 marked a break in the growth in passenger numbers experienced during the recent years. Starting with positive results, the year 2008 stopped the positive trend in airports' figures. For the year 2008, there were 56 million commercial passenger



aircraft movements worldwide, which is around 2% fewer than in 2007.

The Top 20 airports worldwide ranked by passenger numbers are made up of five EU, ten US and five Asian airports, including one from the Middle-East. The two busiest airports worldwide are still the US-airports Atlanta Hartsfield-Jackson International and Chicago O'Hare International.

The largest European airport in terms of passenger numbers is London Heathrow on place three. The traffic results for the five largest EU airports within the world Top 20 show slightly differing tendencies. Only Paris Charles De Gaulle achieves an increase in passenger numbers, growing by nearly one



million (67 million). In contrast, the decline in passenger numbers at London Heathrow, Frankfurt/Main, Madrid Barajas and Amsterdam Schiphol ranges from 0.4 to 1.3 million passengers.

The Top 20 in terms of commercial aircraft movements is dominated by US and European airports (14 and 6 airports respectively). The two largest airports worldwide are again the US-airports Atlanta Hartsfield-Jackson International and Chicago O'Hare International. The largest European airport is Paris Charles De Gaulle, which appears on place seven, followed by Frankfurt/Main on place ten. Of these six European airports, only Paris Charles De Gaulle and Munich manage to increase their numbers of flight movements, growing by 7,364 (+1.4%) and 1,698 (+0.4%) respectively. Otherwise, the decline in aircraft movements at the top European airports ranges between 2,574 (-0.5%) for London Heathrow and 13,470 (-2.8%) for Madrid Barajas.

Forecasts

The forecasts from Airbus and Boeing in 2008 for the period through to 2027 are similar. Global air traffic is expected to grow annually by 4.9% (Airbus) or 5.0% (Boeing) on average, measured in passenger kilometres. Compared to the ICAO forecasts published a year earlier, which predicted 9.2 billion passenger kilometres (pkm) for 2025, the two manufacturers forecast almost 12 billion pkm worldwide for 2027. According to Boeing, the front runner in growth

terms will be intra-Asia-Pacific services (+7.0% p.a.) and the markets within Latin America (+6.7% p.a.). The largely saturated markets "within Europe" and "within North America" will only grow by an annual 3.5% and 2.8% respectively and therefore show the lowest expected growth potential (in pkm).

Distinct growth differences are expected for Europe in the short term. For 2009, Eurocontrol expects an average of a 3.1% decrease in flight movements. The national developments diverge with an assumed reduction of 12% in IFR movements for Sweden and Italy, while Eurocontrol expects growth of 3.1% and 3.4% respectively for their immediate neighbours Finland and Slovenia. A tendency towards negative growth is expected for Central and Western Europe, but generally positive growth for countries toward the east, stretching from Finland (+3.1%) in the north to Turkey (4.2%) in the south.

Regulatory

The first step of an Open Skies Agreement between the USA and the EU came into force on 30th March 2008 replacing the previous "community carrier" concept recognised by US. All participating airlines are now free to offer flights between the EU and the USA and beyond. However, ownership of US airlines remains limited to 25% for investors from the EU and EU airlines are not allowed to operate domestic services within the US (cabotage). Negotiations between the EU and the US will continue for a second phase of the Open Skies Agreement, driven by the principle of liberalisation and harmonisation of the markets.

At the end of 2008, the EU finalised its negotiations with Canada concerning a comprehensive aviation agreement. After only one year of negotiations, the agreement will significantly improve the aviation sector as it covers all possible aspects of aviation. It will offer a gradual liberalisation of traffic rights, investment opportunities and will establish a close cooperation across a wide range of issues including safety, security and environmental matters. The final text of the EU-Canada Air Transport Agreement was endorsed in May 2009.

In May 2008, the first horizontal agreement between two regional organisations was reached between the EU and the eight states of the Economic and Monetary Union of Western Africa (UEMOA). This agreement brings the 47 bilateral agreements concerned into line with EU law.

In continuation of the successful liberalisation of the aviation sector, the new regulation on air services entered into force to ensure internal market competition. The new framework on the single market for air transportation in the European Community includes updated rules concerning intra-Community air services, licensing, leasing and public service obligations (PSO) as well as traffic distribution between airports and pricing issues.

On consumer protection, an important milestone was reached in 2008 in the field of transparency in pricing information. Airlines are now obliged to provide information on prices in their advertising inclusive of all applicable fares, charges, taxes and fees. Precise information on and the breakdown of air fare or rate, the taxes, the airport charges and the other charges, surcharges or fees must also be indicated. All optional, additionally bookable services must be made clear right from the beginning of the booking procedure in order to offer the consumer a genuine opportunity to compare prices. Further, optional services are not allowed to be pre-activated - they have to be pro-actively selected by the consumer. This ensures that the customer cannot unwillingly purchase pre-selected options due to having overlooked them.

In March 2009, a new Regulation introducing a new Code of Conduct for computerised reservation systems (CRS) entered into force. It simplifies the existing Code of Conduct and strengthens competition between the CRS providers while ensuring the provision of neutral information to customers at fair distribution costs.

Environment

The European Commission aims to improve the quality of the environment by counteracting the growing climate change impact of aviation. Therefore, aviation will be included in the existing EU Emissions Trading Scheme for the limitation of CO₂ emissions by the year 2012. On October 27th 2008, the EU Council formally adopted a directive on this issue which will come into force in 2009. In order to also limit aviation's NO_x emissions, which can contribute to anthropogenic climate change too, the European Commission will publish a draft proposal on such measures in the year 2009.

Consumer

Beyond the aforementioned price transparency regulation there are further topics of consumer interest. In 2008, four out of five flights travelled punctually within Europe. With this, the performance level of the previous year was more or less achieved and the deterioration in punctuality stopped. The reduced supply from the airlines led to a relaxation of the heavily utilised infrastructure and thus reduced the probability of delays. Among the airlines associated under the AEA, large differences were nevertheless seen. During the summer season - when particularly large numbers of people fly on holiday - Scandinavian Airlines SAS was the most punctual (89% punctuality). At the other end of the scale, some airlines were punctual in fewer than two thirds of all arrivals. There are also flight routes in Europe which display a particularly high probability of delays: those wanting to fly from, for example, Scandinavia to Greece in summer 2008 had to reckon with an over 50% chance of being delayed on their way to their destination. In contrast, there was a positive development in delayed baggage: according to AEA, the number of passengers seeking baggage in summer 2008 dropped from 17 to 13.8 per 1,000 in comparison to the previous year. Here, the range stretched between an excellent 3.6/1,000 cases (AeroSvit/Ukraine) through to an inadequate 24.5/1,000 (bmi/UK).

Manufacturer

The orders placed in 2008 for commercial passenger and cargo aircraft were once again under the 2,000 mark following an absolute high in the previous year. Here, customers from geographical Europe accounted for almost a fifth of the worldwide orders with a total of 390 aircraft. Customers from the EU accounted for 302 aircraft (15.3% of worldwide orders). The largest chunk of orders came from Asia (26.8%) and the Middle East (20.6%). Despite the dynamic order activity, around the same number of aircraft were delivered in 2008 as in the preceding years. A total of 1166 commercial aircraft were delivered in 2008 - 462 from Airbus, which was even 3.8% more than in the year before and 362 from Boeing, 16.8% fewer than in 2007. Boeing's deliveries were seriously impeded by strikes. The respective delivery figures for Embraer and Bombardier were 155 and 113 units.

The European company Airbus once again reported the highest number of ordered aircraft with 916 units, although this represented a drop of around 40% compared to the previous year. The decline in orders impacted even harder upon the American competitor Boeing. Boeing's orders dropped by more than 50% and fell back considerably to only 653 ordered aircraft. The average decline in orders for the industry was 47% compared to the previous year. Embraer and Bombardier received 145 (34 fewer than 2007) and 109 (141 fewer than 2007) respectively. In 2008, the order volume for the two Russian manufacturers Antonov and Sukhoi and for the Chinese manufacturer Harbin Aircraft Manufacturing Corporation grew completely against the trend, reaching double-digit growth rates. However, these manufacturers have a relatively small market share with a total of 44, 20 and 20 orders respectively in 2008.

Safety and Security

For the fourth time in a row, the number of fatalities in worldwide air traffic declined. However, 682 people lost their lives. Despite the positive trend, Europe witnessed two particularly severe air traffic accidents with civilian passengers on board. One was the failed take-off of a Spanair aircraft in Madrid which cost 154 people their lives. The other was the crash of a Russian aircraft during its landing approach in Perm with 88 deaths.

In 2008, the Commission published a proposal for a regulation amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Council Directive 06/23/EEC85. The proposal seeks to extend the EASA's competencies to the remaining key safety fields of aerodromes, air traffic management and air navigation services in order to improve safety in these subjects.

Based on Regulation (EC) No 2111/200577 ("Blacklist"), the Commission, in close cooperation with the authorities responsible in the Member States, has the right to ban operators from operating into EU airspace, should common safety criteria be violated. At the end of 2008, all carriers from Angola, the Democratic Republic of Congo (DRC), Equatorial Guinea, Gabon

(except for Gabon Airlines and Afrijet subject to strict restrictions), Indonesia, the Kyrgyz Republic, Liberia, Sierra Leone and Swaziland were banned. In addition, all operations of Air Koryo from the Democratic People's Republic of Korea, Air West from Sudan, Ariana Afghan Airlines from Afghanistan, Siem Reap Airways International from Cambodia, Silverback Cargo Freighters from Rwanda, Ukraine Cargo Airways, Ukraine Mediterranean Airlines and Volare Aviation from Ukraine remained on the blacklist.

The Directive (EC) 300/2008 on common regulations in the field of civil aviation security came into force in April 2008 after an agreement on the wording was reached in the arbitration commission. The Directive (EC) 2320/2002 was consequently repealed by (EC) 300/2008 in order to achieve a simplification, harmonisation and clarification of the existing regulations, plus the improvement of the security level at airports. Directive No. 300/2008 repeals the Directive 2320/2002 from the time point stated in the implementation regulations which are enacted in accordance with the procedures named in Article 4 Sections 2 and 3, at the latest however 24 months after their coming into force (April 2010).

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 the ICAO statistics is 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 EU countries, regularly report to the ICAO on the traffic levels achieved by their airlines.

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 the ICAO rules, a flight is classed as international if either the airport of origin or destination (or both) is located outside the territory of the airlines' home country. Thus, cabotage, that is 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 on the territory of the airline's home country. ICAO also makes a distinction between scheduled and non-scheduled airlines. According to ICAO, scheduled airlines are the predominant means of transportation. The following discussion only relates to flights performed by scheduled airlines.

ICAO statistics are supplemented by data from the International Air Transport Association (IATA). The IATA data only represents a part of the global air traffic market, however. For example, most airlines in the USA are not IATA members. The so-called Low Cost Carriers, which have grown strongly in recent years, are also not members in many cases. It can therefore be presumed that this quickly-growing, low-cost segment is underrepresented in the IATA statistics.

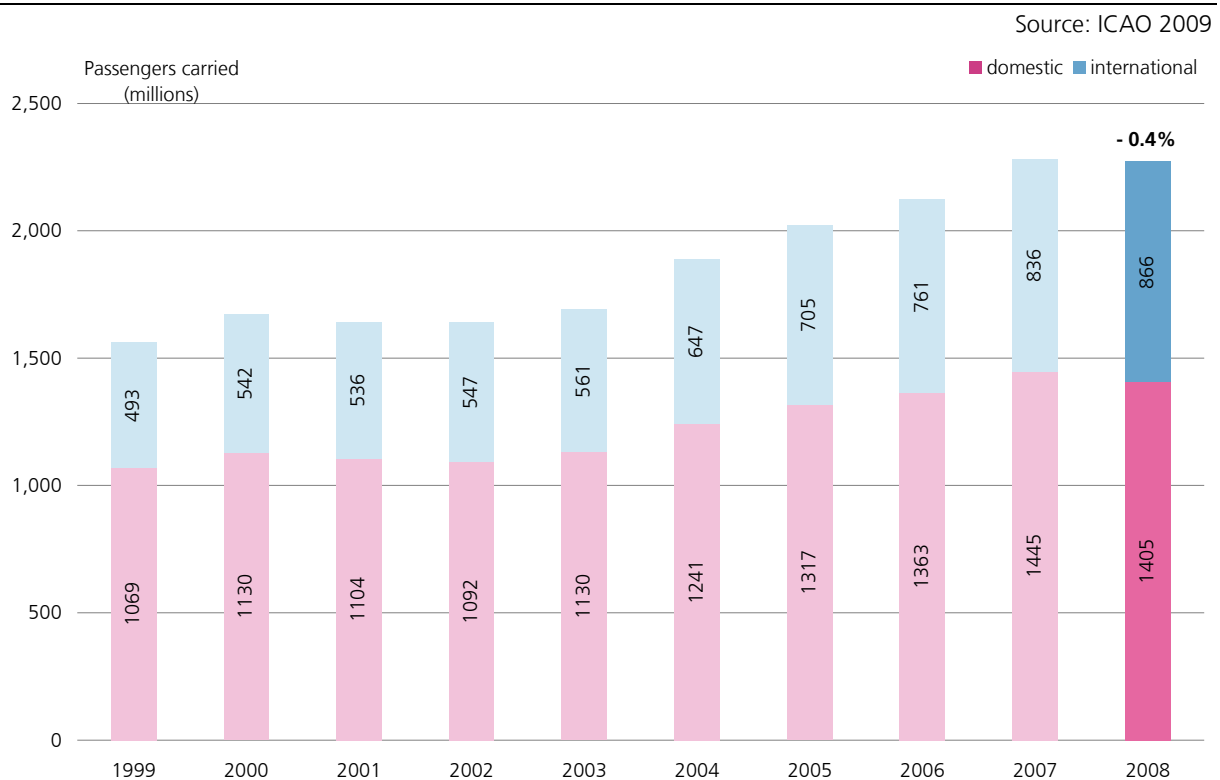
1.1.1 Global passenger volume

For passenger transport, 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 2008 only an aggregated number for both domestic and international scheduled airline traffic is available. 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.

From 2007 to 2008 ICAO declares a passenger growth of -0.4% from 2,281 to 2,271 million passengers carried. In this volume the non-IATA market share increases significantly, reaching around 20% of the total scheduled traffic.

Worldwide passenger traffic grew from approximately 1.5 billion to nearly 2.3 billion passengers in the decade from 1998 to 2008. This corresponds to an average yearly growth of approximately 4.4% and an overall growth of approximately 54%. It is clear however that the dynamic upward trend of the period prior and after the stagnation between 2001 and 2003 is now over for the time being.

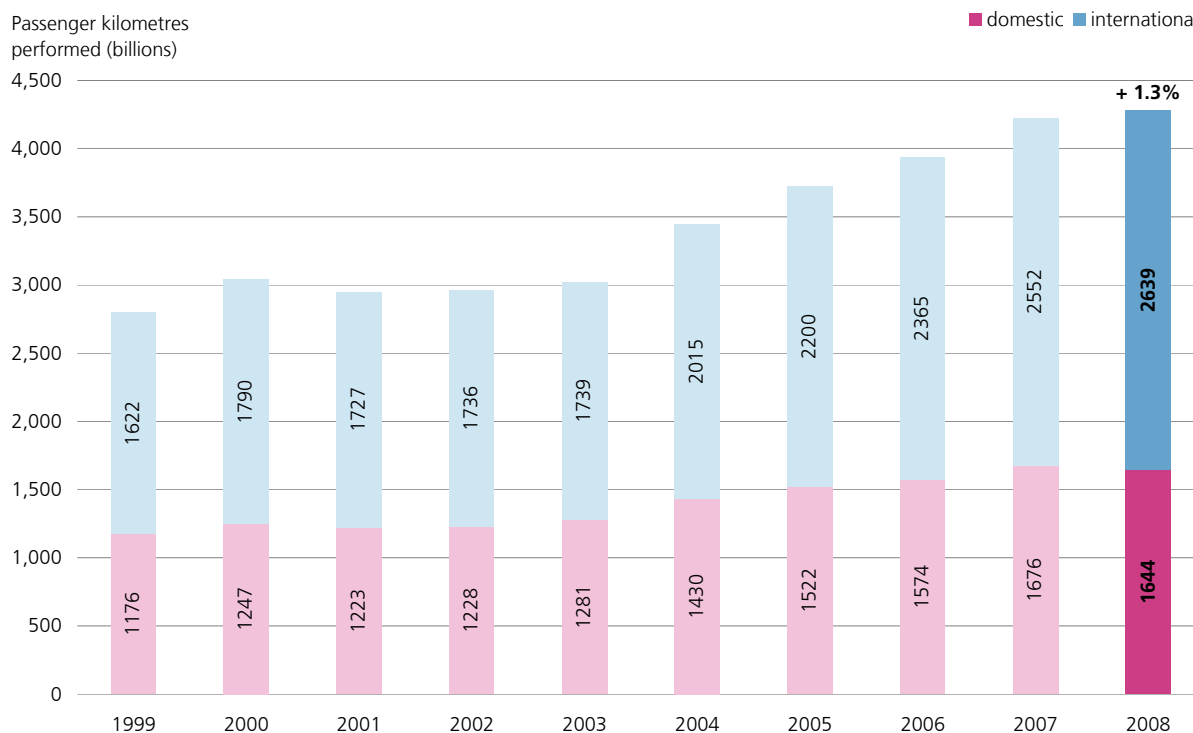
Figure 1-1: Development of the global passenger volume



During the period studied (1999 to 2008), 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 2009



For the volume of passenger kilometres performed, ICAO declares for 2008 a slight growth of 1.3% from 4,228 to 4,283 billion passenger kilometres. The total volume in 2008 is divided into 1,644 billion passenger kilometres in domestic traffic (38%) and 2,639 billion passenger kilometres in international traffic (62%). While the domestic traffic declines from 2007 to 2008 by about 1.9% from 1,676 billion pkm to 1,644 billion pkm, the international traffic rises from 2,552 to 2,639 billion pkm - a growth of 3.4%. One of the most important reasons for the slow growth in 2008 can be assumed to be the crisis on the global financial markets and the following economic crisis.

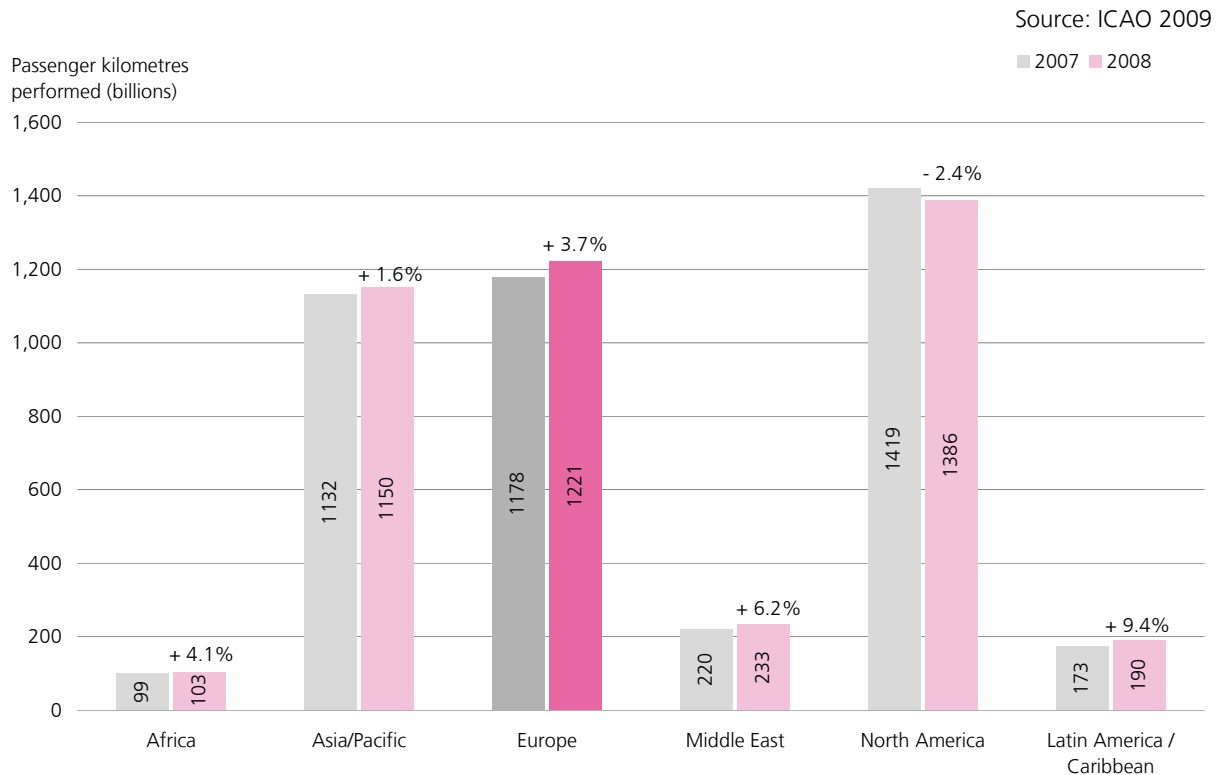
Since 1998, the level of traffic has increased from 2,627 billion passenger kilometres to 4,283 billion passenger kilometres. This corresponds to a growth of 63%, compared to the growth in traffic volume of 54% mentioned above.

1.1.2 Passenger traffic in the world regions

The growth of passenger kilometres differs greatly in the different world regions according to the ICAO information (see Figure 1-3). While it continued to grow relatively strongly in the comparatively small regions of Middle East with 6.2% and Latin America with 9.4%, it stagnated in the regions of Africa, Asia/Pacific and North America to a large extent. With an anticipated growth of 3.7%, the increase in Europe was still above average (world growth 1.3%). Here, the growth in each of the world regions is affected by different factors. Besides the

worldwide financial and economic crisis, which will primarily have dampened aviation demand in the second half of 2008, it was still possible to observe a certain amount of growth in Europe due to low-cost traffic in the first half of the year. In North America, which is already saturated with low-cost offerings, the economic crisis is likely to have already led to a stronger damping of growth.

Figure 1-3: Development of the global passenger kilometres in the world regions

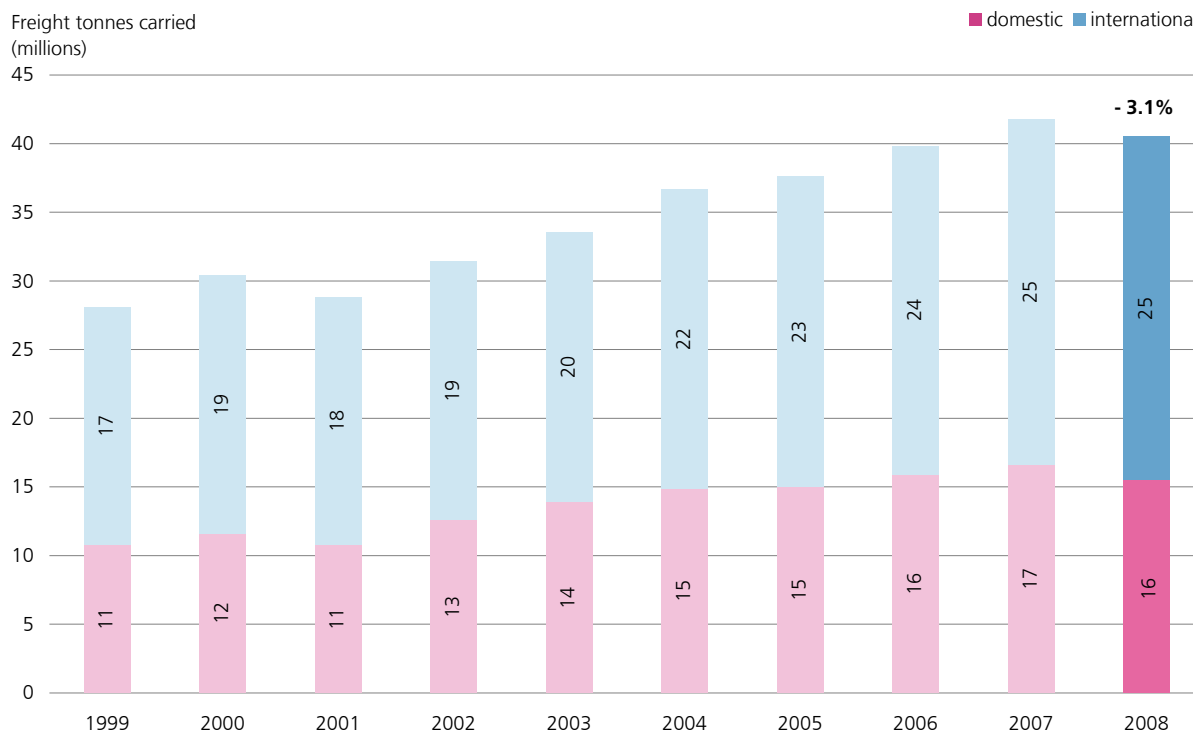


1.1.3 Global freight volume

In 2008, ICAO reported worldwide freight traffic to be nearly 41 million tonnes. This represents a decrease of 3.1% in comparison to 2007. This is sharp decrease compared to the 3.9% growth achieved in the previous year. Figure 1-4 shows the trend over the past decade (1999 to 2008). 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 2009



1.1.4 Comparison of the 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 IATA and grouped into six different world-areas. The growth rates are based on the comparison of the period January - December 2008 versus January - December 2007. The values of each area are obtained by combining the air traffic performance of all IATA airlines resident in the respective area. Quantities of flights operated by a North American airline from Asia to Europe are possibly allocated to the area "North America". Industry means all IATA airlines taken together.

	Jan-Dec 2008 vs. Jan-Dec 2007			
	RPK Growth	ASK Growth	PLF	FTK Growth
Africa	-4.0%	-4.2%	70.2	-2.5%
Asia/Pacific	-1.5%	1.2%	73.9	-6.6%
Europe	1.8%	3.8%	76.6	-2.8%
Latin America	10.2%	9.2%	74.0	-13.5%
Middle East	7.0%	8.6%	74.9	6.3%
North America	2.9%	4.3%	79.8	-1.9%
Industry	1.6%	3.5%	75.9	-4.9%

Table 1-1: Growth rates of selected indicators

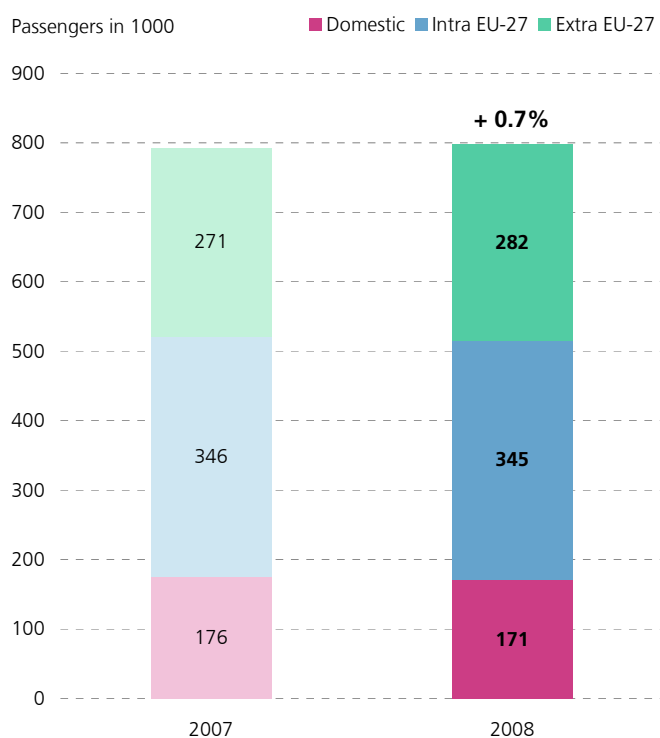
Source: IATA 2009

Airlines licensed in the world areas North America, Europe, and Asia/Pacific altogether achieved approxima-

tely 90% of the world passenger kilometres in 2008. In 2008, the European IATA Airlines had an average level of RPK growth with 1.8%.

1.2 Air traffic in EU-27

The following information is based on the air traffic statistics published by Eurostat. In comparison to the 2007 report, a methodical amendment was made with regard to the passenger-related data. The "Passengers carried, Departure" has been taken as a key parameter in the current report, while in the 2007 report the total number of passengers, which also includes the disembarking passengers, was usually shown. The figures used now have the advantage that the double-counting of disembarking passengers in intra-European traffic no longer causes problems for the data forecasting. This of course means that the data is no longer directly comparable with the information in last year's report. The counting method now used leads - compared to the 2007 report - to a different proportioning in the categorisation of passengers into domestic, intra-EU and extra-EU traffic.



1.2.1 European passenger traffic

Figure 1-5: Development of passenger traffic in the EU-27

Source: EUROSTAT

According to the Statistical Office of the European Communities, EUROSTAT, a total of 798 million passengers were transported by air in EU Member States in 2008. Compared to the preceding year, this corresponds to a growth of approx. 0.7%. The total traffic in 2008 consists of the domestic air traffic (170.6 million passengers, which corresponds to approx. 21.4% of the total traffic), the intra-EU air traffic (345 million passengers; 43.2%)

and also the extra-EU air traffic (282.3 million passengers; 35.4%, see Figure 1-5).

1.2.2 Passenger traffic flows between EU Member States

When considering the busiest flows of boarding passengers in 2008, one notices an above-average growth in the relations Spain – France (+4.1%), Germany – Austria (+4.2%), Germany – Poland (+7.5%) and UK – Poland (+13.9%). These above-average growth rates could be connected with broadening networks of the Low Cost Carrier related to these country-pairs. The demand between Germany and Austria could have been additionally boosted by the European

football championship. Furthermore, a relatively high growth was visible between France and Italy and between the UK and Portugal. The air traffic demand stagnated or dropped on most other relations. The demand between the UK and the Netherlands dropped particularly sharply - by around 8%.

Table 1-2: Main passenger traffic flows between EU Member States in 2008

Source: EUROSTAT

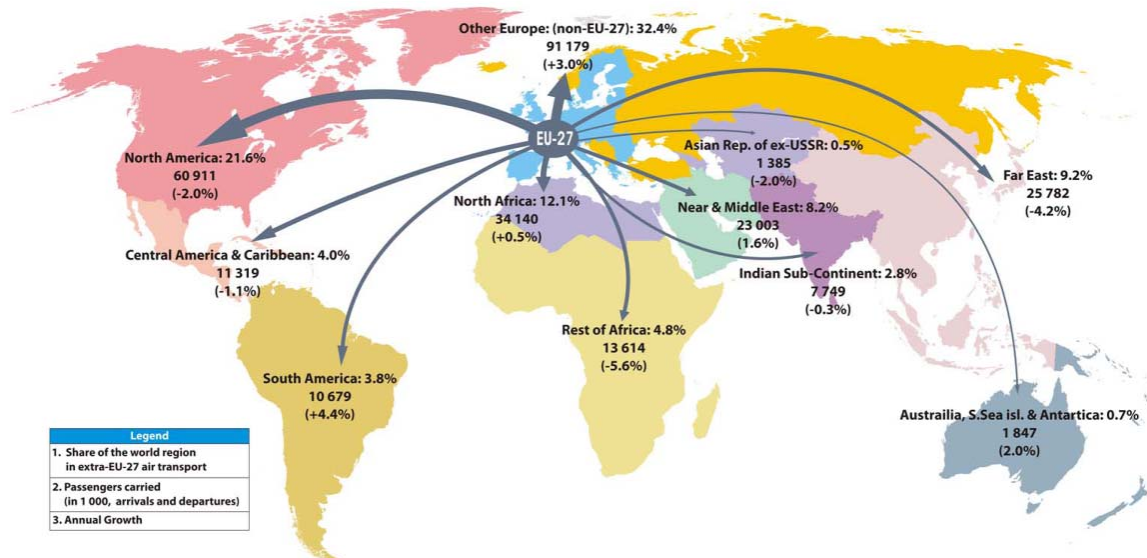
Passengers 2008 in thousand			change to 2007
UK	↔ Spain	34,664	-2.6%
Germany	↔ Spain	21,870	-1.2%
UK	↔ France	11,890	-1.2%
Germany	↔ UK	11,087	-3.9%
UK	↔ Italy	10,716	-4.1%
Germany	↔ Italy	10,432	-4.2%
Italy	↔ Spain	9,881	-3.9%
France	↔ Spain	8,418	4.1%
France	↔ Italy	8,139	3.7%
UK	↔ The Netherlands	7,668	-8.3%
Germany	↔ France	7,052	-3.5%
Germany	↔ Austria	5,823	4.2%
UK	↔ Portugal	5,454	3.4%
UK	↔ Greece	5,198	-4.7%
Spain	↔ The Netherlands	4,892	-2.8%
Germany	↔ Greece	4,795	-3.9%
UK	↔ Poland	4,681	13.9%
Spain	↔ Belgium	3,567	3.1%
Spain	↔ Ireland	3,532	-1.7%
UK	↔ Cyprus	2,955	-0.7%
Spain	↔ Portugal	2,857	-3.1%
Germany	↔ Poland	2,796	7.5%
Italy	↔ The Netherlands	2,746	-4.0%
Germany	↔ The Netherlands	2,678	2.7%

1.2.3 Passenger traffic flows between the EU-27 and other world regions

The EUROSTAT air traffic statistics also give data on passenger flows between EU-27 and non-EU countries. In total, approx. 282 million passengers were carried to and from other regions in 2008. This is 4.2% growth vs. 2007 in comparison to the -0.5% growth in the intra-EU market. Figure 1-6 shows the main passenger flows between EU-27 and selected world regions.

Figure 1-6: The main passenger flows of the EU-27 from/to selected world regions in 2008

Source: EUROSTAT



Source: Eurostat (AVIA_PAOCC)

The passenger flows between EU-27 and non-EU-27 countries consisted mainly of the passenger traffic between the EU and other European Countries like Switzerland, Norway or Turkey. These traffic flows grew in 2008 by about 7% in total. For intercontinental traffic, the relation between the EU and North America was by far the most important one. More than 60 million passengers (1.3% growth) were carried from EU-27 to North America. Another significant intercontinental flow with nearly 25.8 million passengers is the one between Europe and the Far East with the countries Japan, China and Korea. Between the EU and South America, an above average growth was seen with 8.8% to 10.7 million passengers. Further important passenger flows were seen between the EU-27 and North Africa with 34.1 million passengers (almost 8% growth), the Near and Middle East (23 million passengers) and the rest of Africa (13.6 million passengers).

Figure 1-6 also shows the share of the different world regions on the total extra-EU transported passenger volume. The European non-EU (32% of the total traffic of Extra-EU-27), North American (21.6%) and North African (approx. 12.1%) 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 the Rest of Africa with 4.8% displayed lower shares. The smallest flow appeared to be Australia, South Sea Islands and Antarctica with merely

0.7%. One reason could be the fact that those passengers who either stop over or change planes will be not allocated to the country of their final destination.

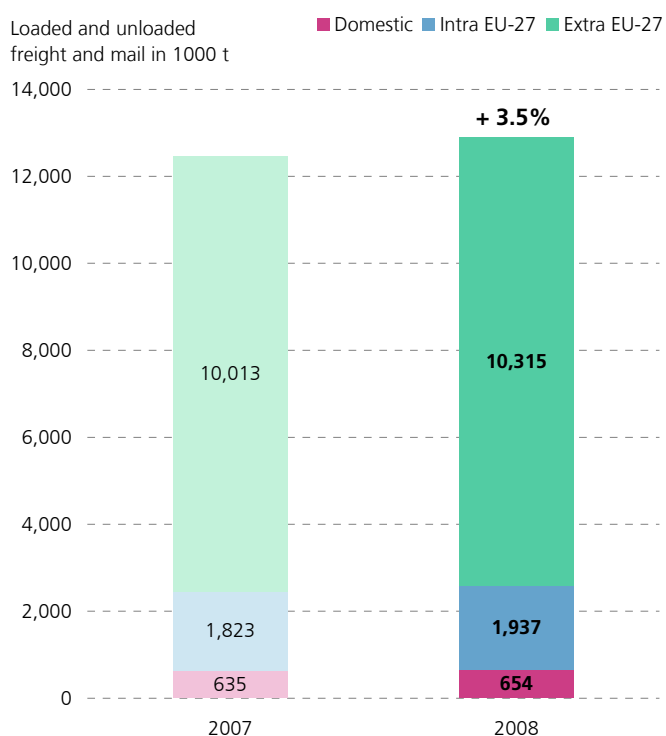
1.2.4 European air freight traffic volume

Besides the data on passenger-carrying 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 each traffic relation, which for example means that between two cities more goods are carried in one direction than in the other. Furthermore it should be noted that the declared destination airport is not necessarily the final destination airport of the shipment.

Figure 1-7: Freight and mail handled (loaded and unloaded) in the EU-27 in 2007 and 2008

Source: EUROSTAT

From, to and within the EU-27, a total of approx. 12.9 million tonnes of freight and mail were handled in 2008. This quantity comprises the quantity of shipments loaded and unloaded at airports of EU Member States. The mentioned total of 12.9 million tonnes consists of 0.6 million tonnes of freight and mail carried on domestic routes, 1.9 million tonnes of shipment carried on routes between EU Member States and over 10.3 million tonnes of shipment carried on routes to non-EU countries (see Figure 1-7). Compared to 2007, the total handled freight of 12.4 million tonnes increased by 3.5%. Domestic traffic grew by about 2.9%, intra-EU traffic increased by 6.2% and extra-EU traffic by 3.0%.



1.2.5 Freight traffic flows between EU-27 Member States

As already mentioned, freight traffic "unpairs" are likely to occur on each traffic relation. Consequently, the main freight and mail flows between the specific EU Member States are displayed in a destination-oriented way (see Table 1-3 on the next page).

Compared to the big intercontinental freight flows, the quantity of freight carried between individual EU Member States is rather low. The freight flow from Germany to UK shows the

Freight flows 2008		1000 tonnes	change to 2007
Germany → UK		77.2	5.7%
Germany → France		74.4	41.1%
UK → Germany		66.5	27.6%
Germany → Spain		58.1	24.8%
France → Germany		53.7	16.1%
Germany → Italy		46.9	26.2%
Belgium → UK		34.0	-32.6%
Germany → Sweden		32.5	1.4%
UK → Belgium		29.7	-26.9%
Belgium → Germany		29.6	-10.5%
Spain → Germany		27.9	21.0%
Germany → Belgium		25.3	-36.7%
Belgium → Spain		21.6	-38.4%
France → UK		21.5	-4.0%
Belgium → Italy		19.1	-4.6%
Germany → Poland		18.3	21.0%
UK → Ireland		18.1	-17.9%
UK → France		18.1	54.9%
France → Spain		18.0	0.3%
Belgium → France		15.3	-48.6%
Belgium → Sweden		15.0	-31.2%

highest volume (approx. 77,200 tonnes). Other important freight flows were seen in 2008 between Germany and France (74,400 t), UK and Germany (66,500 t), Germany and Spain (58,100 t), France and Germany (53,700 t) and Germany and Italy (46,900 t). Most of these freight flows also have a high growth. However, most flows to and from Belgium decreased in 2008. The reason for this is the relocation of so-called integrator flights from Brussels to Leipzig. This relocation can also explain some of the growth on relations to and from Germany. However, it must be considered that a significant part of the cargo handled in each country can also be further transported by air, road or rail to the actual destination country.

Table 1-3: Important freight traffic flows between EU Member States in 2008

Source: EUROSTAT

1.2.6 Freight traffic flows between the EU-27 and other world regions

Table 1-4 shows the main linkages between the EU-27 and selected world regions in 2008. It should be noted – as already mentioned before – that the flights’ true origins and destinations are not necessarily identical to 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 2008, more than 782,000 tonnes were carried from the EU-27 to the Middle East region (8.0% increase) and more than 702,000 tonnes were received from this region (1.8% increase). However, the majority of these shipments probably originated from or got sent to other parts of Asia rather than the Middle East and were only transhipped in the Middle East. Indeed, big transshipment 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. 1,303,000 tonnes were carried towards the West (-7.8% growth), and more than 1,392,000 tonnes towards the East (5.1% growth). Furthermore, the corridor EU-27 – Far East (including China, Japan and Korea) shows a big transport volume. 1,292,000 tonnes (6.6% growth) were carried from the EU-27 directly to East Asia, whereas more than 1,919,000 tonnes were received from this region by direct flights. Further important linkages occurred between the EU-27 and the other European countries, South America, the Indian Sub-Continent and Africa.

Table 1-4: Important air freight traffic flows between the EU-27 and other world regions in 2008

Source: EUROSTAT

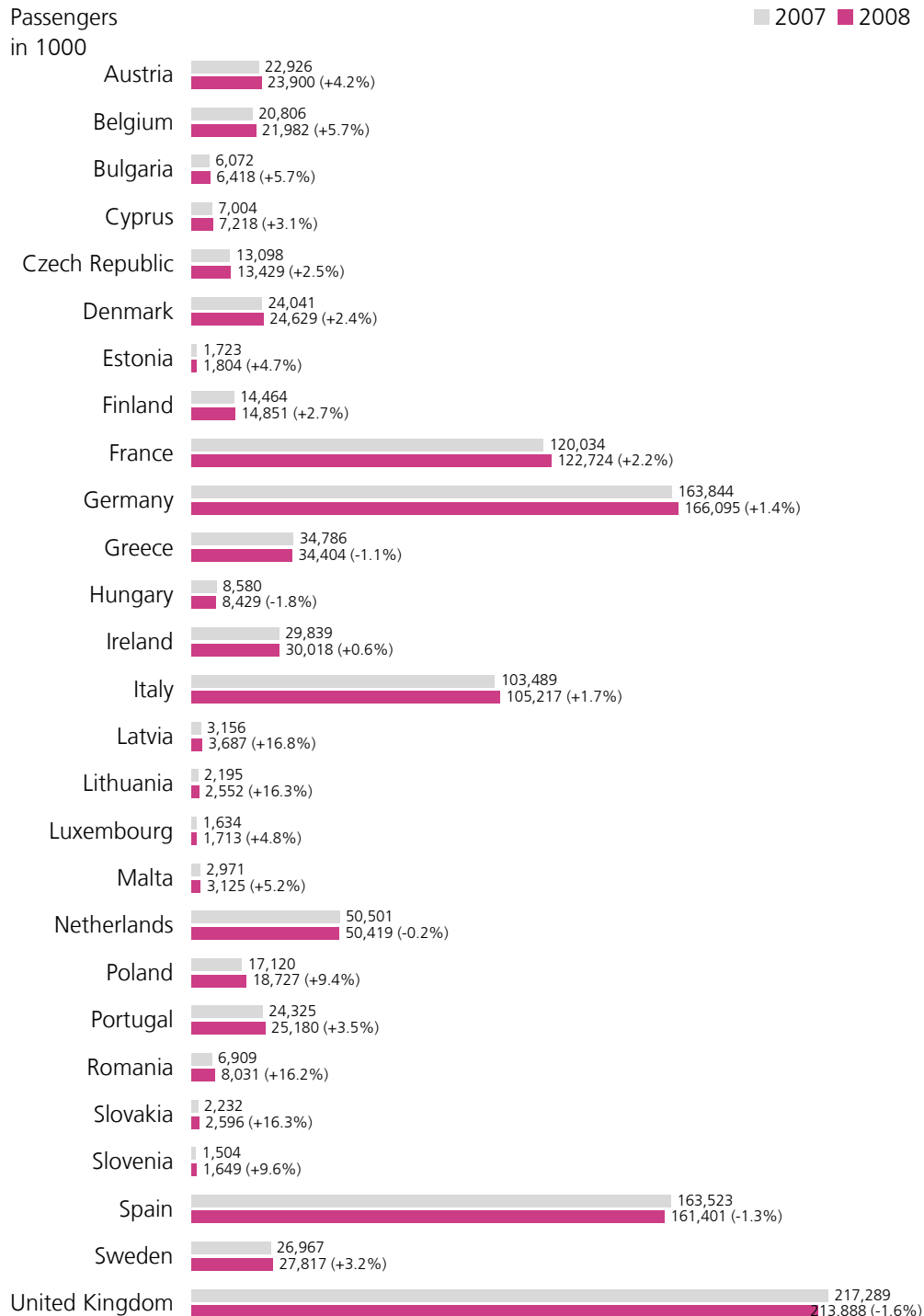
EU-27: loaded and unloaded Freight in 2008 in thousand tonnes				
	unloaded from	+/- to 2007	loaded to	+/- to 2007
Far East	1,919	14.8%	1,292	6.6%
North America	1,392	5.1%	1,303	-7.8%
Near and Middle East	702	1.8%	782	8.0%
South America	237	8.7%	225	3.4%
Indian Sub-Continent	226	-5.4%	206	2.5%
East Africa	196	10.5%	70	18.9%
Europe except EU & former USSR	168	9.2%	164	2.1%
North Africa	132	-13.3%	104	-25.7%
Southern Africa	131	-8.1%	180	17.8%
Central America/Caribbean	73	-4.5%	125	15.0%
Central and West Africa	72	2.7%	187	11.8%
European Republics of the former USSR	65	-24.9%	110	4.0%
Asian Republics of the former USSR	45	-72.9%	74	-12.9%
Oceania (incl. Australia)	40	0.7%	41	5.7%

1.3 Air traffic in EU Member States

1.3.1 Passenger volume

Figure 1-8: Passenger traffic of the EU-27 Member States

Source: EUROSTAT



In 2008 the air traffic demand increased in most countries. Especially high growth rates are shown in the countries Latvia (+16.8%), Lithuania (+16.3%), Romania (+16.2%) and Slovakia (+16.3%). In these countries the total volume is still at a relatively low level. Only Romania, with almost 8 million passengers in 2008, achieved quite a large volume. The countries with high volumes had widely differing growth rates: the United Kingdom -1.6% (to 213.8 million passengers), Spain -1.3% (161.4 million passengers), the Netherlands -0.2% (50.4 million passengers), Germany 1.4% (166.1 million passengers) and France 2.2% (122.7 million passengers).

1.3.2 Freight volume

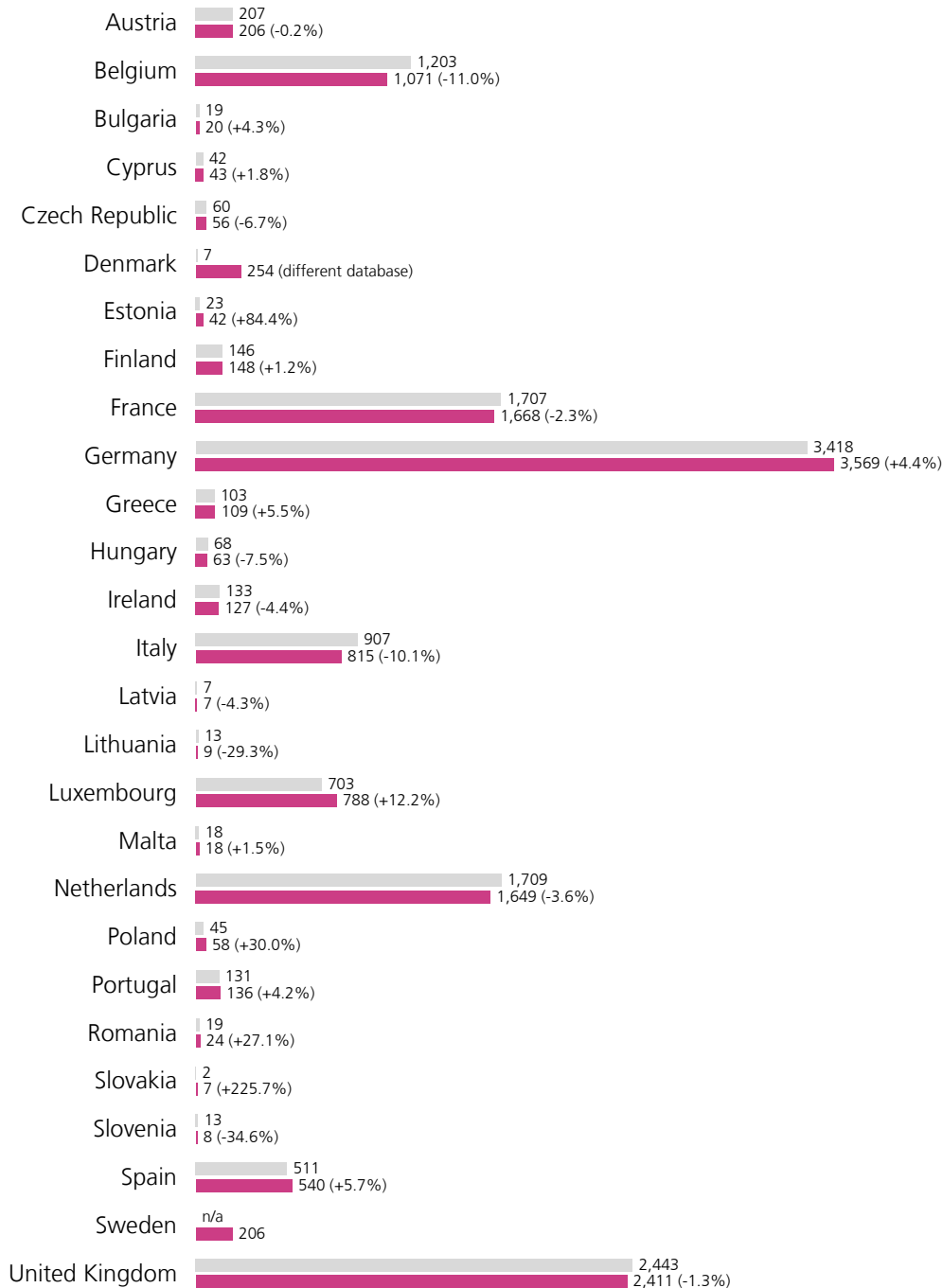
On examination of the cargo and post volumes handled in the EU Member States, Belgium (1,071,000t), France (1,668,000t), Germany (3,569,000t), the Netherlands (1,649,000t) and the UK (2,411,000t) showed the highest volumes by far. These figures include the unloaded shipments as well as the loaded cargo volumes. Growth varied widely from country to country, however. In Belgium, there was a reduction of 11% due to - as previously mentioned - the relocation of DHL's logistics activities to Germany in the first half of 2008. The freight volume decreased also in France (-2.3%), the Netherlands (-3.6%) and UK (-1.3%). In Germany there was an increase of 4.4%. In the countries with low volumes, there were cases of high increases (Estonia +84% although on a very low level), but also cases of high losses (Lithuania -29%). With low handling volumes, no connection can be made to economic activity as the changes in demand are often connected with modifications to logistics chains.

Figure 1-9: Freight traffic of the EU-27 Member States

Source: EUROSTAT

Freight in 1000 t

■ 2007 ■ 2008



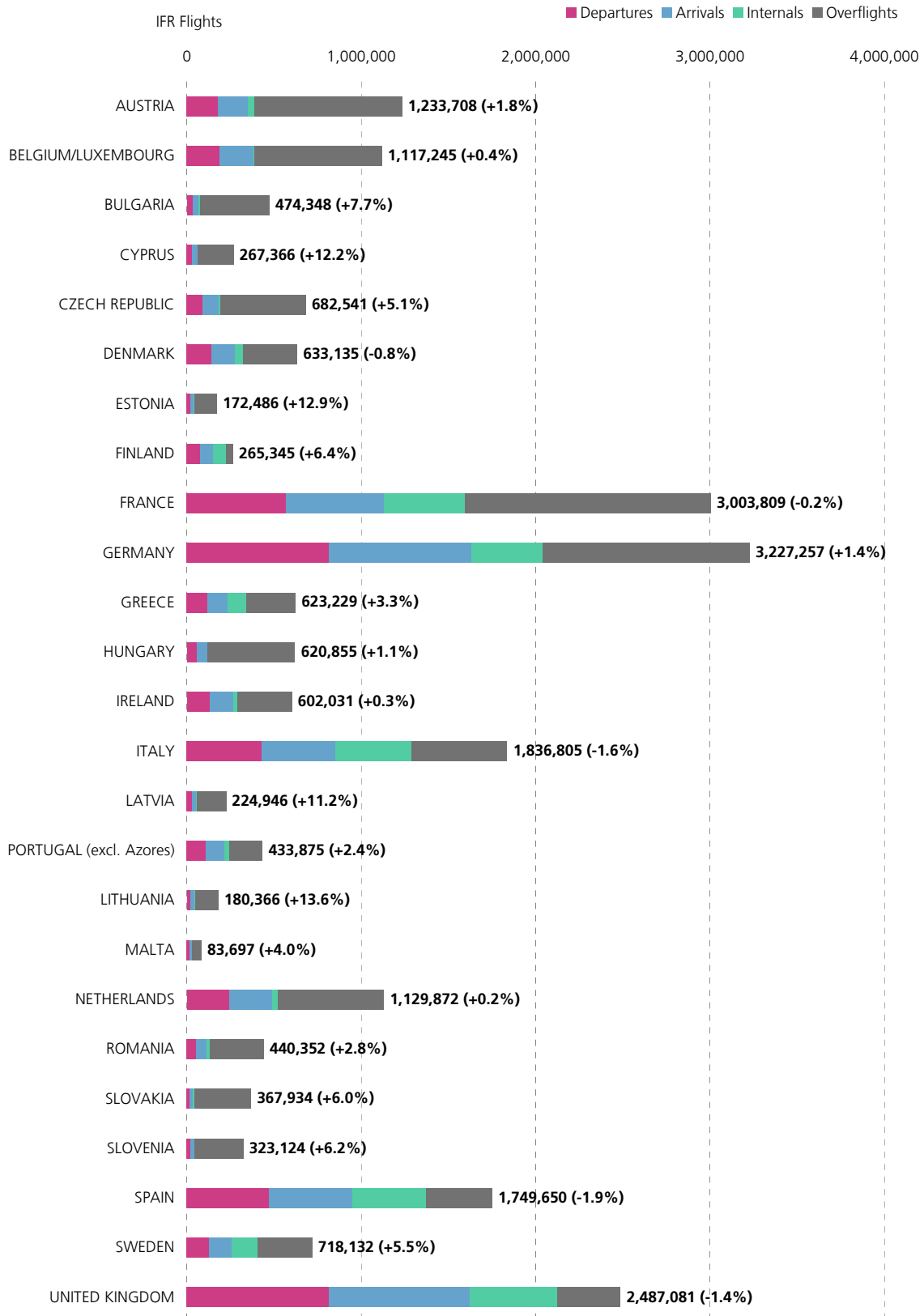
1.3.3 Flight volumes in the European countries

Besides the traffic (passengers and goods) handled in each country – the demand side of air transport – the number of flights performed constitutes an essential measurement for air traffic. Figure 1-9 shows flight movements performed in European countries in 2008. Whereas the statements on European traffic development, as given in the preceding chapters, are based on data provided by EUROSTAT, now data provided by the European organisation for the safety of Air Navigation, EUROCONTROL, is used. This data is not directly comparable with that provided by EUROSTAT. On the one hand it does not only refer to EU member countries, on the other hand it includes all flights performed according to Instrument Flight Rules (IFR). The IFR flights are not identical with those indicated by EUROSTAT in the air traffic statistics. However, the flights indicated in the EUROSTAT air traffic statistic constitute the major part of IFR flights recorded by EUROCONTROL. Besides airplanes departing from or arriving in a country, the so-called overflights are also relevant for the evaluation and planning of flight control 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 1-9 shows the respective flights of each EU member country, broken down by departures, arrivals, domestic flights (here each flight includes take-off and landing procedure), as well as overflights. The number of overflights in a country does not necessarily show the importance of a country in terms of traffic. It has more to do with its areal size and its position in Europe. Thus, for example, the Netherlands shows a high number of overflights compared to the number of arrivals and departures. The same is true for Austria and Belgium/Luxembourg. Flights departing from and arriving at airports located in the same country are called domestic flights. For this parameter, the dimension of a country (regarding the areal size as well as the 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 are also indicated. For the parameter departing and arriving airplanes, the 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 2008), 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 2008, with approx. 1 million respective arrivals and departures crossing the border of the Eurocontrol district, 7.5 million internal flights within the Eurocontrol district and about 0.1 million flights which crossed the Eurocontrol district. Compared to 2007, flight movement traffic increased by about 0.6%. When considering flight movement growth in each country, the high growth rates of East European countries are revealed. For example, flight movement traffic in Lithuania grew by approx. 13.6% and in Estonia by 12.9%. However, when looking at the absolute figures, these countries show only moderate traffic. The most major countries in terms of flight movement traffic show comparatively below average growth (France -0.2%, Italy -1.6%, Spain -1.9% and the UK -1.4%). Only in Germany did the flight movements rise in 2008 - by about 1.4%.

Figure 1-10: IFR flights in EU Member States in 2008

Source: Eurocontrol



1.4 General Aviation

General aviation in the EU is a diverse and dynamic sector undergoing rapid changes. It involves a wide spectrum of aircraft ranging from gliders to complex business jets and provision of high value services such as aerial works or emergency and business door-to-door transportation. It constitutes an important part of the EU aeronautical industry. Figure 1-11 gives a review of the different elements of general aviation with their relationship to each other and commercial scheduled flights.

Following the consultations on general aviation in 2007, the Commission published a communication concerning an agenda for a sustainable future in general and business aviation¹ in January 2008. It is the first time since creation of the EU internal aviation market that the Commission has studied this sector, quantified its value and identified the challenges that it is facing. The Commission proposes to integrate general and business aviation into the EU air transport policy.

The main elements of the abovementioned agenda are:

- Improving data gathering and building a basic set of data regarding European general and business aviation
- Screening legislation to ensure proportionality because of limited resources in this field of aviation to keep up with changes in regulatory or technical requirements
- Integrating general and business aviation into the capacity optimisation initiatives as regards airports and airspace
- Facilitating access to world markets for the manufacturing industry and commercial business aviation within the EC external air transport policy
- Ensuring environmental sustainability to minimise the impact of general and business aviation on the environment
- Enhancing research and development also in general and business aviation

In April 2008, the Council welcomed the Commission communication providing a clear overview of the sector and presented a coherent position as regards its future development².

In September 2008, a hearing on general and business aviation took place on request of the Commission as the next important step in the EU-wide debate on the future of this field in aviation³. The Commission proposed to present a roadmap of concrete actions implementing its agenda.

¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0869:FIN:EN:PDF>

² http://ec.europa.eu/transport/air/internal_market/doc/ga_council_conclusions.pdf

³ http://ec.europa.eu/transport/air/internal_market/general_aviation_hearing_en.htm

In the field of air safety and in line with the principle of proportionality, the Commission determined that the current provisions of Annex I (Part M) to Regulation (EC) No 2042/2003 are too stringent for aircraft not involved in commercial air transport. The Commission adopted two regulations revising requirements for continuing airworthiness of aircraft not involved in commercial air transport, in order to adjust them to the complexity of different categories of aircraft and types of operations while ensuring a uniform and high level of safety across the EU⁴.

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 still growing faster than the market for scheduled passenger flights. The number of operators in scheduled aviation in Europe is about 700. Although precise figures are difficult to obtain, the number of operators in business aviation is probably over 700. Given this and the fact that business aviation is around ten times smaller than scheduled aviation, most operators have only one or two aircraft. Only 10% of business flights are over 2 000 km and about half of them are less than 500 km, thus most business flights are shorter than the average scheduled flight. The European business fleet has grown by about 3 000 airframes in the last two years and is expected to reach about 4 600 by 2017. If taxi operations grow as strongly as expected in the future, business aviation could contribute 0.8 percentage points per year to total growth in traffic of about 3.7% to 4.7% per year (Eurocontrol 2008) – however this growth has now been affected by the economic downturn.

Annually updated data on business aviation is often still difficult to obtain, as a number of studies are conducted only on a one-off or irregular basis. Therefore, statistics from past years were included provided they possess enough significance for the year 2008.

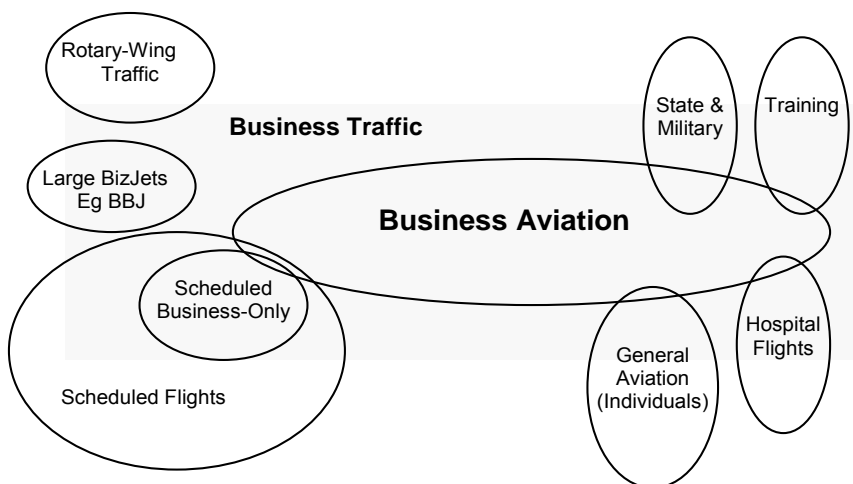


Figure 1-11: General aviation and business aviation

Source: Eurocontrol 2008

In this report, general aviation is defined similarly to the definition used by Eurocontrol (2008) for business aviation, i.e. by aircraft type, as this captures the

⁴ Commission Regulation (EC) No 1056/2008 of 27 October 2008 amending 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
Commission Regulation (EC) No 1057/2008 of 27 October 2008 amending Appendix II of Annex to Regulation (EC) No 1702/2003 concerning the Airworthiness Review Certificate (EASA Form 15a)

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 2008):

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

Table 1-5 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 1-5: 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 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 no more 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).

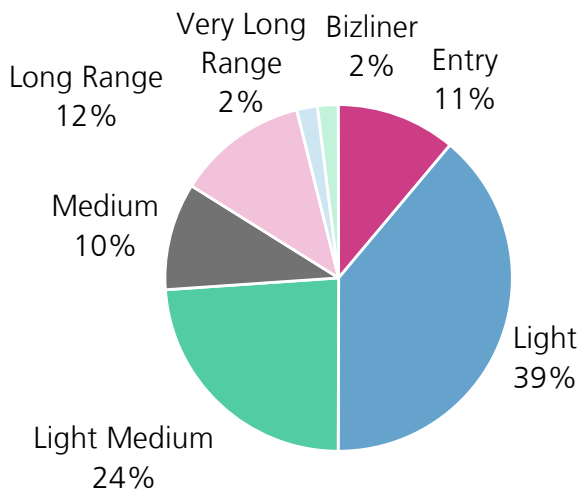


Figure 1-12 depicts the fleet distribution among the different classes of business jets. In 2002, the light and light medium class accounted for nearly two thirds of the whole business jet fleet.

Figure 1-12: Worldwide fleet distribution in 2002

Source: HSH Nordbank 2005, Rolls Royce

Table 1-6 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.

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Table 1-6: 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 1-13 displays the share of European business aviation by country, both in terms of aircraft movements and active fleet. The top three countries (Germany, United Kingdom and France) already cover more than half of the aircraft movements. On the other hand, the top three countries (Germany, United Kingdom and Switzerland) cover only about 43% of the registered fleet. Interestingly, Switzerland has a disproportionate share of business jets registered compared to aircraft movements, but generally, the number of business jets and business jet movements in a country is strongly positively correlated with country size.

Figure 1-13: Business jet movements and business jets registered per country

Source: PricewaterhouseCoopers 2008, Eurocontrol 2008

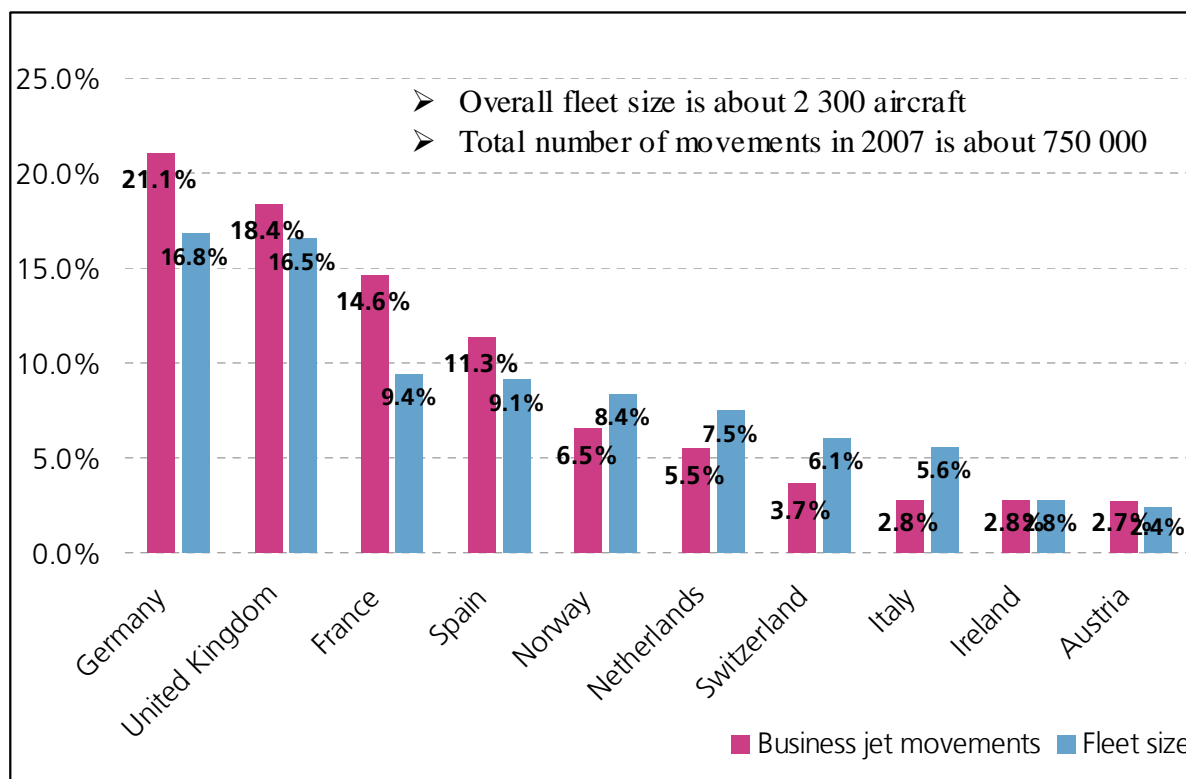


Table 1-7 shows the ownership structure of business jets in the aforementioned five largest markets. Most business jets are operated by private companies and therefore the share of business jets owned by private persons or the government is rather low. However, 26% of the business jets in France are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

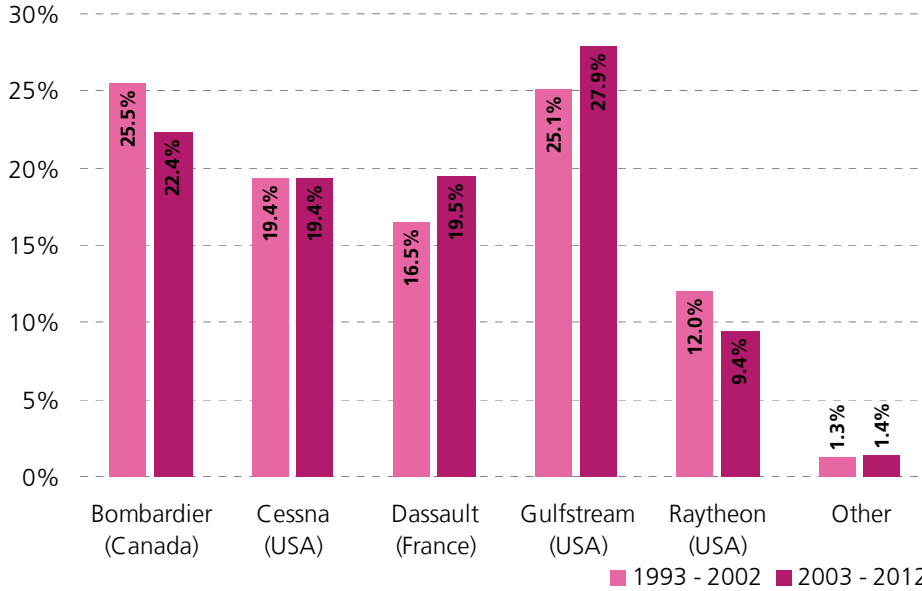
Table 1-7: Ownership structure of business jets
Source: HSH Nordbank 2005, Jetnet

While Airbus and Boeing are the main manufacturers of airliners, the market for business jets is rather fragmented. Figure 1-14 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.

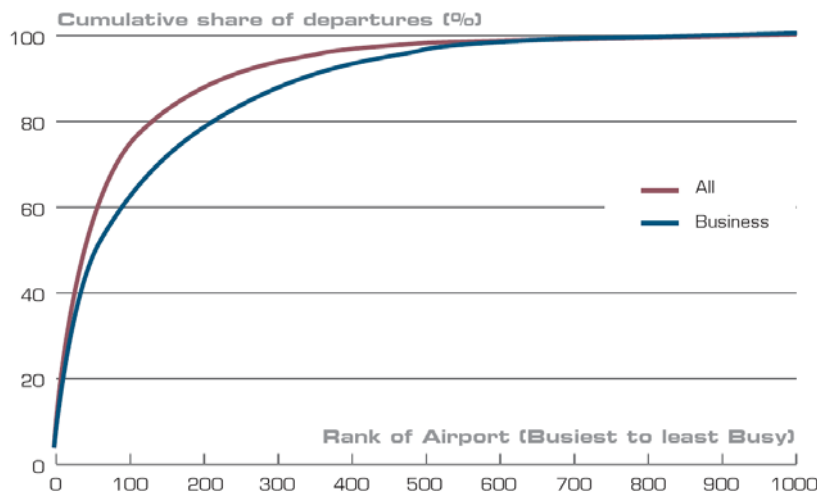
The biggest business jet manufacturers are Bombardier (Canada) and Gulfstream (USA).

Figure 1-14: 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 in general aviation are more widespread across air routes than commercial aviation. The top 500 bi-directional business aviation routes in 2007 carried only 28% (2005: 29%) of business aviation, whereas the top 500 bi-directional scheduled aviation routes in 2007 carried 41% (2005: 39%) of the commercial flights. The market for business aviation is spread thinly, as the following two figures illustrate: the top 100 airports in business aviation handle only about 60% of the business



aviation traffic, whereas this number increases to 75% when we look at the air traffic as a whole. Half of the traffic in business aviation is from airports with less than 50 departures per day (Eurocontrol 2008).

Figure 1-15: Distribution of traffic

Source: Eurocontrol 2008

Figure 1-16: Distribution of traffic by airport size

Source: Eurocontrol 2008

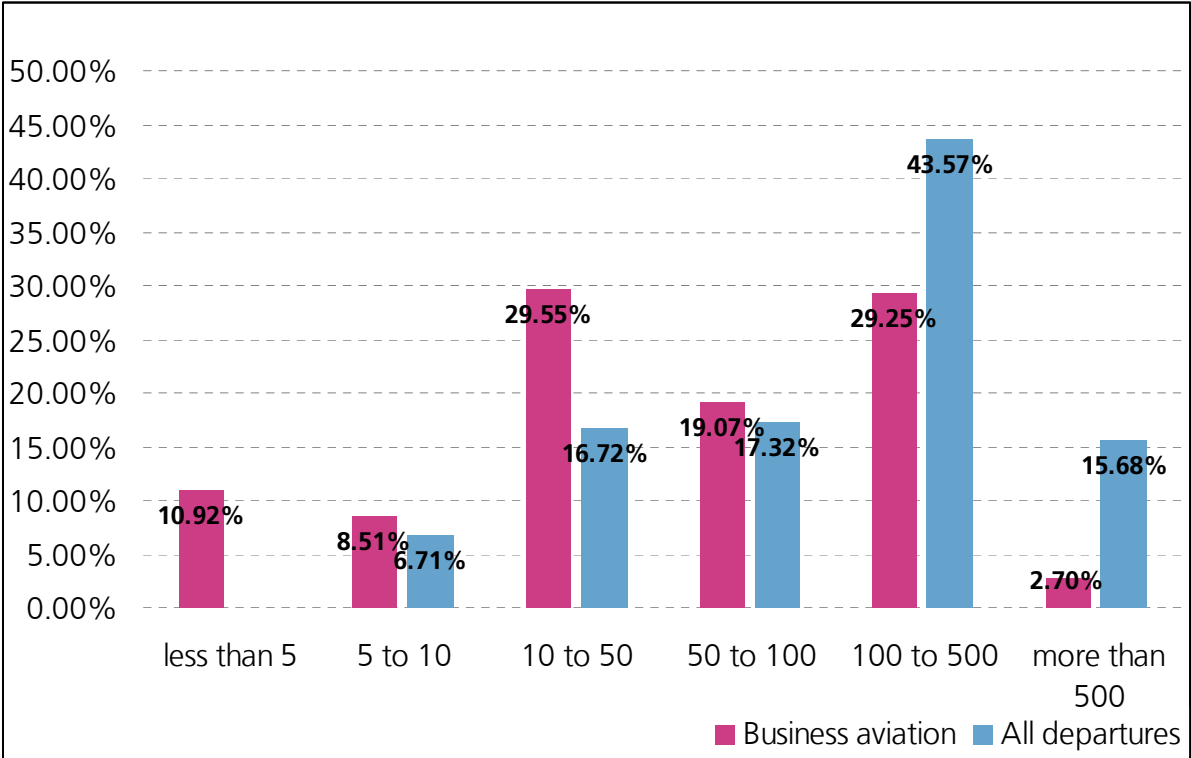


Table 1-8 shows the top 25 business aviation airports in Europe in terms of business aviation departures. The busiest airport is Paris Le Bourget with an average of around 80 business aviation departures per day in 2007. Paris Le Bourget is well ahead of the second-placed airport Geneva Cointrin with an average of 54 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 accounts for less than 10% of the departures at international airports such as Munich, Cologne-Bonn or Düsseldorf.

Table 1-8: Airports with the most business aviation departures

Source: Eurocontrol 2008

Rank	Previous Rank	IATA Code	Airport	2007 Business Deps/Day	2006 Business Deps/Day	Business Growth	% Business	Busiest Business Day
1	1	LBG	Paris Le Bourget	80.2	74.2	8.1%	88%	202
2	2	GVA	Geneva Cointrin	53.8	48.6	10.9%	23%	125
3	4	LTN	London/Luton	42.4	37.3	13.8%	26%	72
4	3	LIN	Milano Linate	42.3	38.4	10.4%	23%	89
5	6	NCF	Nice	37.4	31.2	19.7%	19%	136
6	5	CIA	Roma Ciampino	36.5	35.9	1.6%	38%	75
7	7	ZRH	Zurich	33.7	29.9	12.8%	9.6%	86
8	8	FAB	Farnborough	32.1	25.8	24.8%	90%	82
9	9	VIE	Vienna Schwechat	26.2	23.3	12.8%	6.9%	56
10	10	TOJ	Madrid Torrejon	25.7	22.8	12.7%	72%	55
11	11	MUC	Munich 2	22.7	21.9	3.8%	3.9%	53
12	12	CEQ	Cannes Mandelieu	20.3	18.1	12.3%	88%	65
13	15	LCY	London/City	18.3	17.3	5.7%	15%	35
14	23	BQH	Biggin Hill	18.1	13.7	31.9%	89%	48
15	13	STR	Stuttgart	17.9	17.9	-0.2%	8.7%	41
16	14	THF	Tempelhof-Berlin	17.3	17.3	-0.3%	50%	47
17	19	ATH	Athina E. Venizelos	17.2	14.6	18.2%	6.3%	70
18	16	BCN	Barcelona	17.0	16.4	3.8%	3.5%	39
19	17	PMI	Palma de Mallorca	16.1	15.7	2.7%	6.0%	40
20	18	BRU	Brussels National	15.0	14.7	1.9%	4.3%	39
21	20	CGN	Cologne-Bonn	14.5	14.5	0.6%	7.1%	35
22	22	AMS	Schiphol Amsterdam	14.5	13.9	4.5%	2.4%	31
23	21	DUS	Düsseldorf	14.0	14.1	-0.8%	4.5%	34
24	24	OLB	Olbia Costa Smeralda	13.8	12.4	11.1%	32%	70
25	25	DUB	Dublin	13.2	12.4	6.6%	4.7%	31

Business aviation is point-to-point air travel. Most of the traffic takes place at small airports: about half of the traffic is from airports with fewer than 50 departures per day and only about one third of business aviation departures are from airports with more than 100 IFR departures per day (Eurocontrol 2008). Table 1-9 shows the top 25 airports in Europe with the highest proportion of business aviation departures. The share of business aviation departures ranges from 97% for Wiesbaden to 56% for Hawarden. Business departures per day lie in a range from 0.6 to 80.2; however, the high value of 80.2 business departures per day on average for Paris Le Bourget is rather the exception than the rule. There are on average about 10 business departures per day at the top 25 airports in Table 1-9. The number of departures per day for purposes other than business aviation lies between 0.1 and 11.4. 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 the maximum value of 11.4. Only Madrid Torrejon comes close to such a value. The number of departures per day at small airports with mainly business aviation traffic is especially sensitive to supraregional events and thus exhibits great variability.

Table 1-9: Airport with the highest proportion of business aviation departures

Source: Eurocontrol 2008

Rank	Previous Rank	IATA Code	Airport	Business Deps/Day	Other Deps/Day	Proportion Business	Business Growth	Busiest Day
1	1	WIE	Wiesbaden	4.3	0.1	97%	25%	14
2	2	ZQC	Speyer	2.6	0.2	92%	(12%)	11
3	4	SIR	Sion	6.6	0.5	92%	43%	35
4	3	NHT	Northolt	10.4	1.0	91%	-3.0%	27
5	6	FAB	Farnborough	32.1	3.8	90%	25%	82
6	7	BQH	Biggin Hill	18.1	2.2	89%	32%	48
7	5	CEQ	Cannes Mandelieu	20.3	2.7	88%	12%	65
8	8	LBG	Paris Le Bourget	80.2	11.4	88%	8.1%	202
9	9	SMV	Samedan	4.9	0.7	87%	28%	42
10	12	OBF	Oberpfaffenhofen	3.8	0.7	84%	5.6%	19
11	11	LTT	La Mole	3.6	0.8	83%	-1.3%	25
12	17		Le Castellet	1.1	0.4	76%	44%	14
13	10		Buochs	1.8	0.6	76%	-1.7%	10
14	13		Schwaeb.Hall-Hessent	5.0	1.7	75%	44%	14
15	15	TOJ	Madrid Torrejon	25.7	10.0	72%	13%	55
16	18	LYN	Lyon Bron	7.8	3.7	68%	15%	22
17	20		Wevelgem/Kortrijk	4.3	2.0	68%	36%	13
18	22	CBG	Cambridge	3.2	1.5	68%	30%	12
19	19		Villacoublay	6.2	3.2	66%	5.4%	17
20	23		Pratica di Mare	4.6	2.4	66%	39%	14
21	16	GLO	Gloucestershire	2.2	1.5	60%	10%	14
22	14		Ljungbyhed	1.7	1.2	59%	(16%)	13
23	21	LME	Le Mans Arnage	1.5	1.0	59%	-0.2%	35
24	24	NVS	Nevers Fourchambault	0.6	0.5	56%	(17%)	33
25	28		Hawarden	3.6	2.8	56%	14%	11

Figure 1-17: Economic impact (split) of business aviation in Europe

Source: PricewaterhouseCoopers 2008

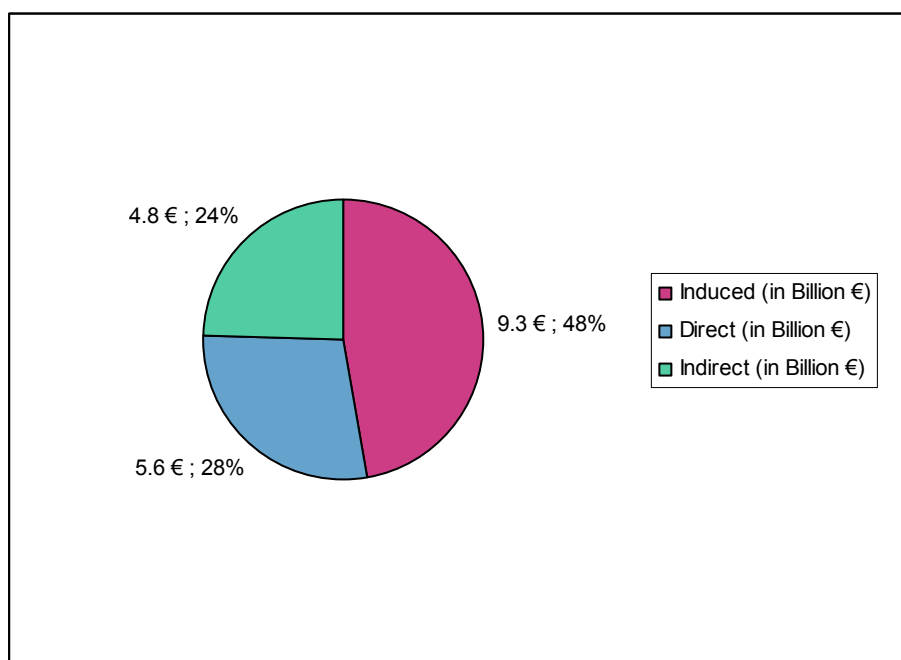


Figure 1-18: Total economic impact of business aviation in Europe

Source: PricewaterhouseCoopers 2008

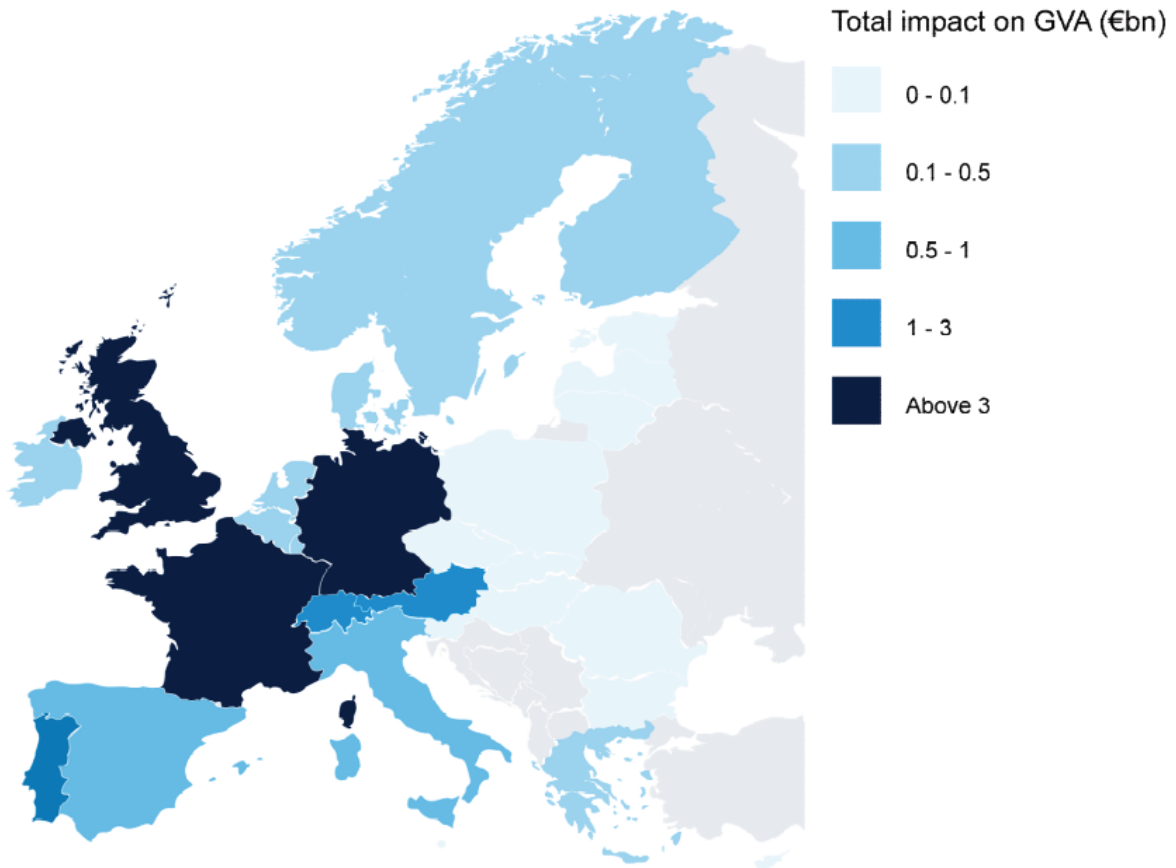


Figure 1-18 illustrates the economic impact (annual gross value added, GVA) of the business aviation segment in Europe. The total GVA adds up to 19.7 billion € in Europe in 2007 and thus accounts for about 0.2% of the combined GDP of the EU, Norway and Switzerland. GVA exceeds three billion € per year in France, Germany and United Kingdom and sums up to 12.6 billion € in these three countries, thus representing 64% of the total GVA in EU, Norway and Switzerland. These three countries are the leaders because of their extensive business aviation aircraft assembly and component manufacturing operations combined with a high number of aircraft movements and fleets registered. Italy also has some business aviation aircraft production facilities; however, they are much smaller than those in France, Germany and the United Kingdom. Business aviation also has a large economic impact on Austria, Switzerland and Portugal, although this is mainly due to a high number of aircraft movements, maintenance activity and the size of the fleets registered rather than production facilities (PricewaterhouseCoopers 2008).

Figure 1-19: Total economic impact of business aviation by value chain segment

Source: PricewaterhouseCoopers 2008

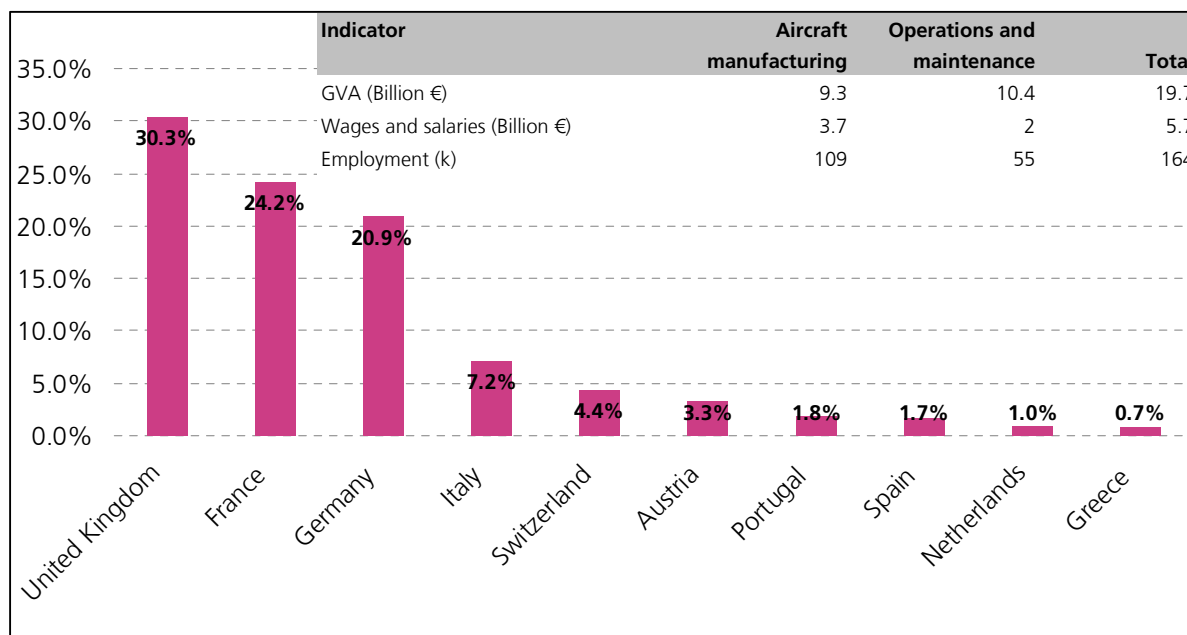


Figure 1-19 displays the economic effects of business aviation by value chain segment and the distribution of employment due to business aviation among the European countries. Total wages and salaries on the basis of business aviation in Europe are 5.7 billion € and total employment in aircraft manufacturing and operations & maintenance is 164 000. Here, France, Germany and United Kingdom have a share of (PricewaterhouseCoopers 2008):

- 64% of total GVA
- 73% of total wages and salaries
- 75% of total employment

2 Airlines

2.1 Passenger airlines

Worldwide scheduled departures

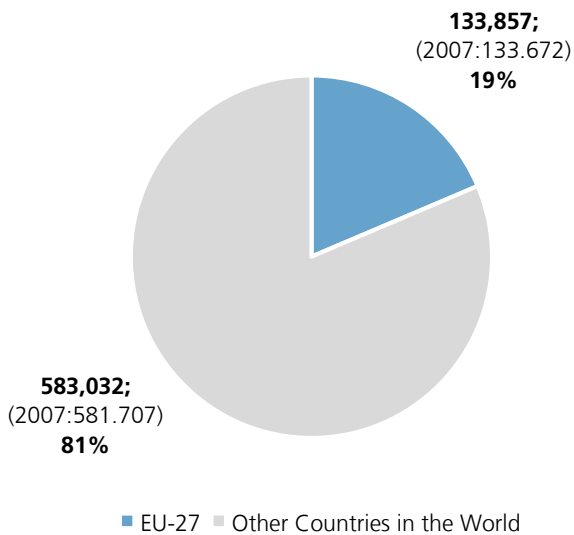


Figure 2-1: Global scheduled departures of commercial aircraft in the world in the third week of July 2008

Source: OAG 2008

Figure 2-1 shows the total number of scheduled aircraft departures worldwide in the third week of July 2008, of which 23% originate in Europe and 19% in the Member States of the EU 27. 81% of the worldwide departures originate in the rest of the world. 19% and 23% of the worldwide aircraft departures sum up to about 134 000 and 163 000 respectively, of which about 162 000

are passenger flights. 156 000 of these passenger flights are non-stop. The values in brackets correspond to the values for 2007. The overall number of departures worldwide has constantly increased since 2003, from 629 289 in 2003 up to 716 889 in 2008. However, there is only a slight increase of less than 1% from 2007 to 2008, which is mainly a result of the economic downturn since the second half of 2008.

Figure 2-2: Worldwide scheduled departures in the third week of July 2008

Source: OAG 2008



Figure 2-2 illustrates the distribution of the worldwide departures in the third week of July 2008. 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 287 000, while the route between North and South America and Europe has the highest number of interregional flights, amounting to 16 000 in the third week of July 2008. The route between North America and Europe has the highest number of intercontinental flights, summing up to 9 000. 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 2008

Figure 2-3 illustrates the air routes with the highest flight frequencies per week. The top three air routes are Monaco – Nice, Barcelona – Madrid and Milan – Rome with 756, 319 and 280 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 and is thus not displayed in Figure 2-3. Top routes in northern Europe are Jersey – Guernsey (both in the UK), Amsterdam – London Heathrow and Hamburg – Munich with

197, 172 and 156 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 141 take-offs per week.



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

Source: OAG 2008

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 48 000, 40 000 and 39 000 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 24 000 seats offered in one direction. Altogether, there are four 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 274 (2007: 292) seats on the route London Heathrow – New York JFK, whereas on the route Barcelona – Madrid the offered capacity is only 151 (2007: 157) seats per take-off on average. Both flight frequency and the average number of flights have decreased since 2007, one reason being the strong increase in the oil price during the first half of 2008 and the falling economic development during the second half of 2008.

Figure 2-5: Number of destinations per country

Source: OAG 2008

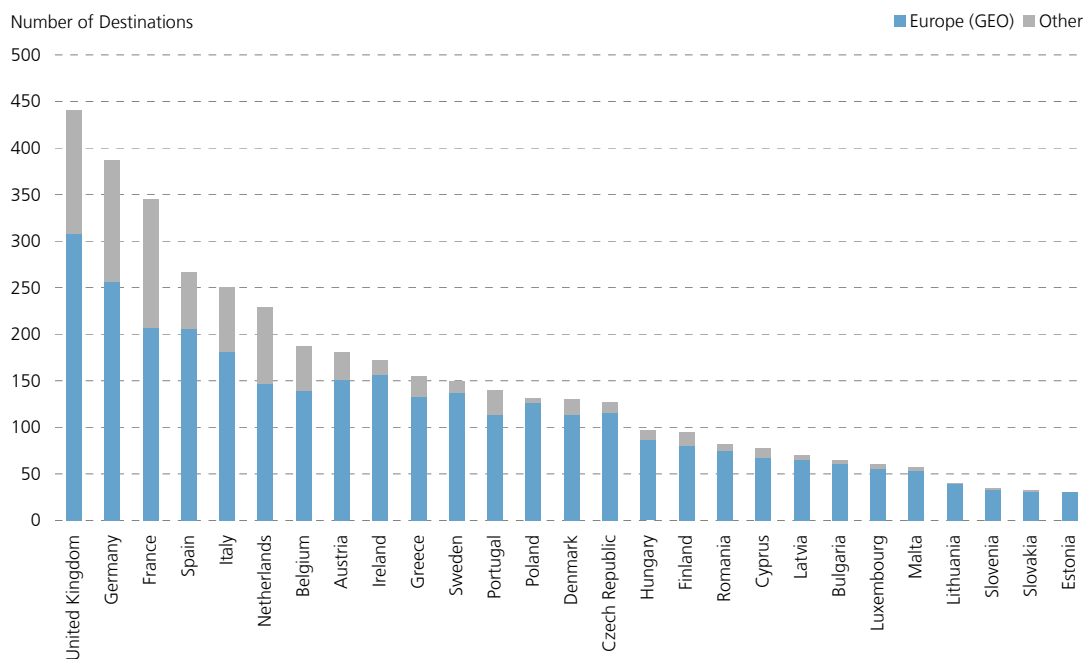


Figure 2-5 shows the number of routes per country in Europe, subdivided by European or intercontinental route. There is a strong positive correlation between the size of a country and the number of destinations served by its airports. The share of intercontinental routes increases with country size as 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 441 (2007: 444) different destinations are served from the UK, of which 133 (2007: 143) are intercontinental. 387 (2007: 379) destinations are served from German airports, of which 131 (2007: 130) are outside Europe. A total of 345 (2007: 331) destinations are served from France, of which 138 (2007: 134) are intercontinental. Of the top three countries, only France shows a positive development in the number of destinations served.

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 internationally 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.

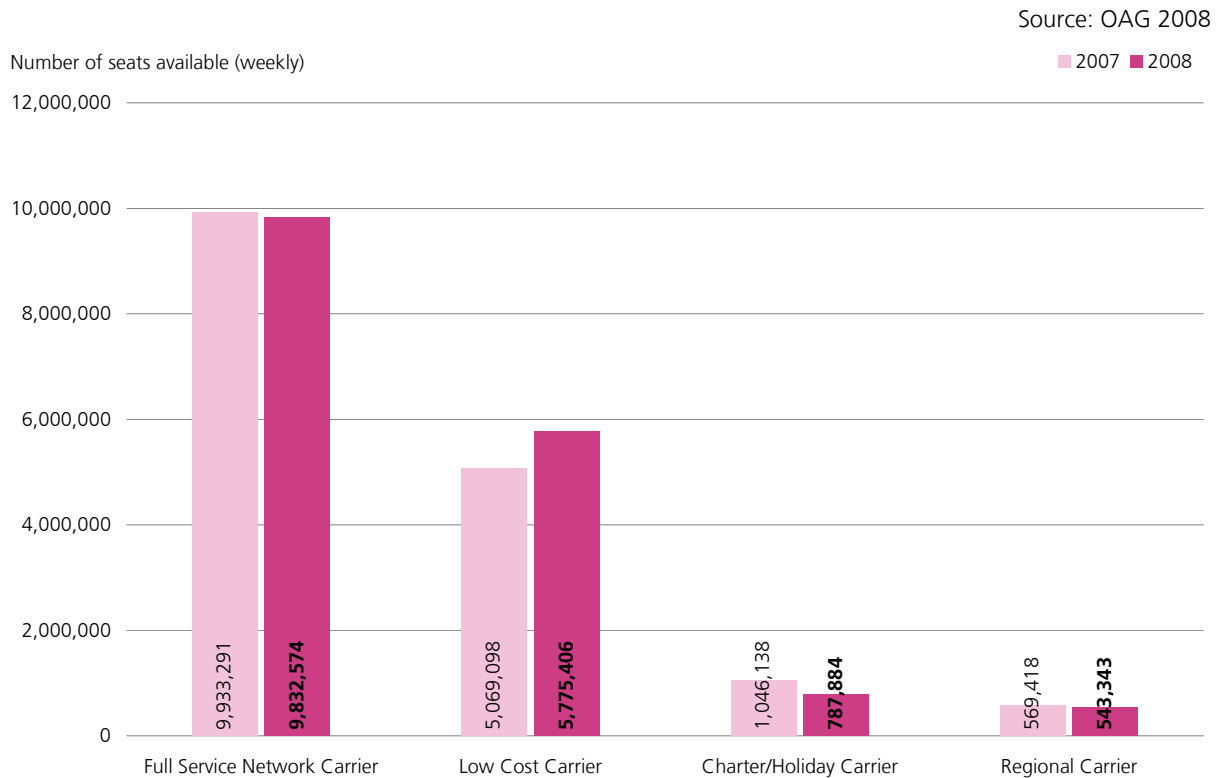
In most cases, Regional Carriers restrict their flight routes to a geographically limited area and provide connecting flights for international airlines between regional and international airports. They also provide decentralised connections between regional and national airports. Because of the need to use smaller airports, these companies mostly operate small-scale aircraft suitable for travelling shorter 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 58% of the weekly seats available at European airports in 2008, followed by LCCs offering 34.1% of the total capacity. In contrast, Charter carriers and Regionals have respective shares of only 4.7% and 3.2%. Figure 2-6 illustrates these relations in absolute figures for the years 2007 and 2008. Compared to 2007, there is a slight decrease in seat capacity offered by FSNCs and Regionals by about 1% and 5% respectively. However, there is a large decrease of around 25% in the Charter/Holiday segment and a huge increase of about 14% in the Low Cost segment. FSNCs and Regionals appear to be only slightly affected by the economic crisis, whereas the Charter/Holiday segment was hit very hard due to the focus on holiday travel. In contrast, Low Cost Carriers managed to gain market share thanks to their low fares.

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



If we look at each airline type in more detail regarding market concentration, the top 25 European FSNCs cover 84.0% of the seat capacity in this category. Concentration is even higher for charter carriers: the top 25 charter carriers cover 99.0% of the charter market, which is higher than in the low cost market where the top 25 LCCs provide 95.8% of the flights. Market concentration is comparatively low for regional carriers: the top 25 in this category cover only 82.2% 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, LCCs and regional carriers (91.1%, 100%, 99.8% and 91.9% respectively).

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

2.1.1.1 Full Service Network Carriers (“FSNCs”)

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

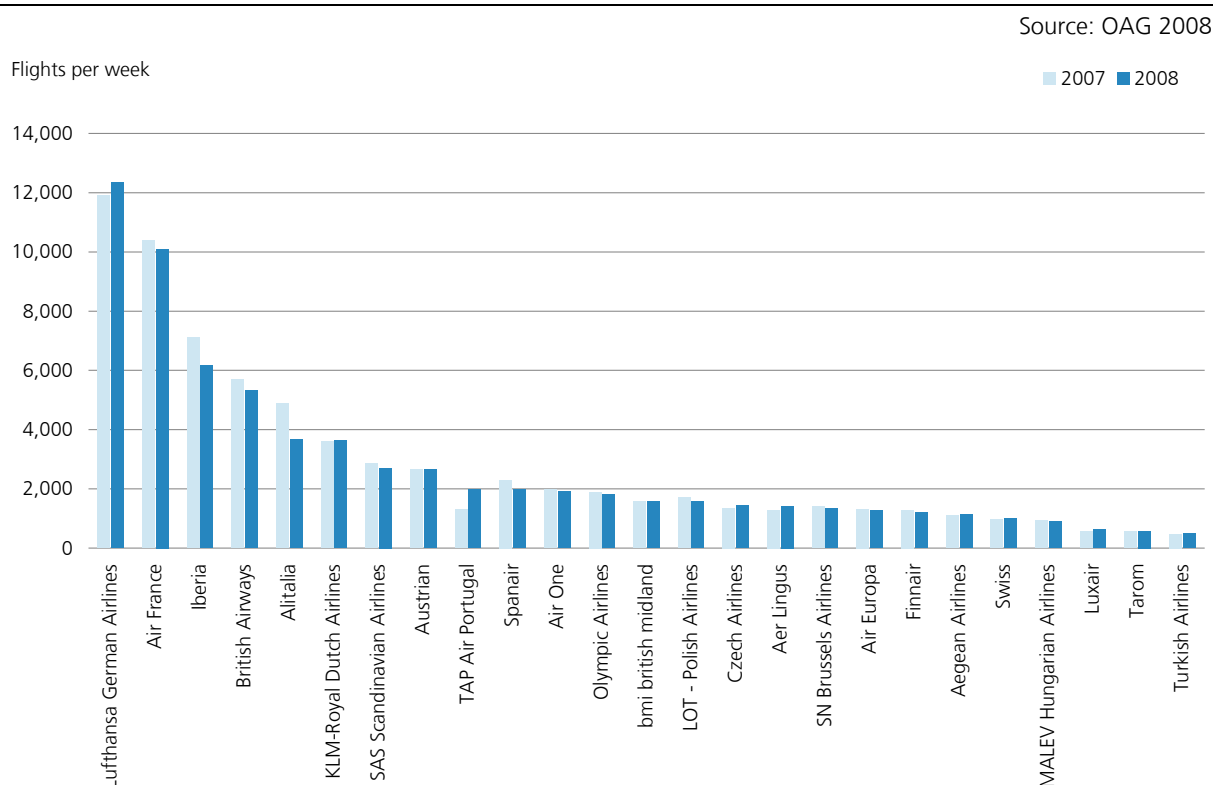
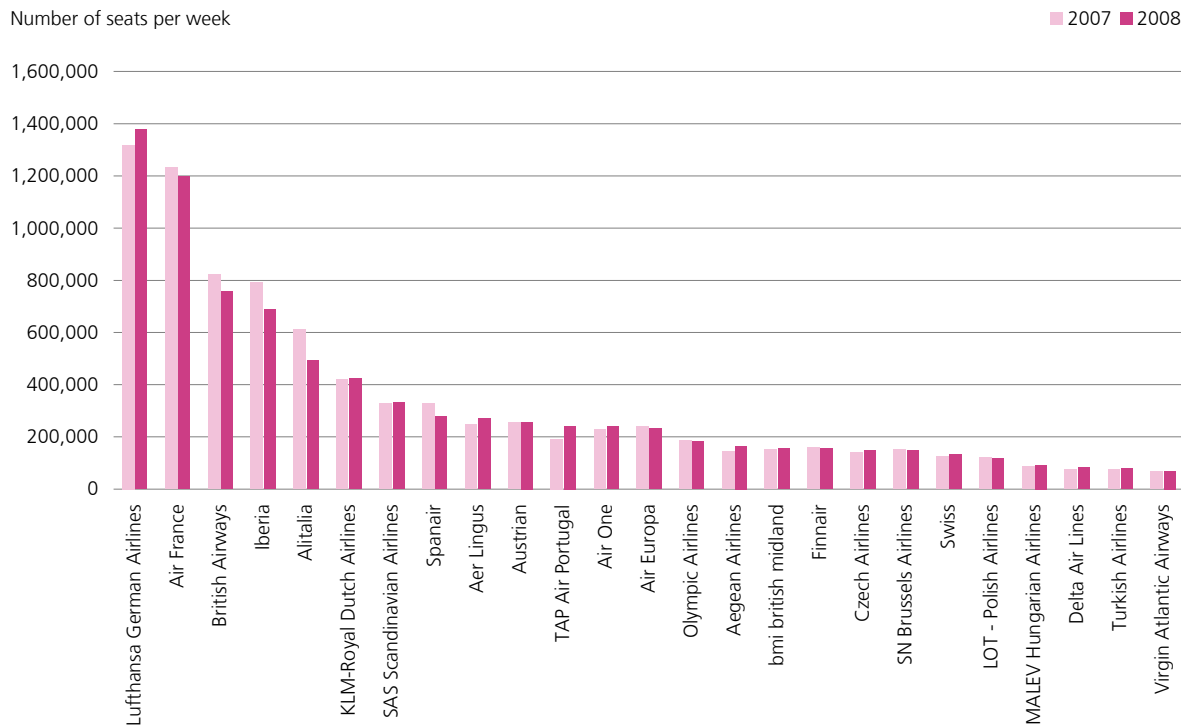


Figure 2-7 displays the top 25 FSNCs in Europe (EU27) for 2007 and 2008 regarding weekly flights. The top 2 airlines are Lufthansa and Air France with 12 000 flights and 10 000 flights per week respectively. Iberia and British Airways follow with 6 000 and 5 000 flights per week. As Figure 2-7 shows, the FSNC market is rather concentrated on around eight big airlines. Total market volume is about 77 000 flights with 10 million seats offered per week in 2008. Average seat capacity per flight for 2008 is 130. Overall, there are only small changes compared to 2007 of less than 5% in most cases. As already mentioned earlier, the FSNC market was rather robust up to the economic crisis in 2008. The two most striking outliers are TAP Air Portugal (+53%) and Alitalia (-25%).

Figure 2-8 shows the top 25 FSNCs in Europe (EU 27) in terms of seats offered per week for 2007 and 2008. 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. Changes compared to 2007 are in most cases rather small with TAP Air Portugal and Alitalia being the most noticeable outliers (+25% and -20%, respectively).

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

Source: OAG 2008



2.1.1.2 Low Cost Carriers ("LCCs")

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

Source: OAG 2008

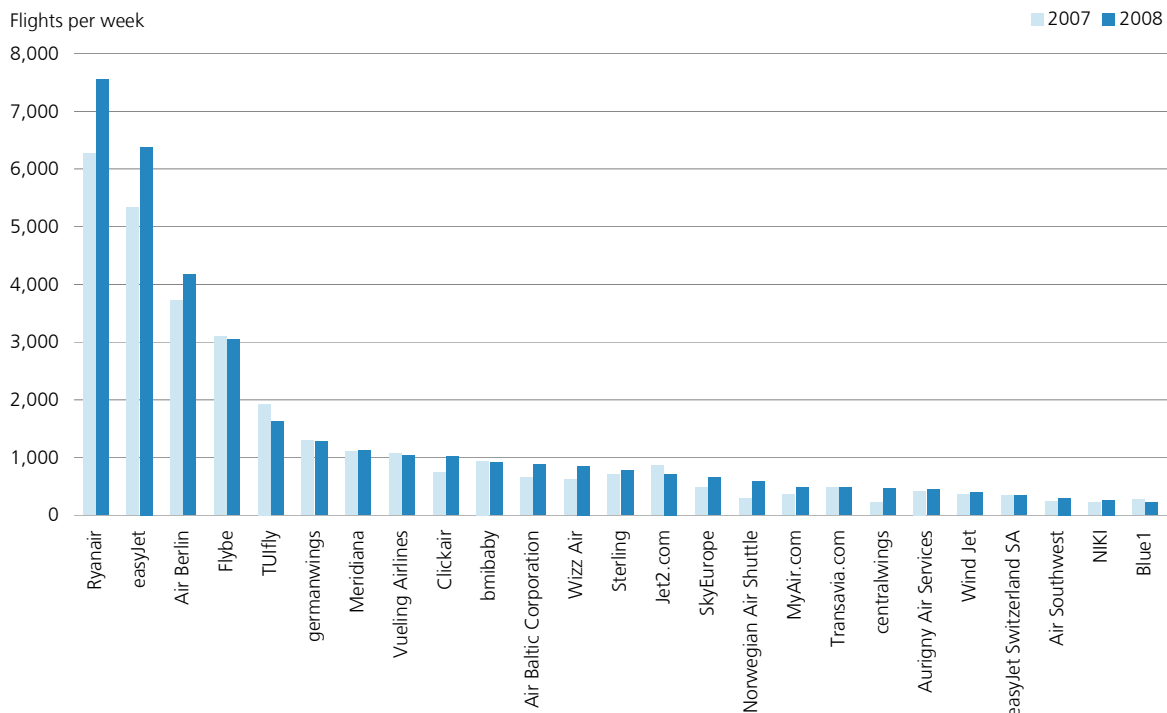


Figure 2-9 shows the top 25 LCCs in Europe (EU 27) for 2007 and 2008 in terms of weekly

flights. The four biggest LCCs are Ryanair, easyJet, Air Berlin and Flybe with 7 546, 6 382, 4 171 and 3 044 flights per week respectively. Flights per week decline sharply among the first four carriers and then rather gradually down to 25th place with Blue 1 offering only 225 flights per week. The market volume regarding flights per week is about 38 000 flights per week and roughly a half of the FSNC market. Average seat capacity per flight is 156 seats - 26 seats more than FSNCs offer on average. There are in many cases large increases in the number of flights offered compared to 2007. The top three Low Cost Carriers managed to increase the number of flights they offered between 10% and 20%. However, some very small Low Cost Carriers offered twice as many flights in 2008 as in 2007, but their high percentage growth is mainly due to their small size.

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

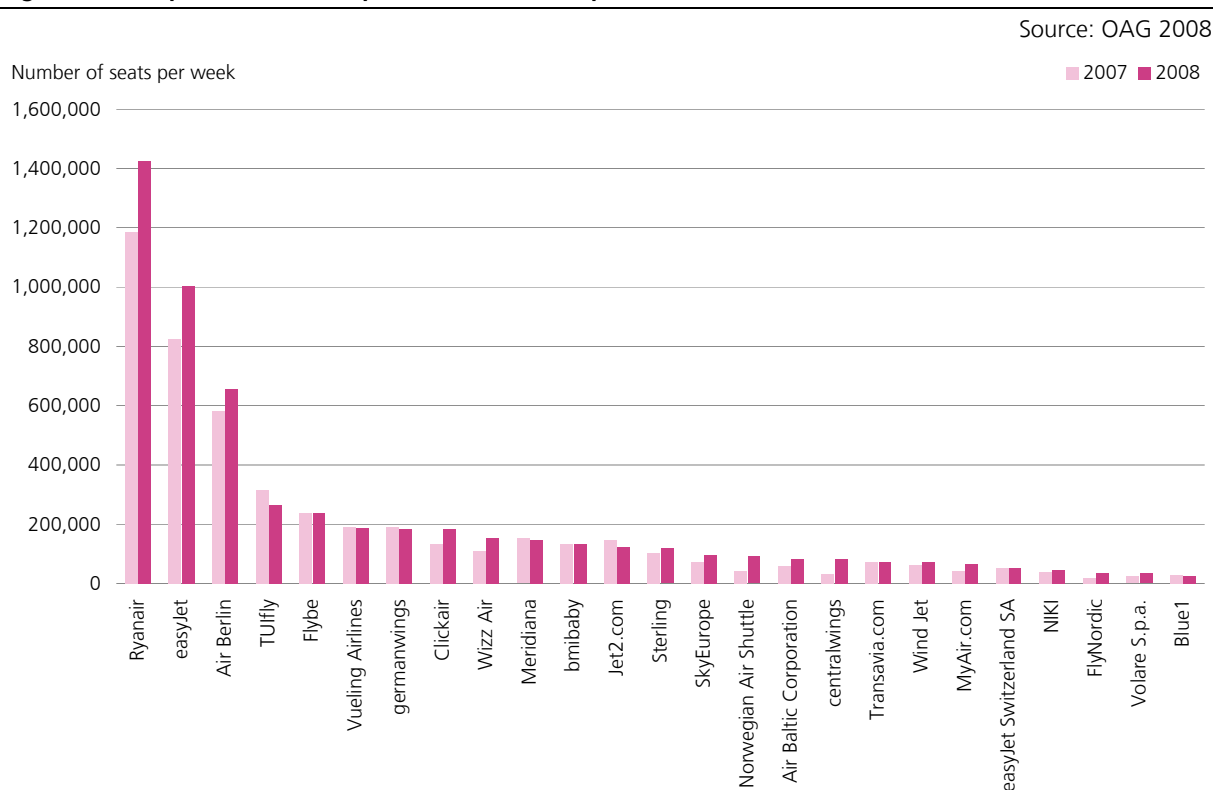


Figure 2-10 shows the top 25 LCCs in Europe (EU 27) in terms of seats offered for 2007 and 2008. The top rankings are largely unchanged and changes compared to 2007 similar to the case of number of flights offered. However, Ryanair extends its lead over the number of seats offered by the following carriers and flybe switched places with TUIfly. The number of seats offered ranges from nearly 1.5 million for Ryanair to 26 000 for Blue 1.

2.1.1.3 Regional Carriers (“Regionals”)

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

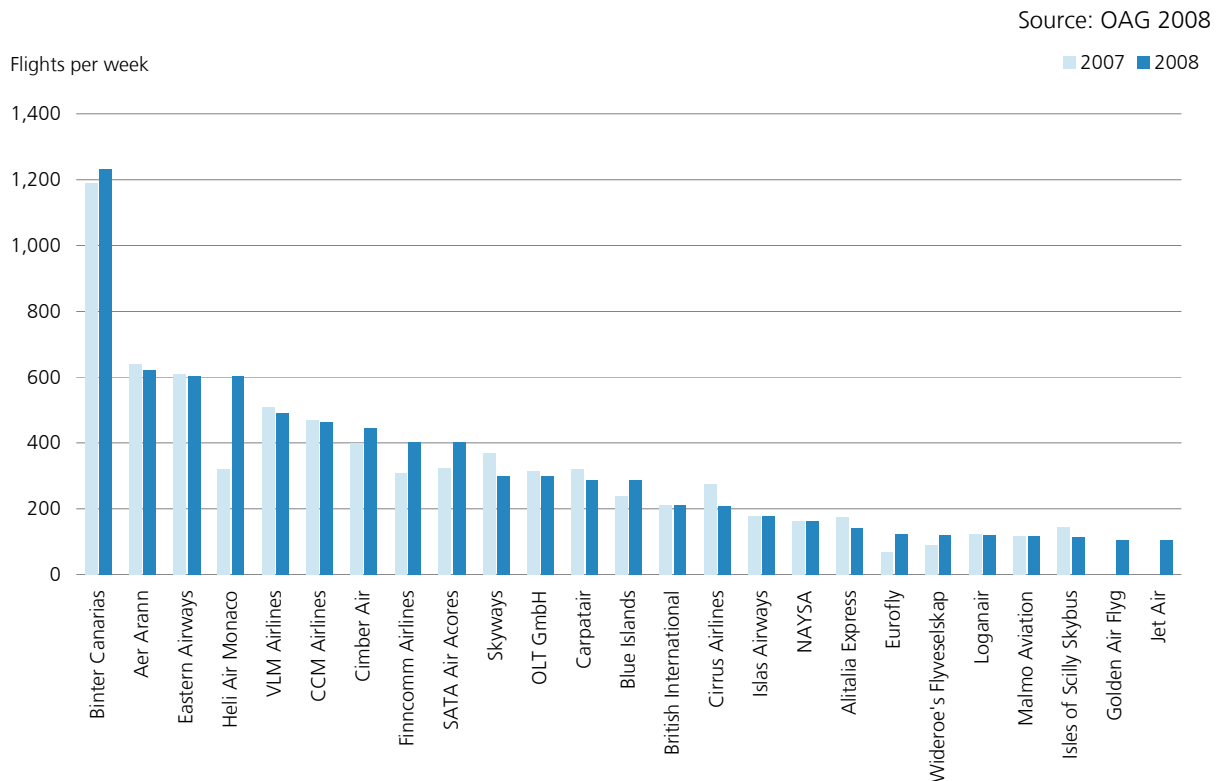
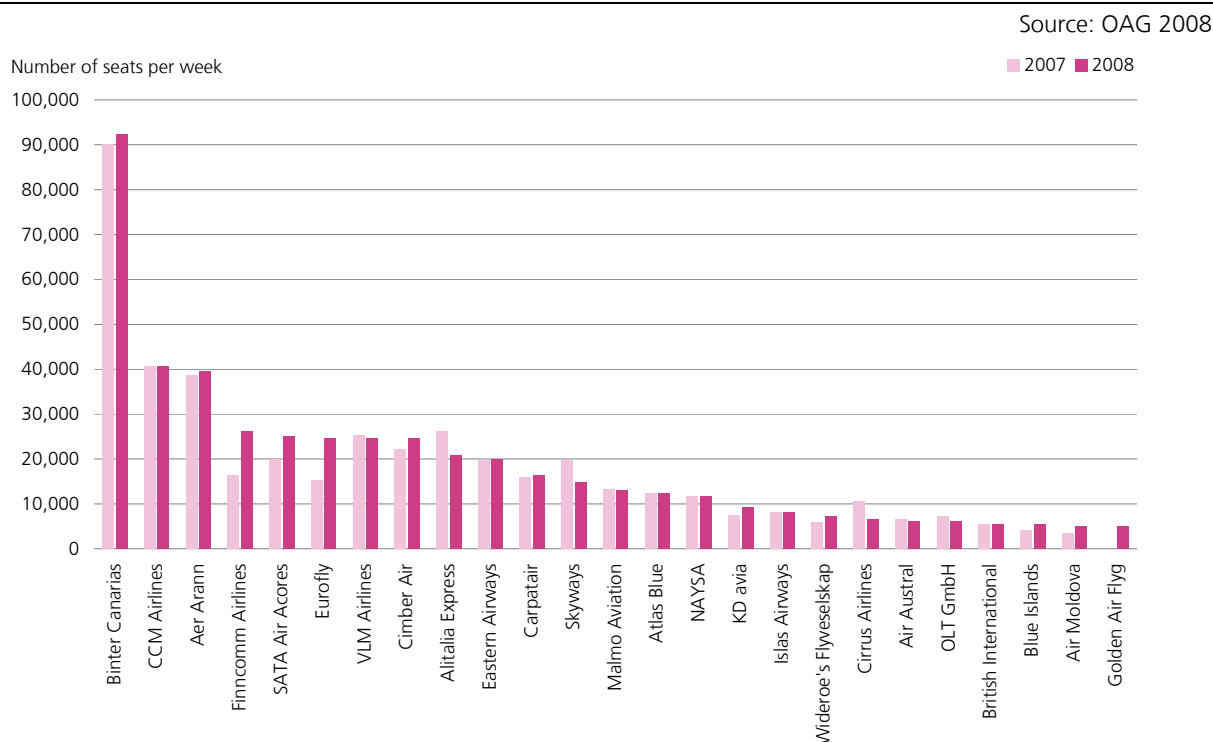


Figure 2-11 shows the top 25 Regionals in Europe (EU 27) for 2007 and 2008 in terms of weekly flights. The 2 biggest Regionals are Binter Canarias and Aer Arann with 1 232 and 622 flights per week respectively. Changes compared to 2007 for those two airlines lie in a range of about +/-3%. The decline from the second place down to 25th place is rather slight. Changes in the number of flights offered lie in a much broader range for smaller airlines: They vary from 0% to more than 100%. Market volume is 9 451 flights and 543 343 seats per week, which is again only a fraction of the FSNC market. The average seat capacity per flight of 57 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 for 2007 and 2008. The ranking differs significantly from the flights per week ranking. Binter Canarias leads by a large margin; however, rankings have changed considerably on the places two to 25, one reason being the wide range of average seat capacity per flight resulting from different aircraft types employed. Changes in the number of seats offered per week are less than +/-3% for the top three airlines, which occupy nearly a third of the whole market in 2008. However, in the case of smaller airlines there are changes of up to 60% compared to 2007. Average seat capacity per flight ranges from five for Heli Air Monaco, which is a helicopter service, to 200 for Eurofly. The Regionals market 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



2.1.1.4 Holiday / Charter Carriers ("Charters")

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

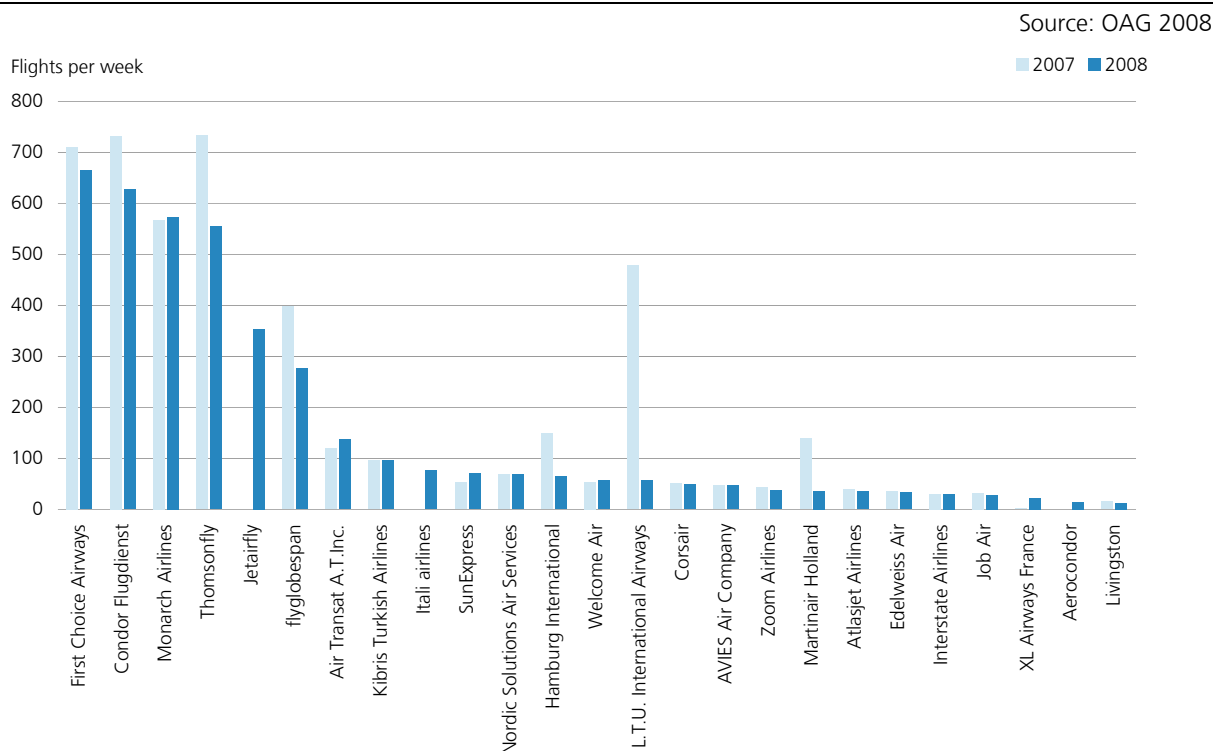


Figure 2-13 shows the top 25 charter airlines in Europe (EU 27) for 2007 and 2008 in terms of

weekly flights. The four biggest charter airlines are First Choice Airways, Condor, Monarch Airlines and Thomsonfly with 664, 627, 573 and 554 flights per week respectively. Thereafter, charter airlines become rapidly smaller in terms of flights per week. Market volume is 4 055 flights and nearly 800 000 seats per week, which is only a fraction of the FSNC market. However, the market is concentrated on around six to seven airlines again. The weekly flight frequency has declined in most cases since 2007 as a result of the economic downturn since the second half of 2008. However, there are some smaller airlines which have increased their number of flights offered since 2007. Furthermore, there are some large changes due to organisational restructuring: e.g. many flights which were formerly offered by LTU are now operated by Air Berlin. The average seat capacity per flight of 194 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 2-14: Top 25 charter airlines in Europe in terms of seats per week

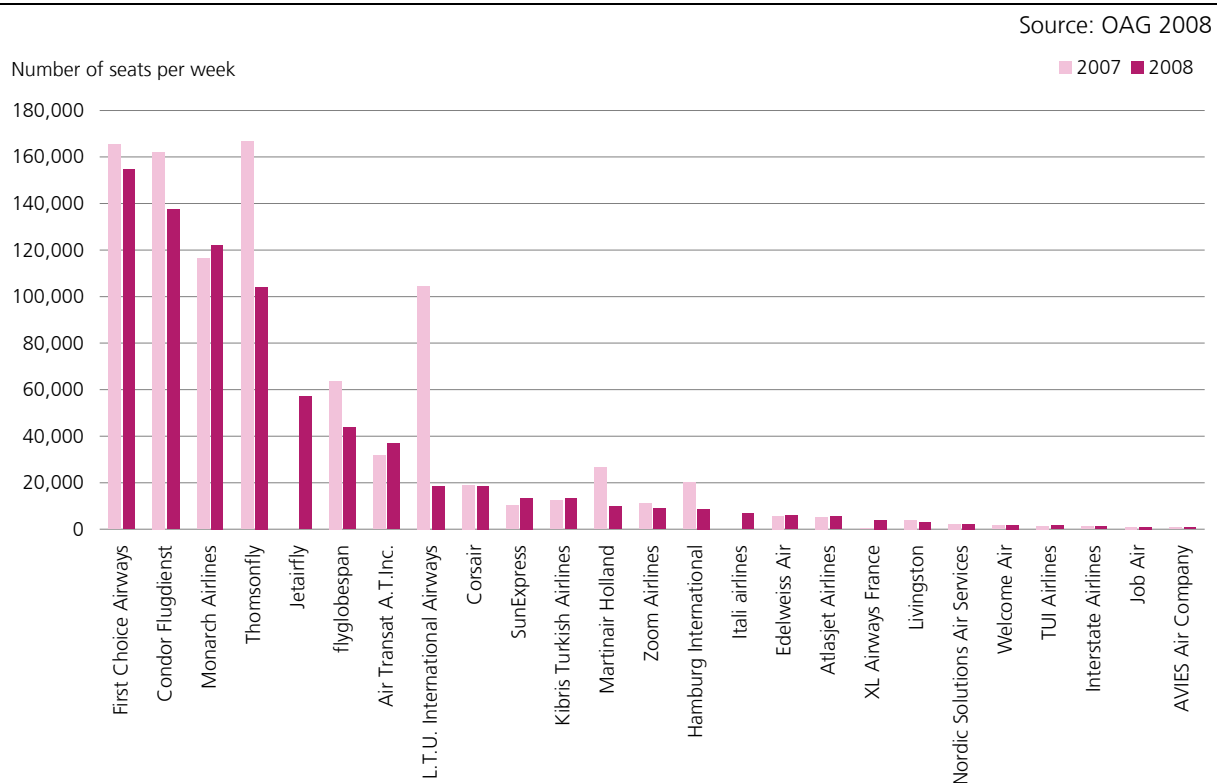


Figure 2-14 shows the top 25 charter airlines in Europe (EU 27) in terms of seats offered for 2007 and 2008. The ranking is largely unchanged within the top rankings with First Choice Airways, Condor, Monarch Airlines and Thomsonfly occupying the first four places. Changes to the previous year are similar to the former case of flights offered per week.

2.1.2 Air transport demand

The total number of airlines worldwide is constantly changing due to companies entering and exiting the market. This analysis therefore only includes 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 Ascend Online Fleets as it shows the yearly performance figures for over 300 major airlines, as well as monthly updates of current performance figures. Singular missing monthly values have been substituted by data provided by Airline Business magazine, ICAO, or IATA.

All figures are presented using the same format. The ranking tables show the type of airline, the geographical region, and the 2008 traffic data. The airlines are ranked based on the performed revenue passenger kilometres (RPK). 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 2007 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. Since other chapters are based on the DLR classification and in order to simplify the comparison of the data in this chapter with other topics in this report, we decided to use this classification as well.

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 2008 and ranks the airlines according to individual performance.

In total, 16 carriers out of the top 50 FSNC airlines originate from Europe (11 from EU-27), 19 from the Asian-Pacific region, 8 from North America, 4 from the Middle East, 2 from Latin America, and 1 from Africa. Taking a look on the top 10 carriers in this class, it can be seen that 6 carriers originate from North America, which illustrates the importance of this mode of transport in the United States.

As was the case in the preceding year, American Airlines led both the Full Service Network Carrier rankings and the overall airline rankings although the data shows a reduction in passenger number (-5.5%), RPK (-4.8%), and in capacity (-3.7%) in comparison with the preceding year. American Airlines is a member of the oneworld Alliance operating from its major hubs at Dallas/Fort Worth and Chicago O'Hare.

Table 2-1: Top 50 Full Service Network Carriers worldwide

Source: Ascend Online, Airline Business, ICAO, IATA

2008 RPK class	Rank 2007 RPK class	Rank 2008 RPK total	Airline	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	1	1	American Airlines	North America	92.8	212,098	263,259	80.6
2	2	2	Air France-KLM Group	Europe	73.8	207,242	260,938	79.4
3	4	3	United Airlines	North America	63.2	177,171	218,638	81.0
4	3	4	Delta Air Lines	North America	71.7	170,147	207,620	82.0
5	5	5	Continental Airlines	North America	48.7	133,297	165,044	80.8
6	6	6	Lufthansa	Europe	57.0	125,955	160,352	78.5
7	7	8	Northwest Airlines	North America	48.9	115,332	135,944	84.8
8	8	9	British Airways	Europe	32.3	110,831	149,661	74.1
9	11	10	Emirates Airline	Middle East	22.4	100,672	129,152	77.9
10	9	11	US Airways	North America	54.8	97,506	119,364	81.7
11	12	12	Singapore Airlines	Asia-Pacific	19.1	93,626	119,363	78.4
12	14	13	Cathay Pacific	Asia-Pacific	25.0	90,975	115,478	78.8
13	15	14	China Southern Airlines	Asia-Pacific	58.2	83,117	112,691	73.8
14	13	15	Japan Airlines International	Asia-Pacific	46.9	82,122	123,790	66.3
15	10	16	Qantas	Asia-Pacific	24.5	81,438	101,143	80.5
16	16	17	Air Canada	North America	23.2	74,731	90,834	82.3
17	17	18	Air China	Asia-Pacific	34.2	66,019	88,079	75.0
18	18	20	All Nippon Airways	Asia-Pacific	48.6	58,858	88,812	66.3
19	19	21	Thai Airways International	Asia-Pacific	18.7	56,376	75,391	74.8
20	21	22	Korean Air	Asia-Pacific	23.1	55,054	77,140	71.4
21	20	23	China Eastern Airlines	Asia-Pacific	37.2	53,754	75,920	70.8
22	22	24	Iberia	Europe	22.8	52,844	66,053	80.0
23	23	28	Virgin Atlantic Airways	Europe	5.7	41,174	53,694	76.7
24	27	29	TAM Linhas Aereas	Latin America	28.2	40,028	56,332	71.1
25	28	31	Qatar Airways	Middle East	9.7	36,203	49,848	72.6
26	24	32	Malaysia Airlines	Asia-Pacific	12.6	35,868	52,868	67.8
27	31	33	Turkish Airlines (THY)	Europe	22.5	34,157	46,325	73.7
28	26	34	China Airlines	Asia-Pacific	9.8	31,597	41,139	76.8
29	29	35	Saudi Arabian Airlines	Middle East	17.7	31,444	49,584	63.4
30	30	37	Alaska Airlines	North America	16.8	30,119	38,982	77.3
31	25	38	Alitalia	Europe	18.0	29,206	42,629	68.5
32	32	39	Air New Zealand	Asia-Pacific	12.9	28,651	36,318	78.9
33	33	40	Swiss	Europe	13.5	28,141	35,032	80.3
34	-	41	SAS	Europe	25.4	27,890	38,776	71.9
35	34	42	Aeroflot Russian Airlines	Europe	9.3	27,181	38,380	70.8
36	37	43	LAN Airlines	Latin America	13.2	26,951	35,178	76.6
37	38	47	Asiana Airlines	Asia-Pacific	13.1	24,651	34,343	71.8
38	44	48	Etihad Airways	Middle East	6.0	24,159	32,104	75.3
39	36	49	EVA Air	Asia-Pacific	5.8	22,944	28,853	79.5
40	35	50	South African Airways	Africa	7.1	22,919	30,839	74.3
41	39	51	Hainan Airlines	Asia-Pacific	15.0	22,852	29,186	78.3
42	42	53	TAP Portugal	Europe	8.7	21,906	32,700	67.0
43	47	54	Jet Airways	Asia-Pacific	11.7	21,897	32,365	67.7
44	40	55	Finnair	Europe	8.3	21,896	29,101	75.2
45	41	58	Austrian Airlines	Europe	10.7	18,896	25,131	75.2
46	45	61	Philippine Airlines	Asia-Pacific	8.2	17,890	23,116	77.4
47	48	62	Garuda Indonesia	Asia-Pacific	10.4	17,585	24,571	71.6
48	-	63	Transaero	Europe	4.9	17,549	21,254	82.6
49	-	64	Air Europa	Europe	9.5	17,031	21,233	80.2
50	50	67	Aer Lingus	Europe	10.4	16,655	22,370	74.5

Number 2 in this ranking is (as in the preceding year) a major European airline, the Air France-KLM Group. Besides a slight reduction in passenger numbers (-1.3%), the passenger load factor decreased by 1.4 percentage points compared with the preceding year due to an increase in capacity (+1.8%) without a significant increase in passenger kilometres flown.

Compared to the preceding year, Delta Airlines shows a decrease of 34.3% in passenger numbers, as well as a decrease in RPKs and ASKs (-13.8% and -15% respectively). Delta Air Lines' huge drop can be explained with the data which contains only the mainline activities. Regional affiliates are not included. Furthermore, Delta announced a reduction of capacity by 4-5% in early 2008. In addition, the United States Department of Justice approved the merger between Delta Air Lines and Northwest Airlines on October 29, 2008, creating the world's largest passenger airline. The process of integration will take from 12 to 24 months. The airlines will operate under the brand "Delta". Delta Air Lines operates from its major hubs in Atlanta, Cincinnati, New York (JFK), and Salt Lake City. The Northwest Airlines hubs at Detroit, Saint Paul/Minneapolis, Memphis, Tokyo (Narita) will be maintained.

Emirates Airlines is a new entrant in list of the top 10 carriers. In 2008, the Middle Eastern carrier acquired 17 new aircraft, including the first four A380s (first delivery in July 2009) and 12 Boeing 777s, and added a number of new destinations and services added to its network. Qantas dropped from rank 10 in 2007 to 15 in 2008. As a result of the economic crisis the Australian Dollar fell sharply in the second half of 2008 (-31% vs. US-Dollar) and, consequently, the Australian carrier suffered a large drop in profits. RPKs fell by 16.6% which led to a reduction of capacity by 17.2%.

Alitalia now occupies rank 31 (rank 25 in 2007). Considering the development of the fleet and the reduction of services from Milan, this change was expected. Compared with the preceding year Alitalia reduced its capacity by 18.4%. In August 2008, the Italian airline filed for bankruptcy after making serious losses. To ensure the long-term viability, the airline was fully privatized and merged with the second largest Italian airline, Air One. In December 2008, the Air France – KLM group acquired 25% of Alitalia's shares. The new Alitalia will start operations in January 2009.

While TAM Linhas Aereas went up from rank 27 to rank 24 in 2008, Turkish Airlines is a new entrant in the top 30 carriers and occupies rank 27 (rank 31 in the preceding year). The Turkish airline increased its capacity by 17.6% and its passenger kilometres flown by 27.1%. In terms of passengers, Turkish Airlines carried 22.5 million passengers in 2008, which is an increase of 18.4% compared to 2007.

Air India fell from rank 43 to rank 52 due to increasing domestic competition and is therefore not listed in the 2008 top 50 FSNC ranking. El Al and AeroMexico (rank 46 and 49 respectively

in the preceding ranking of 2007) fell to rank 51 and 55 respectively in 2008. In contrast, Etihad Airways shows constant growth. The Middle-Eastern airline is now ranked among the top 40 carriers. Compared with 2007 Etihad Airways shows a significant increase in passengers numbers (+30.4%), RPKs (+36.2%), and ASKs (24.5%).

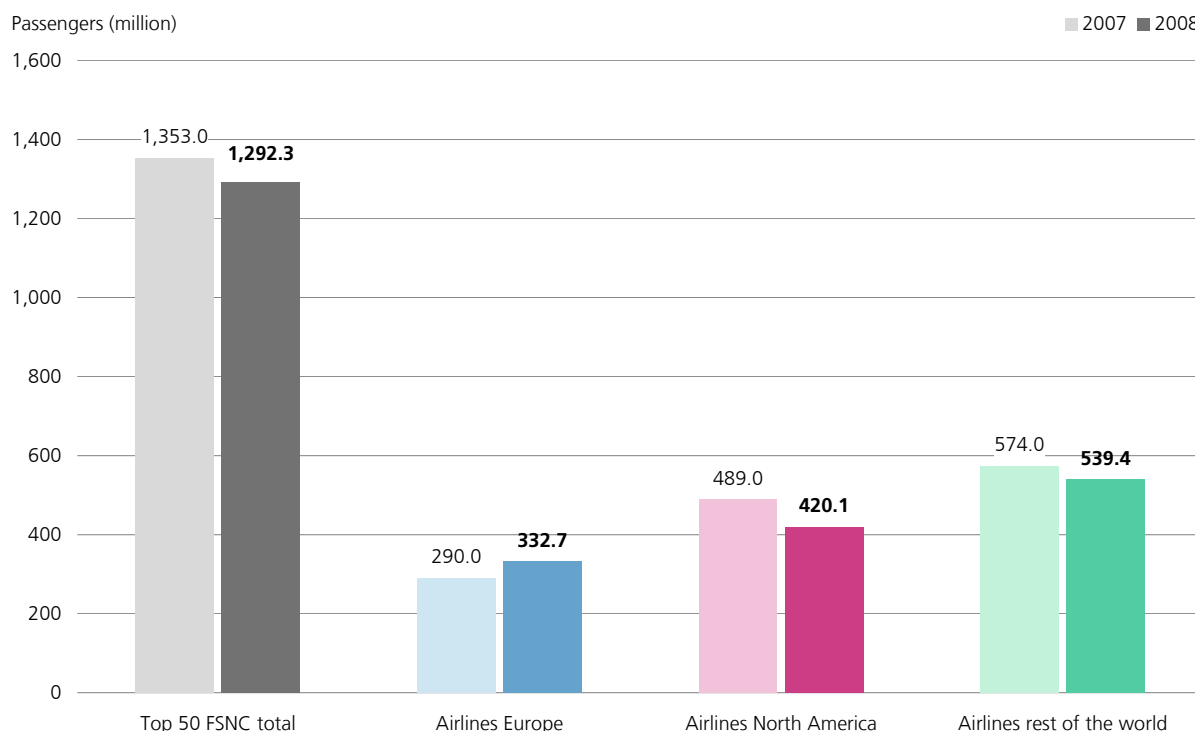
Transaero Airlines and Air Europa are new entrants to this table. Transaero Airlines is a Russian airline which operates from Domodedovo International Airport in Moscow and Pulkovo Airport in Saint Petersburg and serves 70 domestic and international destinations. The Spanish carrier, Air Europa, is based in Palma de Mallorca Airport.

A ranking according to the number of passengers shows that again American Airlines occupies the number one spot followed by the Air France-KLM Group.

The Figure 2-15 shows airline passenger numbers for 2007 and 2008, both as a total and split according to region. The regions Asia-Pacific, Middle East, Latin America, and Africa are grouped under "Airlines rest of the world".

Figure 2-15 Number of passengers carried by the top 50 FSNCs

Source: Ascend, Airline Business, ICAO, IATA



Compared to the preceding year, the distribution has changed slightly. North American airlines do not account for the largest proportion of passengers carried in the period of analysis. With a total of 435 million passengers (33.7%) airlines from the Asian-Pacific region show the largest

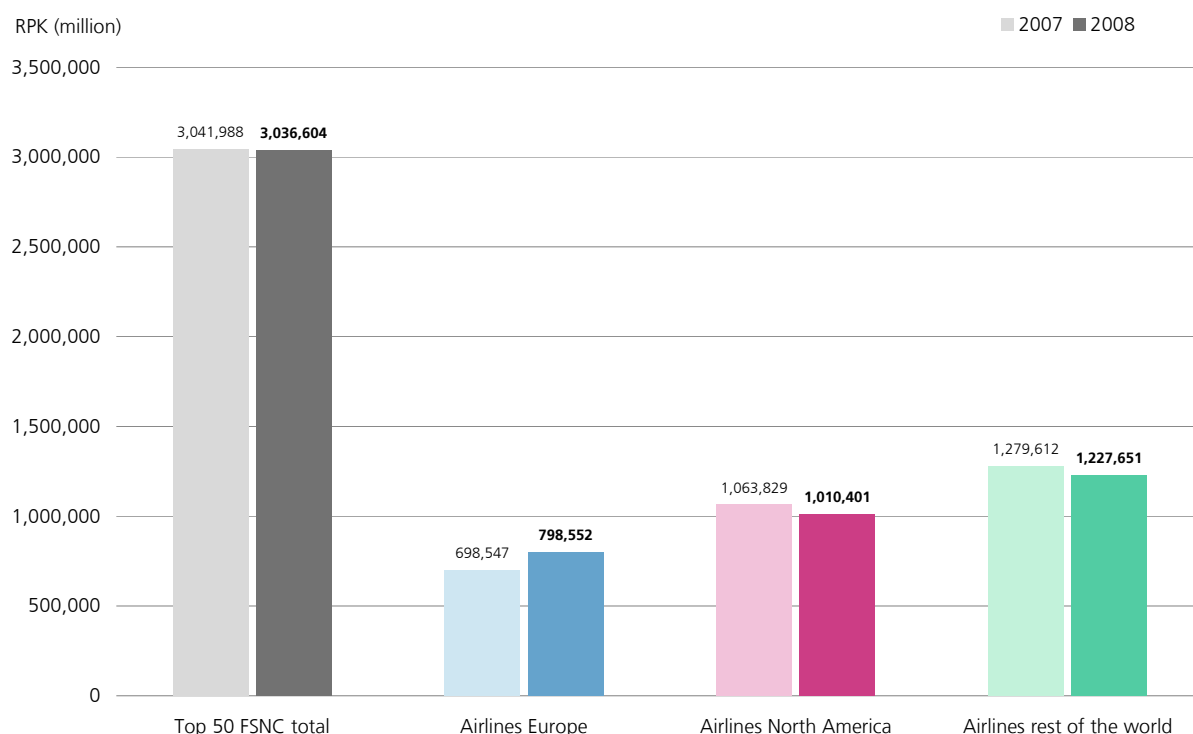
proportion, compared to 420 million for North American airlines (32.5%) and 333 million for European airlines (25.7%). Airlines originating from EU-27 account for around 20% of all passengers carried in this ranking. However, considering the limited number of North American carriers in the data set, these figures again highlight the size of these airlines compared to their European counterparts.

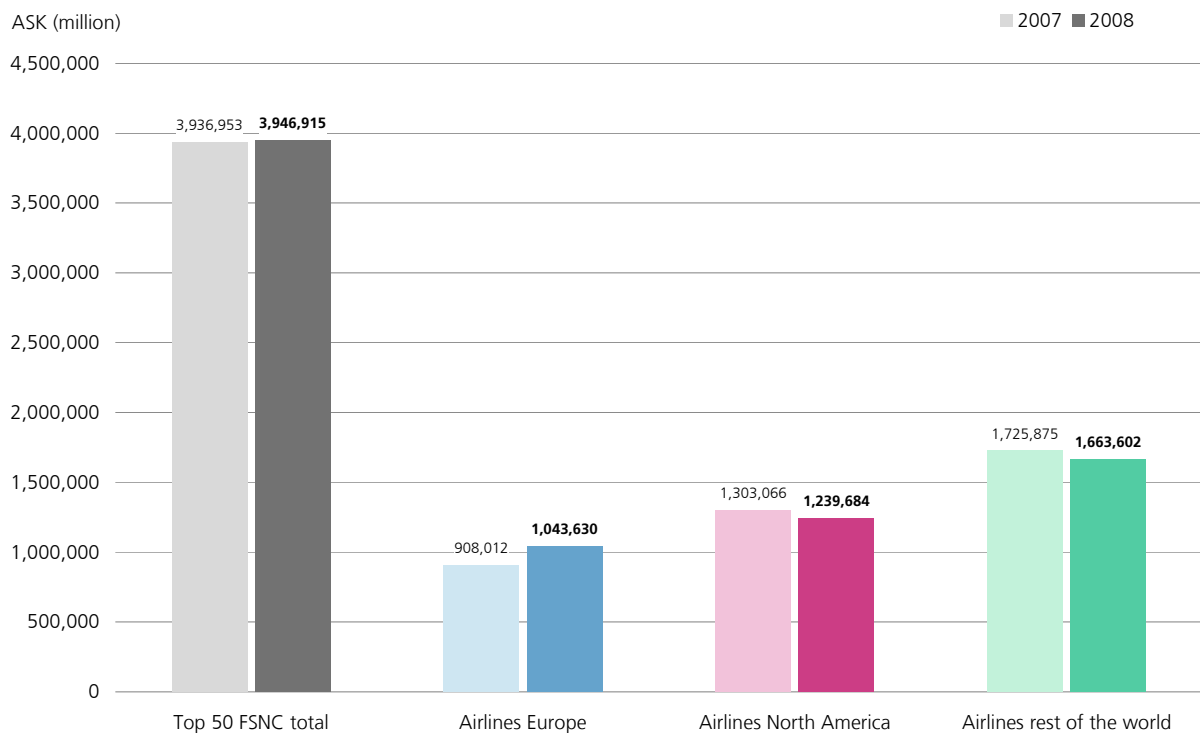
Compared with 2007, the number of passengers decreased by 4.5%. The decrease in passenger numbers for North American airlines can be explained by the increasing weakness in the US economy over the course of the year accompanied by high fuel prices in the first half of 2008. In contrast, the data shows an increase in passenger numbers for European airlines. However, this increase results from an increase in European carriers in the top 50 FSNC ranking (from 12 airlines in 2007 to 16 airlines in 2008).

The figures 2-16 (a) and 2-16 (b) show the shares in terms of passenger kilometres flown and capacity (ASK) for the different geographical regions.

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

Source: Ascend, Airline Business, ICAO, IATA





North American airlines represent the largest share in terms of RPKs (33.3%) closely followed by Asian-Pacific airlines (31.1%). European airlines account for 26.3% market share (21.9% for carriers from EU-27). The overall average length of passenger haul is 2350 km. Especially the North American airlines show a significant increase in the average length of passenger haul. This is primarily a consequence of increased services to more profitable international destinations accompanied by the reduction of domestic capacity.

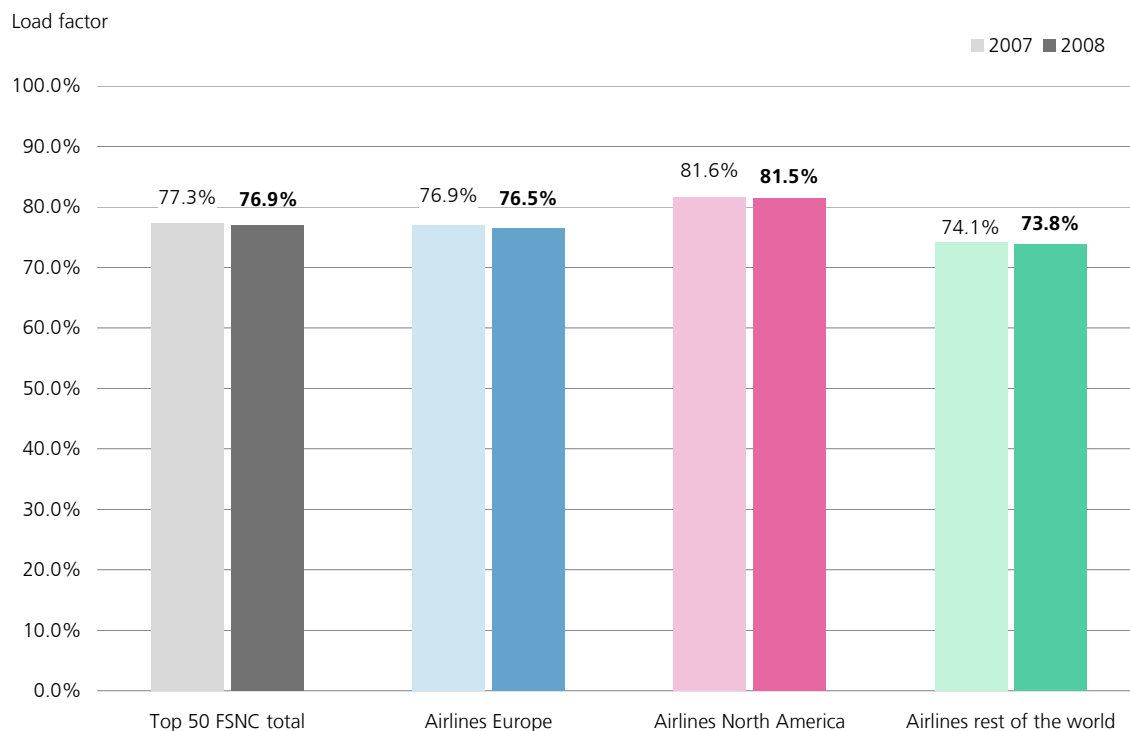
The ratio of available seat kilometres to revenue passenger kilometres determines the load factor. The average values are shown in Figure 2-17.

Taking an average for all top 50 airlines gives a load factor of 76.9%. It is mainly those in the category "Airlines rest of the world" (73.8%) that come in below this value. In contrast, North American airlines show a fairly high load factor of 81.5%. Their load factor also exceeded 80% in the preceding year. In Europe, 6 airlines score above average load factors.

An overall decrease in load factor can be seen, reflecting the growing economic weakness in 2008. Airlines faced high fuel prices causing a rise of break-even load factors which added even more pressure to their profitability, forcing them to cut their supply. Even after the fuel price peak in July of 2008, the full benefit of lower fuel costs was not being felt due to hedging.

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

Source: Ascend, Airline Business, ICAO, IATA



2.1.2.2 Low Cost Carriers (LCC)

The following Table 2-2 shows the top 25 low cost airlines in 2008, ranked according to revenue passenger kilometres.

Of the top 25 Low Cost Carriers, 10 are European (all originating from EU-27 Member States) and 8 are from North America. In comparison with the preceding year, the ranking shows a high stability. The leading North American LCC, Southwest Airlines, is significantly bigger than its European equivalents. With 118,543 million revenue passenger kilometres (over 21% of the total in this class) Southwest Airlines is the largest company in this class and even ranks among the world's overall top 10 airlines (rank 1 in number of passengers and rank 7 in RPKs). By contrast, there are numerous relatively small LCCs in Europe.

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

Source: Ascend Online, Airline Business, ICAO, IATA

2008 RPK class	Rank 2007 RPK class	Rank 2008 RPK total	Airline	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	1	7	Southwest Airlines	North America	102.0	118,543	166,590	78.3
2	2	19	Ryanair	Europe	57.7	61,983	75,403	90.4
3	3	25	airberlin¹	Europe	28.6	44,315	56,478	86.3
4	5	26	easyJet²	Europe	37.9	43,160	52,210	90.9
5	4	27	JetBlue Airways	North America	21.9	41,968	52,224	88.4
6	6	36	AirTran Airways	North America	24.6	30,514	38,327	87.6
7	7	46	GOL Linhas Aereas	Latin America	19.6	25,307	41,101	67.7
8	8	52	WestJet	North America	14.3	22,103	27,591	88.1
9	10	57	Virgin Blue Airlines	Asia-Pacific	17.7	19,887	25,136	87.0
10	9	59	TUIfly	Europe	10.6	18,309	21,293	94.6
11	13	66	Jetstar	North America	9.8	16,666	21,800	84.1
12	11	72	Frontier Airlines	North America	10.6	15,865	19,055	91.6
13	15	80	AirAsia	Asia-Pacific	11.8	13,485	18,717	79.3
14	12	87	Spirit Airlines	North America	6.9	10,623	13,230	88.3
15	-	94	Kingfisher Airlines³	Asia-Pacific	10.7	9,557	14,865	70.7
16	-	110	Norwegian Air Shuttle⁴	Europe	7.5	7,297	9,272	86.6
17	-	113	Air Arabia	Asia-Pacific	3.6	7,115	8,300	94.3
18	16	114	Germanwings	Europe	7.6	6,811	8,340	89.8
19	22	123	Vueling Airlines	Europe	6.3	6,007	8,455	78.2
20	23	126	Cebu Pacific Air	Asia-Pacific	6.7	5,710	7,365	85.3
21	20	127	Jet2	Europe	3.5	5,688	7,166	87.3
22	-	129	Virgin America	North America	2.6	5,528	7,242	84.0
23	24	136	SpiceJet	Asia-Pacific	4.1	4,620	7,047	72.1
24	25	152	SkyEurope Airlines	Europe	3.7	3,733	4,888	84.0
25	-	162	Flybe	Europe	6.9	3,350	5,270	69.9

¹ Includes airberlin and LTU.

² Includes easyjet and GB Airways (excluidig easyjet Switzerland).

³ Includes Kingfisher Airlines and Kingfisher Red (former known as Air Deccan).

⁴ Includes Norwegian Air Shuttle and FlyNordic.

As a consequence of the advancing process of consolidation, GB Airways, which was ranked as number 18 in the preceding year, was purchased by easyJet in January 2008. The UK airline ceased operations on March 30, 2008. The values for the months January to March were added to the values of easyJet. Similarly, Air Deccan was renamed in Kingfisher Red after the acquisition by Kingfisher Airlines. As a subsidiary, the figures from the two airlines have been added up. Kingfisher Airlines now occupies rank 15 in the top 25. Furthermore, Norwegian Air Shuttle, the second-largest airline in Scandinavia, purchased the Swedish airline FlyNordic in April 2007 and entered the Copenhagen market in 2008. The Scandinavian carrier added 17 aircraft to its fleet. In addition, Norwegian Air Shuttle started operations on 18 new routes in the fourth quarter of 2008 (in the first three quarters of 2008, 44 new routes were added to the network).

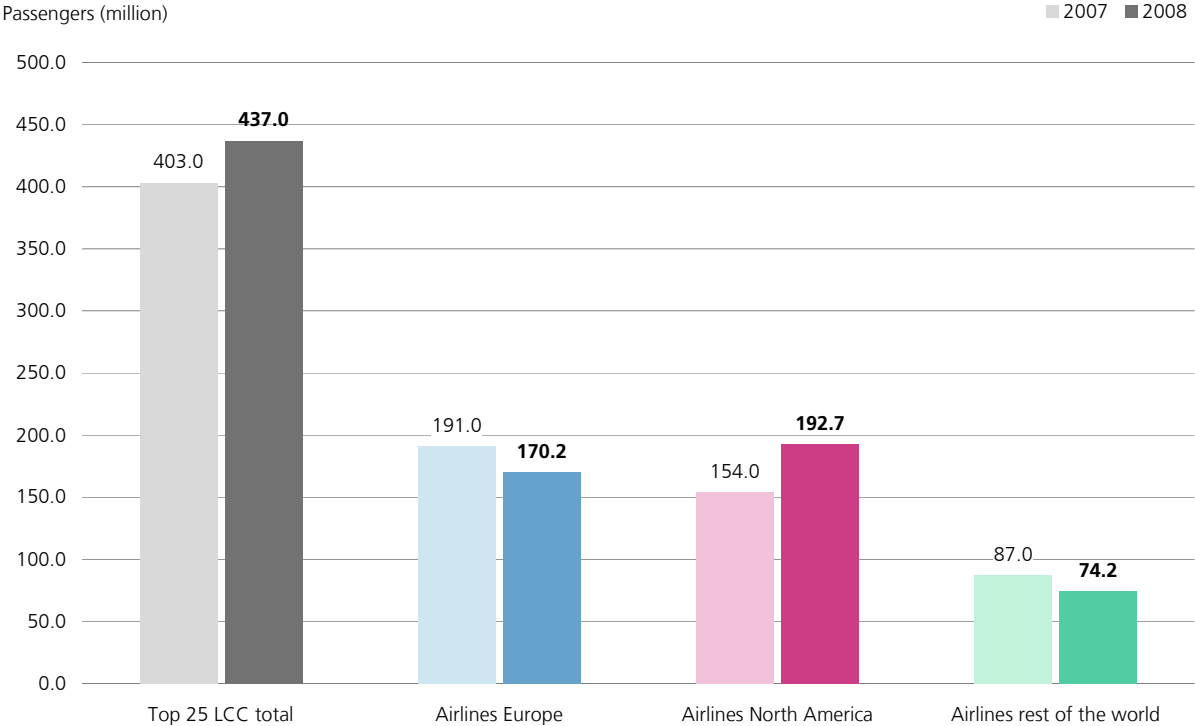


In addition, Vueling and Clickair, both based in Barcelona, announced their intention to merge in June 2008. On January 10, 2009, the European Commission approved the merger between these two airlines. On April 10, 2008, Frontier Airlines filed for Chapter 11 bankruptcy to solve financial issues and to ensure long-term viability. The airline continued its operations uninterrupted. In June 2008 Frontier announced a 17% reduction of its scheduled flights.

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

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

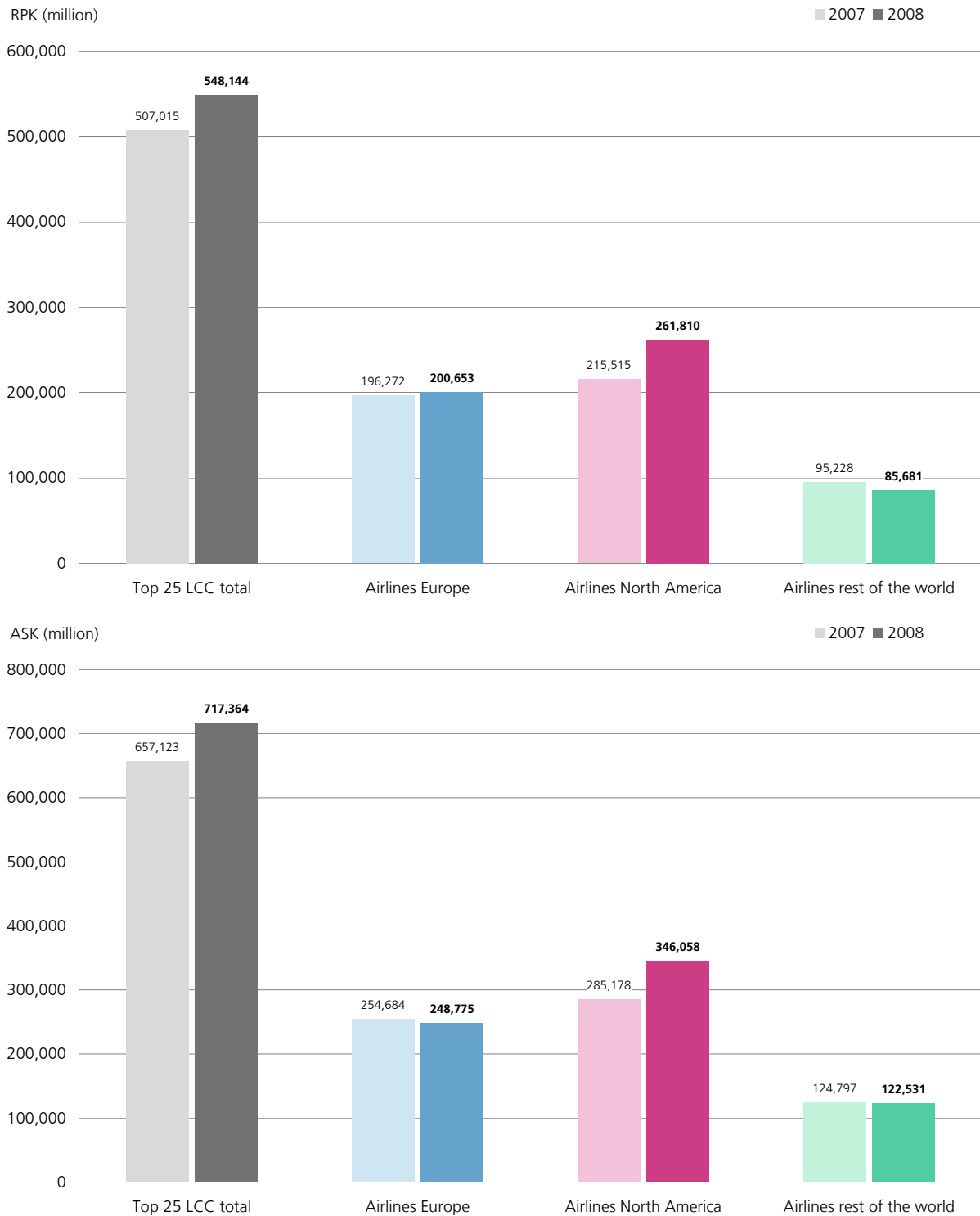
Source: Ascend, Airline Business, ICAO, IATA



Southwest Airlines has a considerable share (23.4%) of the total number of passengers carried by all of the top 25 carriers followed by Ryanair (13.2%), easyJet (8.7%), airberlin (6.5%), and JetBlue Airways (5%). This means that nearly 55% of all passengers carried by the top 25 LCCs can be attributed to these five airlines.

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

Source: Ascend, Airline Business, ICAO, IATA



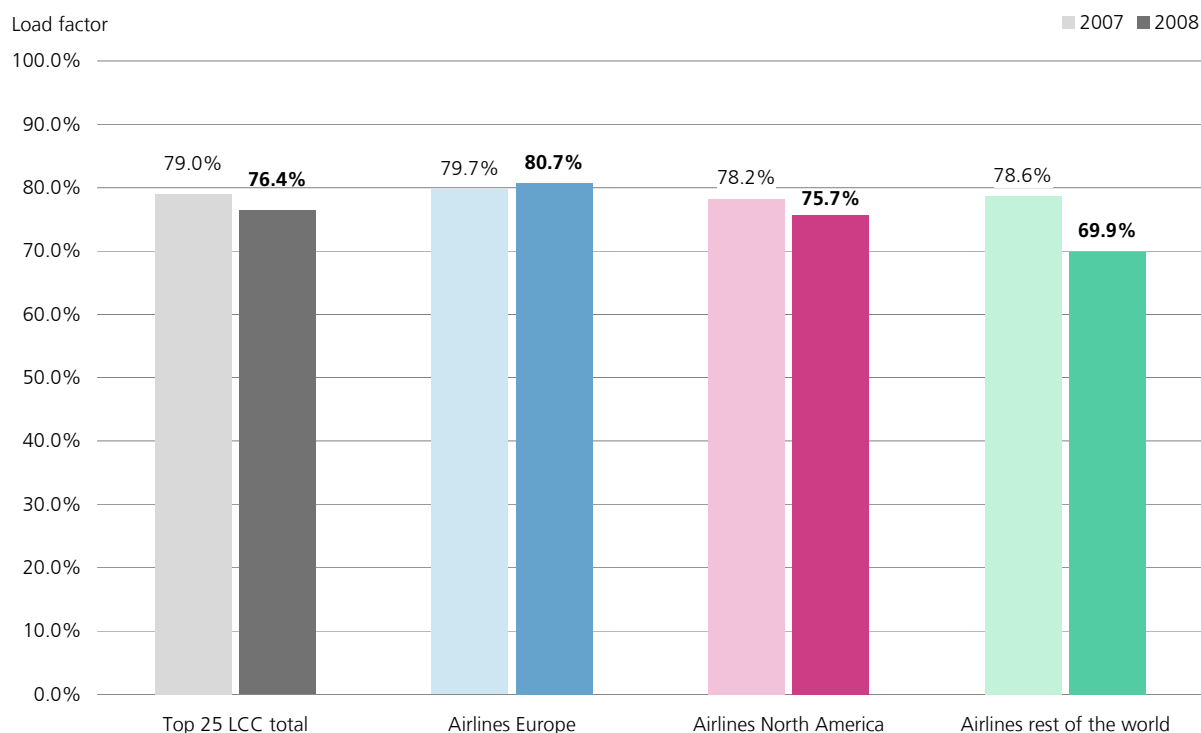
The Figures 2-19 (a) and 2-19 (b) show the regional breakdown in terms of revenue passenger kilometres and available seat kilometres respectively. It can be seen that North American airlines make up the highest share of RPKs (48%) followed by European carriers (37%).

Regarding the average length of passenger haul, the North American airlines show the longest travel distances. The mean distances travelled in Europe are below the global average of 1359 km. Due to Europe's geographical structure, shorter city pairs are more often offered here than in other regions such as North America.

For the LCCs, the average seat load factor is 76.4%. European airlines show an above average load factor of 80.7%. North American and the "Rest of the World" carriers show a significantly lower level with 75.7% and 69.9% respectively. The following Figure 2-20 shows the load factor by airline group for 2007 and 2008.

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

Source: Ascend, Airline Business, ICAO



A noticeable difference here is the 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 4 percentage points above that of European FSNCs, the reverse is true for the North American airlines (FSNC load factor of nearly 82% versus 75.7% for LCCs). European Low Cost Carriers still differ from the traditional airlines with respect to their business concept (low overheads, high load factor).

2.1.2.3 Regional carriers

The following Table 2-3 gives an overview of the top 25 regional airlines in 2008. The dominance of North American airlines is obvious: 16 of the top 25 regional airlines are from this

region, compared to only 3 airlines from Europe (includes Lufthansa CityLine as only EU-27 regional carrier in this ranking), 5 airlines from the Asian-Pacific region, and 1 originating from Latin America.

Table 2-3: The top 25 regional carriers worldwide

Source: Ascend, Airline Business, ICAO, IATA

2008 RPK class	Rank 2007 RPK class	Rank 2008 RPK total	Airlines	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	1	60	SkyWest Airlines	North America	20.7	17,959	23,532	76.3
2	4	65	Shenzhen Airlines	Asia-Pacific	12.0	17,019	21,862	77.8
3	2	74	ExpressJet Airlines	North America	14.8	14,719	19,387	75.9
4	5	81	Hawaiian Airlines	North America	7.9	12,645	15,305	82.6
5	3	83	American Eagle Airlines	North America	16.6	11,798	16,729	70.5
6	6	85	Xiamen Airlines	Asia-Pacific	9.6	11,373	15,634	72.7
7	8	93	Atlantic Southeast Airlines	North America	12.5	9,577	12,008	79.8
8	9	100	Sichuan Airlines	Asia-Pacific	6.7	8,833	11,618	76.0
9	7	101	Mesa Airlines	North America	11.2	8,168	10,667	76.6
10	10	104	Pinnacle Airlines	North America	10.4	7,798	10,174	76.7
11	-	108	Dragonair	Asia-Pacific	6.0	7,404	10,774	68.7
12	13	112	SAS Norge	Europe	10.0	7,189	10,888	66.0
13	11	117	Comair	North America	8.1	6,652	8,928	74.5
14	12	120	Air Canada Jazz	North America	n/a	6,594	9,087	72.6
15	17	121	Allegiant Air	North America	4.3	6,219	7,151	87.0
16	23	128	Republic Airlines	North America	7.0	5,620	7,540	74.5
17	14	133	Midwest Airlines	North America	3.0	5,034	6,640	75.8
18	19	137	Lufthansa CityLine	Europe	6.8	4,602	6,599	69.7
19	16	138	VIM Airlines	Asia-Pacific	1.6	4,455	n/a	n/a
20	15	139	Chautauqua Airlines	North America	6.3	4,434	6,089	72.8
21	21	141	Shuttle America	North America	4.2	4,417	6,024	73.3
22	18	143	Horizon Air	North America	7.4	4,242	5,822	72.9
23	-	148	Continental Micronesia	North America	1.3	3,908	5,701	68.6
24	-	150	KrasAir¹	Europe	1.2	3,744	5,000	74.9
25	-	153	LanExpress	Latin America	3.4	3,633	4,728	76.8

¹ KrasAir ceased operations in October 2008.

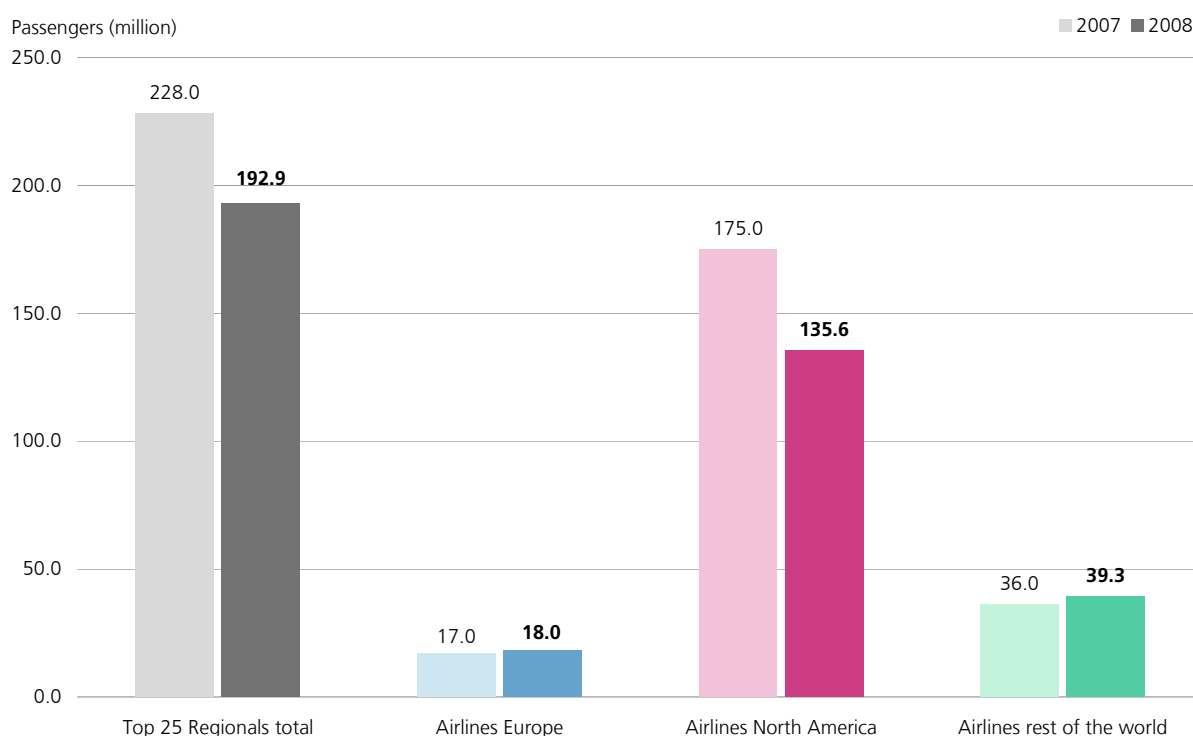
As in the previous year, SkyWest Airlines is the leading airline in this group in terms of revenue passenger kilometres and of number of passengers carried. However, in comparison with the preceding year a 3.5% decrease in revenue passenger kilometres can be seen (18,616 million in the period of 2007 versus 17,959 million in 2008). A similar change is observable regarding the number of passengers carried. In the period of 2008 SkyWest Airlines carried almost 6% fewer passengers as in the same period in 2007 (the difference between the two compared periods is 2.3 million). At the same time the capacity only shows a decrease of 2%, which has a negative effect on the load factor (1.2 percentage points difference to the preceding period). A possible explanation might be negative effects due to high oil prices and the growing economic

weakness in 2008. Furthermore, SkyWest operates regional services for United Express and Delta Connection. Especially the latter was planning to reduce its regional flights significantly. Comair, too, is a subsidiary of Delta Air Lines and operates under the name Delta Connection. This airline dropped slightly from rank 11 to rank 13. Due to Delta's new strategy to reduce domestic capacity by 4-5%, Comair planned to reduce its fleet by 8-14 50-seat aircraft.

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: Ascend, Airline Business, ICAO, IATA



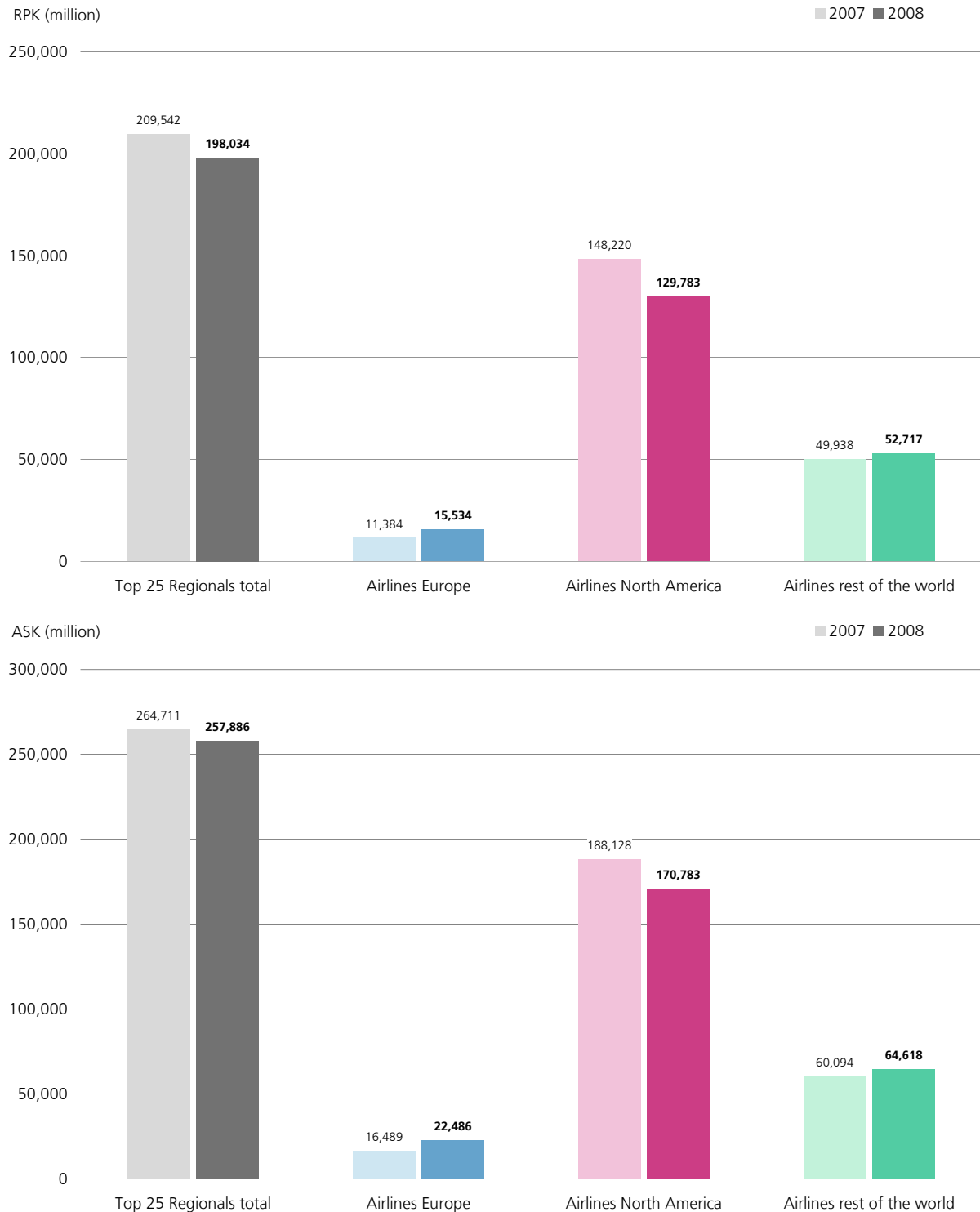
Similarly to the LCCs, the highest number of passengers is seen for the North American airlines (70.3%) followed by airlines of the "Rest of the World" group which mainly originate from the Asian-Pacific region. Regional carriers have much greater importance in the USA than they do in Europe or Asia 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. FSNCs often cover short-distance city pairs themselves. An increasing level of cooperation between airlines and railway operators can also 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. Figures 2-22 (a) and 2-22 (b) show the regional

distribution of the total RPKs and ASKs achieved by airlines within this class. In 2008, almost 70% of the total RPKs and ASKs (by the top 25 regional airlines) were attributable to North American airlines.

Figure 2-22: RPK and ASK for the top 25 regional carriers

Source: Ascend, Airline Business, ICAO, IATA

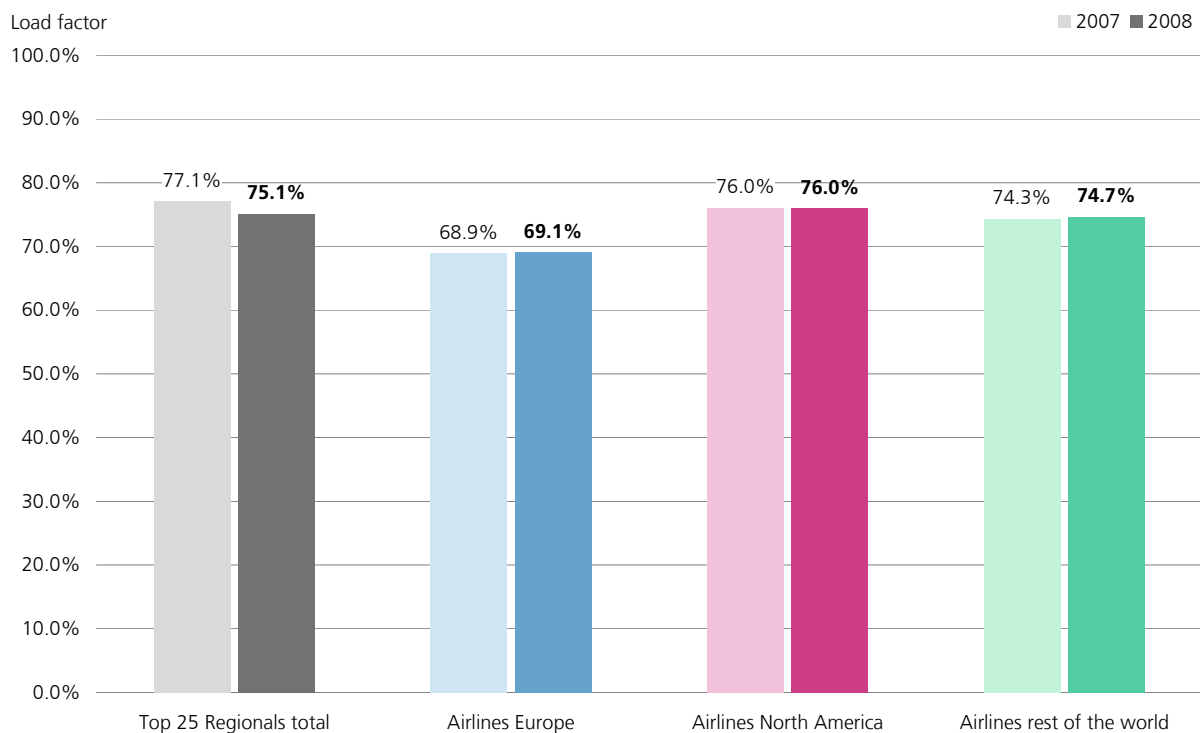


* ASK without VIM Airlines, since value is not available for 2008.

Due to the gap between available seat kilometres and passenger kilometres actually performed, the corresponding load factor is lower on average for this airline class than for the other classes. The overall average value (75.1%) is lower than those achieved by FSNCs, LCCs and Holiday/Charter Carriers (see below). On average, these airlines' aircraft are only loaded to two-thirds capacity. European airlines have the lowest value in this class (69.1%). Airlines in the "Rest of the World" group show a slight improvement of 0.4 percentage points in their load factor. These airlines achieved an average seat load factor of 74.7% while the North American airlines show a slightly higher load factor of 76%. 11 airlines in this class made an above average load factor. Nevertheless, only 2 airlines (Hawaiian Airlines, Allegiant Air) achieved the 80% range in load factor.

Figure 2-23: Average load factor for the top 25 regional carriers

Source: Ascend, Airline Business, ICAO, IATA



2.1.2.4 Holiday/charter carriers

The following table lists the top 15 holiday and charter airlines.

Table 2-4: The top 15 charter airlines worldwide

Source: Ascend, Airline Business, ICAO, IATA

2008 RPK class	Rank 2007 RPK class	Rank 2008 RPK total	Airline	Region	Mill PAX	Mill RPK	Mill ASK	%LF
1	4	44	Thomas Cook Airlines UK¹	Europe	15.4	52,394	57,873	90.5
2	1	30	Thomson Airways²	Europe	13.6	38,300	41,821	91.6
3	2	56	Condor Flugdienst	Europe	6.4	21,752	24,407	89.1
4	5	71	Monarch Airlines	Europe	6.5	15,921	19,043	83.6
5	6	84	Air Transat	North America	2.9	11,411	13,011	87.7
6	8	86	Corsair	Europe	1.6	11,200	12,947	86.5
7	12	105	SunExpress	Europe	4.2	7,957	10,258	77.6
8	-	-	Onur Air	Europe	4.4	7,457	9,137	81.6
9	10	110	Martinair	Europe	1.6	6,500	6,832	95.1
10	9	125	XL Airways UK²	Europe	1.7	5,776	6,450	89.5
11	13	130	Pegasus Airlines	Europe	3.7	5,270	7,033	74.9
12	15	131	Iberworld	Europe	1.5	5,091	6,060	84.0
13	11	134	flyglobespan	Europe	1.6	4,822	6,060	79.6
14	14	135	Livingston Energy Flight	Europe	1.1	4,670	5,797	80.6
15	17	140	Omni Air International	North America	1.0	4,430	7,808	56.7

¹ Includes MyTravel Airways due to merger in May 2008.

² Includes First Choice Airways. In November 2008 Thomsonfly and First Choice were renamed to Thomson Airways.

³ XL Airways UK ceased operations in September 2008.

The data obtained for 2008 mainly related to European charter airlines. The two North American airlines in the top 15 ranking list only play a minor role compared to the major holiday airlines, Thomson Airways and Thomas Cook Airlines. These two airlines represent the largest share of RPKs and ASKs (both combined make up nearly 35% of the total in this class). 10 out of 13 of the European airlines in the above ranking originate from EU-27 (excluding the Turkish carriers SunExpress, Onur Air and Pegasus Airlines). In terms of RPKs, EU-27 holiday/charter airlines account for over 82% in this ranking.

In 2008, Thomsonfly and First Choice Airways became Thomson Airways which started its operations on November 1, 2008. It is now the third largest airline in the UK. In this analysis, the data from both airlines was combined and is presented as Thomson Airways.

In June 2007, MyTravel Airways' parent group merged with Thomas Cook AG after suffering serious financial losses. On May 30, 2008, MyTravel Airways was re-branded and now operates under the name Thomas Cook Airlines.

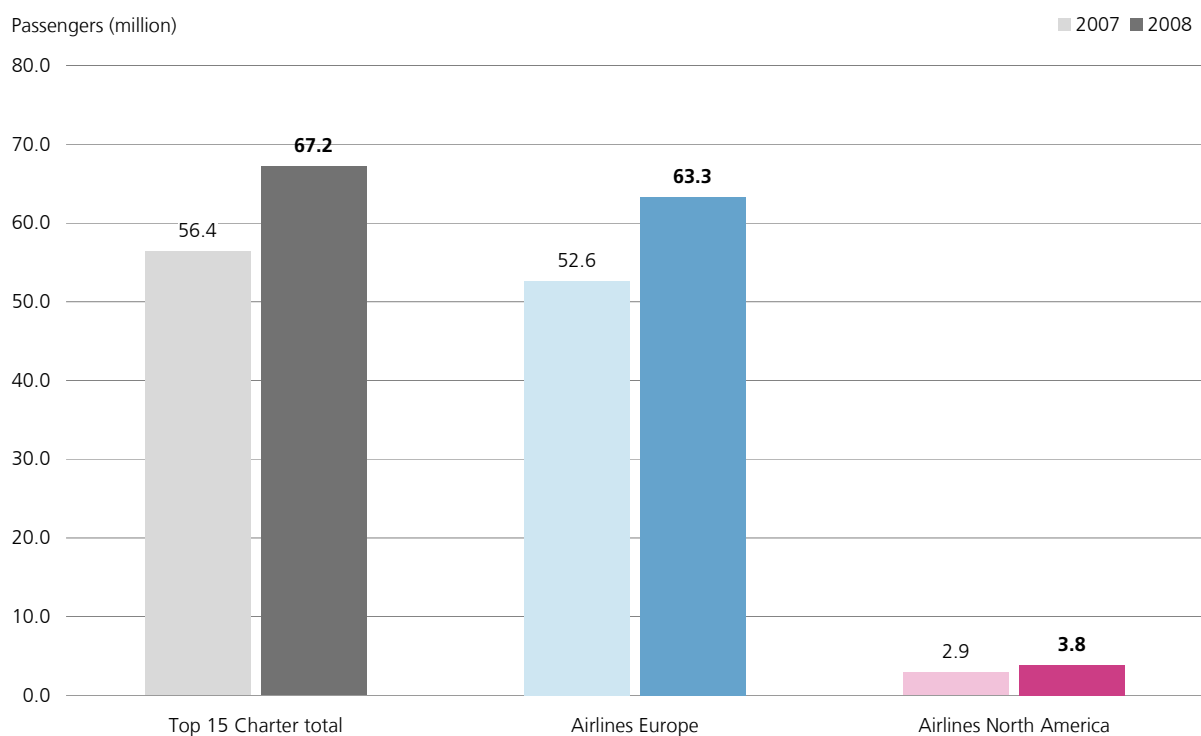
Even though XL Airways still occupies rank 8 in this list, it should be noted that this airline ceased operations on September 12, 2008, after going into administration due to high oil prices and the effects of the global recession.

The first North American carrier in this ranking, Air Transat, is based in Montreal and is one of Canada's largest airlines. Air Transat focuses on services between Canada and the Caribbean, Mexico, USA, South America and Cuba. Due to the consolidation of European holiday airlines there is one new entrant in this class with North American origin, Omni Air International. This US-carrier is headquartered in Tulsa, Oklahoma and operates international and domestic charter services.

The passenger numbers emphasise the strong position of European airlines in this top 15 list (89% of all passengers carried in this class) thanks to the importance of European charter traffic (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). As mentioned above, the higher passenger numbers for North American carriers in this class can be explained with the increase of airlines from this region in the top 15 ranking.

Figure 2-24: Number of passengers carried by the top 15 holiday/charter carriers

Source: Ascend, Airline Business, ICAO, IATA



Thomson Airways also leads in terms of passengers carried during the period studied, marking this company out clearly from its closest competitors, Thomas Cook Airlines and Condor

Flugdienst. As the leading airline, Thomson Airways carried 13.6 million passengers (more than 21% of all passengers carried by the top 15 airlines) followed by Thomas Cook Airlines with 7.8 million passengers.

Figure 2-25: RPK and ASK for the top 15 holiday/charter carriers

Source: Ascend, Airline Business, ICAO, IATA

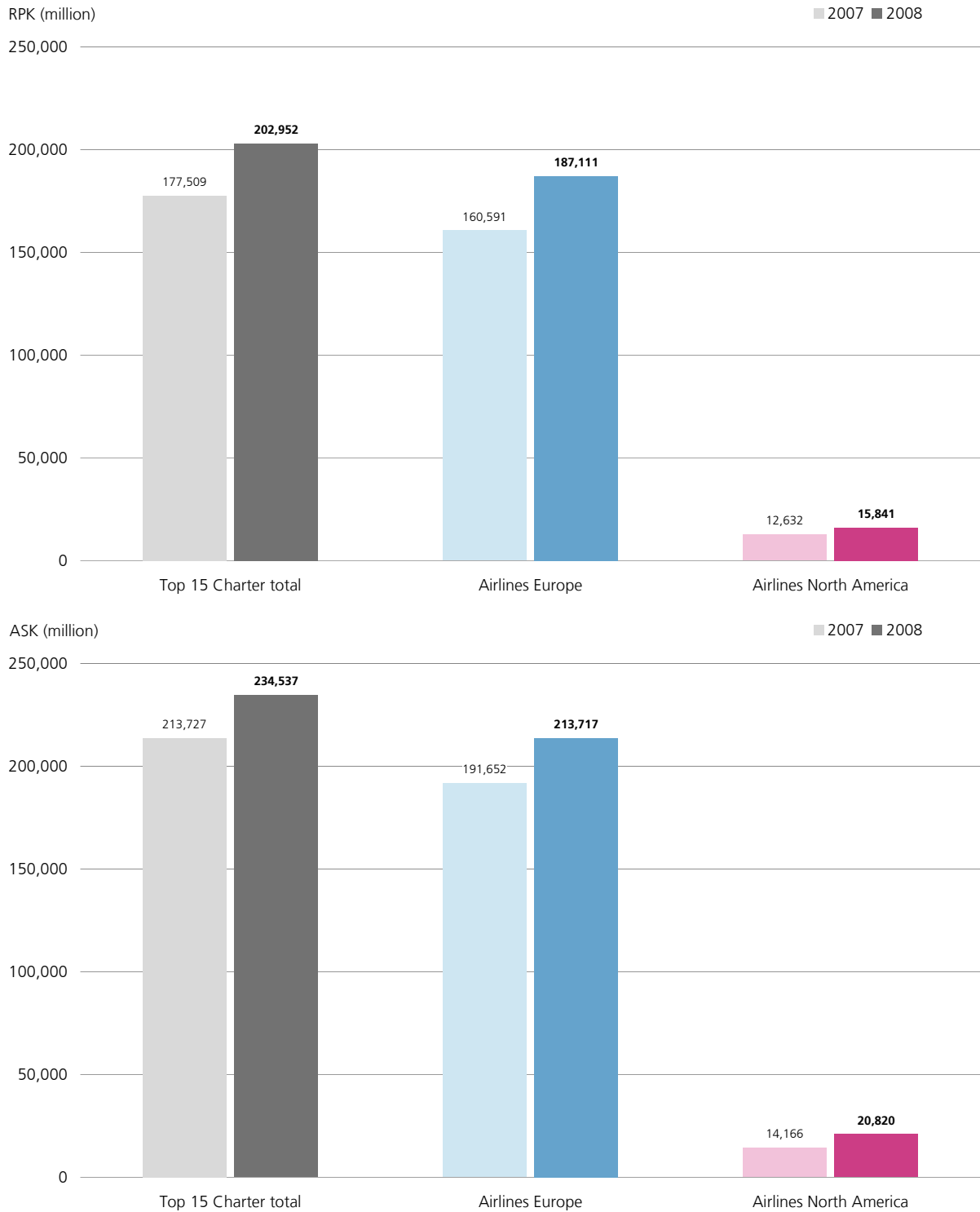


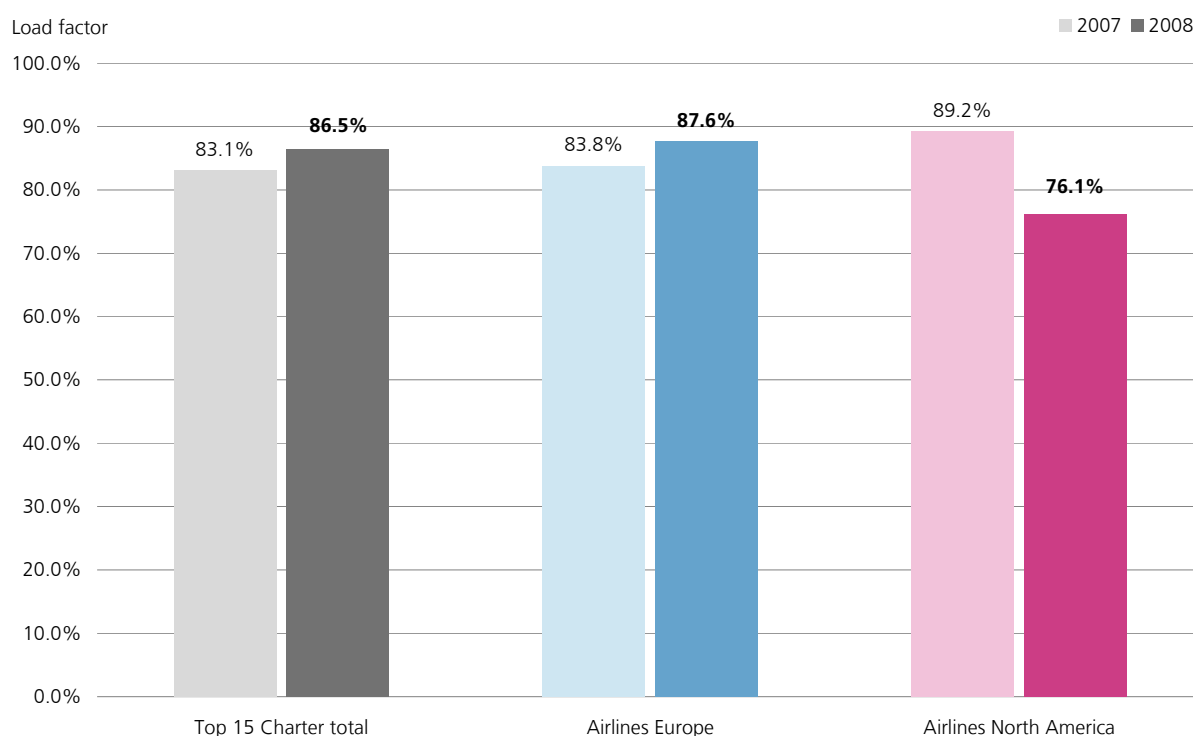
Figure 2-25 (a) and (b) show the number of available seat kilometres and the level of demand in 2008. The European dominance is shown again by these results.

Analysis of the available seat kilometres and the revenue passenger kilometres data reveals the high distances travelled compared to all other classes. On average, each passenger was carried over a distance of approximately 2930 km.

As in the preceding year, the average 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%. First place in this group is occupied again by Thomson Airways with a load factor of 91.6%. It can be seen that European airlines show an increase in load factor while North American airlines show a significant reduction of 2.1 percentage points. This might be a result of the rise in crude oil prices in the middle of 2008 and especially the economic slowdown which were felt stronger in the North American region at that time.

Figure 2-26: Average load factor for the top 15 holiday/charter carriers

Source: Ascend, Airline Business, ICAO, IATA



2.1.3 Passenger aircraft fleet

Table 2-5 shows the development of the world passenger aircraft fleet in 2008 compared to 2007. 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 2008 stood at 19,640 – this is a marginal decline of 15 aircraft compared to the end of 2007.

Table 2-5: Passenger aircraft in service at year-end 2007/2008

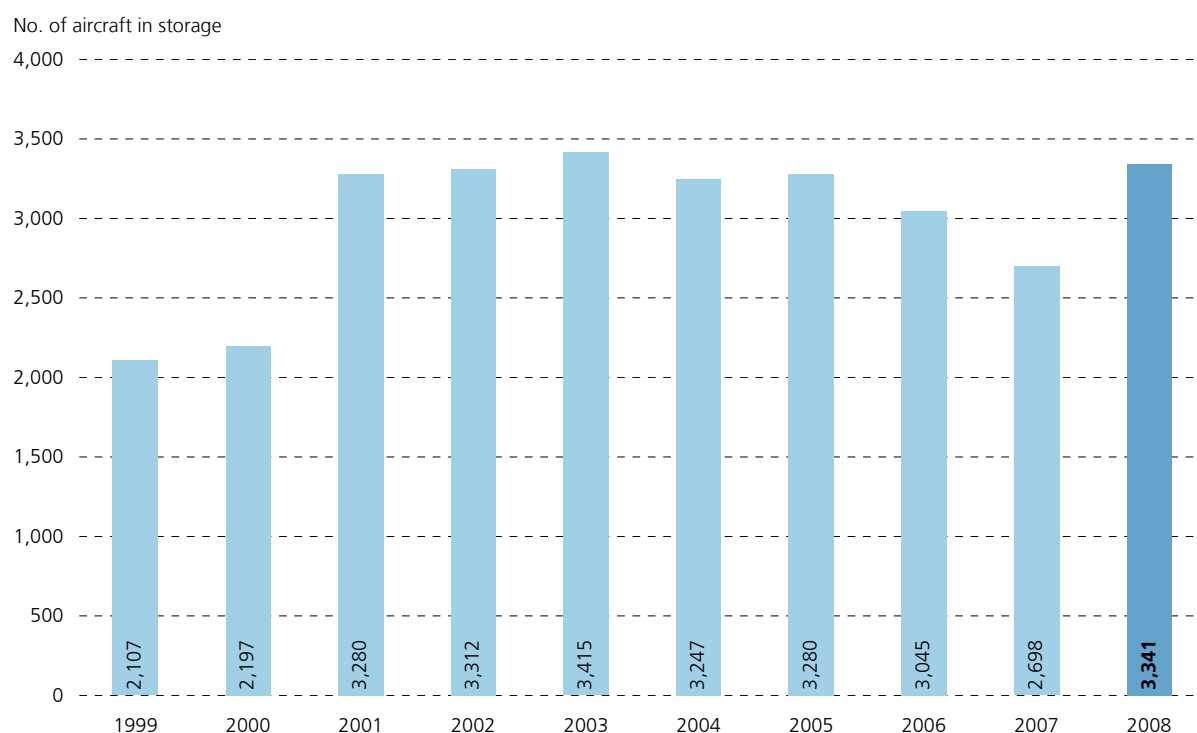
Source: Ascend Online Fleets

Aircraft Size	2008	2007	Percentage Change
20-39 seats	1348	1447	-6.8%
40-69 seats	3161	3228	-2.1%
70-119 seats	2565	2458	4.4%
120-169 seats	6948	7001	-0.8%
170-239 seats	3133	3046	2.9%
240-349 seats	1883	1859	1.3%
350+ seats	602	616	-2.3%
Total	19,640	19,655	-0.1%

The stagnating global passenger aircraft fleet reflects the ambiguous nature of the year 2008 for air transport. In the first half, high oil prices pressed airlines to decommission older, less fuel efficient aircraft. In the second half, the drop in demand pushed airlines to put aircraft out of service.

Figure 2-27: Passenger aircraft in storage at year-end 1999-2008

Source: Ascend Online Fleets



354 passenger aircraft were permanently withdrawn from service in 2008. This, however, is fewer than the 403 passenger aircraft retired in 2007. In the course of 2008, the number of passenger aircraft in storage increased according to ASCEND from 2698 to 3341. The level of stored passenger aircraft is near the historical peaks seen in 2002 and 2003.

Nevertheless, some segments of the world passenger aircraft fleet also grew in 2008. Particularly the segment of large regional jets with 70 to 119 seats grew by 4.4%. This is due to the high demand for modern regional jets, namely the Embraer E-Jets family and Bombardier's CRJ900.

The second highest growing segment in the world passenger aircraft fleet is the 170-239 seat aircraft category with a growth of 2.9%. These aircraft are popular with many low cost carriers which continued their growth in 2008, despite the difficult economic background. This aircraft class also contains small wide-body aircraft in a two or three-class configuration, such as the Airbus A330-200 or the Boeing 767-200 and -300, which continue to be popular with FSNCs for the provision of lower demand intercontinental city pairs. A slight growth was observed in the category of intermediate long-haul aircraft with 240 to 349 seats. These aircraft include the medium sized wide-body aircraft Airbus A330-300 and Boeing 777-200/-300, which are perceived as very fuel efficient and therefore very popular with network carriers, long-haul holiday carriers and also some newer long-haul low cost carriers. For instance, AirAsia X from Malaysia now operates three Airbus A330-300 (plus an additional 23 on order) for low cost flights between Asia and Australia and will soon also begin services to Europe.

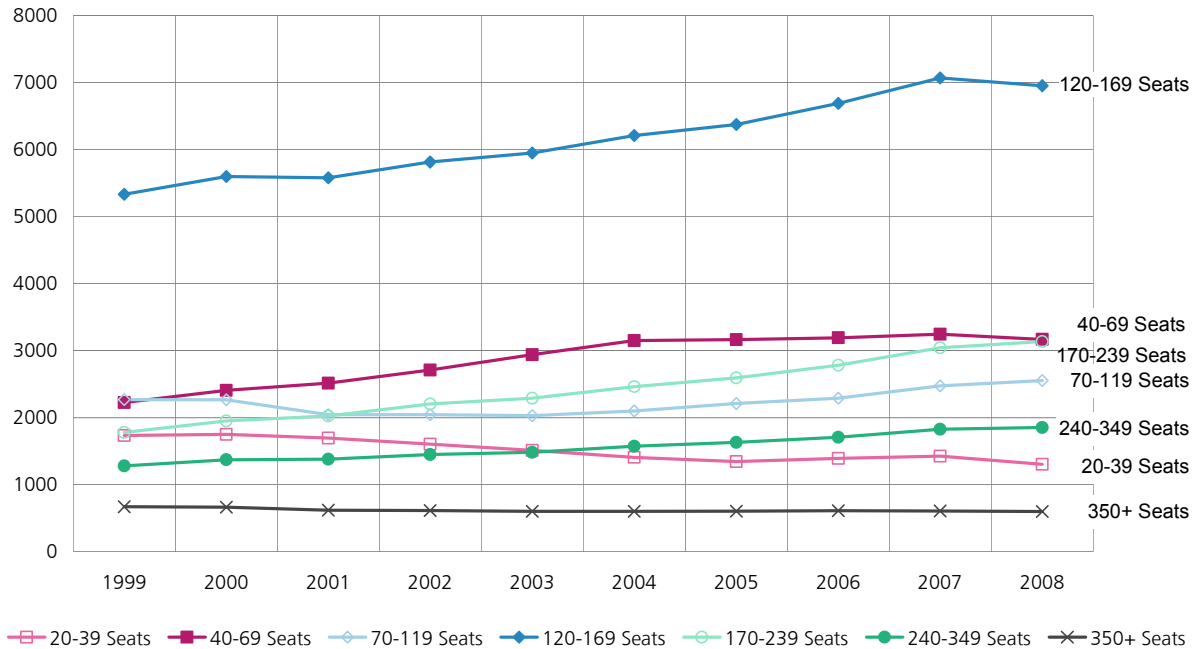
Despite the delivery of 12 Airbus A380s, the number of aircraft in the category of very large passenger aircraft with more than 350 seats continued to decline. Only 602 of these aircraft, mainly Boeing 747-400, remain in passenger service. A considerable number of 747s were converted into freighters, and a total of 28 of these aircraft were permanently withdrawn from service in 2008.

Figure 2-28 depicts the development of the different fleet segments over the past 10 years. In total, the world passenger aircraft fleet grew by almost 28%.

Figure 2-28: 10-year development of the world passenger aircraft fleet

Source: Ascend Online Fleets, data as of January 2009

Number of Aircraft



Aircraft Category	2008	2007
20-39 seats	19.5	18.0
40-69 seats	12.9	12.2
70-119 seats	10.9	12.4
120-169 seats	10.9	11.2
170-239 seats	9.2	9.4
240-349 seats	9.4	9.1
350+ seats	12.9	12.9
Overall Average	11.5	11.6

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

Source: Ascend Online Fleets, data as of January 2009

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. The overall fleet age dropped slightly from 11.6 years in 2007 to 11.5 in 2008. This could be a sign that, despite the financial crisis making it harder for airlines to invest capital into new fleets, economic pressures from fuel costs and environmental concerns create a need to operate modern fleets. The biggest modernisation took place in the category of large regional jets with 70-119 seats, where older aircraft such as the DC-9 were to a large extent removed from service and younger aircraft, like Bombardier's CRJ-series or the Embraer E-Jets put into service.

Table 2-7: The 20 largest network carriers by fleet size at year-end 2008, mainline passenger operations only

Pos.	Operator	Total fleet 2008	Total fleet 2007	Percentage Change	Regional jets and turboprops (20-69 seats)	Small single aisle jets/ turboprops (70-119 seats)	Medium single aisle jets (120-169 seats)	Large single aisle/ small twin aisle jets (170-239 seats)	Intermediate twin aisle jets (240-349 seats)	Large twin aisle jets (350+ seats)
1	American Airlines	623	659	-5.5%	0	0	374	182	67	0
2	Delta Air Lines	439	445	-1.3%	0	0	205	184	50	0
3	US Airways	354	360	-1.7%	0	25	240	80	9	0
4	United Airlines	353	404	-12.6%	0	29	126	105	93	0
5	Continental Airlines	342	356	-3.9%	0	40	181	96	25	0
6	Northwest Airlines	302	347	-13.0%	0	30	170	52	32	18
7	Lufthansa	252	246	2.4%	0	30	89	54	54	25
8	China Southern Airlines	249	249	0.0%	6	5	158	51	25	4
9	Air France	245	244	0.4%	0	6	98	59	63	19
10	British Airways	233	235	-0.9%	0	3	91	67	53	19
11	China Eastern Airlines	228	210	8.6%	15	0	158	15	40	0
12	Air China	221	206	7.3%	0	4	139	32	42	4
13	Air Canada	196	206	-4.9%	0	60	72	40	24	0
14	Japan Airlines	193	187	3.2%	0	0	44	22	75	52
15	ANA - All Nippon Airways	142	139	2.2%	0	5	25	23	59	30
16	Qantas	132	125	5.6%	0	0	56	12	41	23
17	SAS	132	123	7.3%	7	27	66	21	11	0
18	Iberia	121	136	-11.0%	0	0	67	21	21	12
19	Emirates Airline	118	102	15.7%	0	0	0	20	43	55
20	Turkish Airlines (THY)	113	97	16.5%	0	0	78	19	16	0
Total fleet operated by 20 largest operators		4988	5076	-1.7%	28	264	2437	1155	843	261
Percentage of world fleet:		25.4%	25.8%		0.6%	10.3%	35.1%	36.9%	44.8%	43.4%

Source: Ascend Online Fleets, data as of January 2009

Table 2-7 provides information on the largest FSNCs by fleet. It takes into account only 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.

Despite a considerable reduction in fleet size by 36 aircraft or 5.5% of the total fleet, American Airlines continues to operate the largest jet fleet in the world. Since the end of 2001, American has reduced its fleet by about 30% or almost 250 aircraft. United Airlines has also reduced its capacities by the same magnitude. Interestingly, the top six carriers by fleet size are all based in the US and all reduced capacities throughout 2008. However, if the fleets of Air France and KLM, which operate under different certificates, are combined, their combined fleet is the third-largest among the world's network carriers with 355 aircraft. When the merger between Delta Air Lines and Northwest is completed, it can be expected that the merged carrier will operate the largest passenger aircraft fleet in the world, even if further reductions take place. By the end of 2008, the two airlines operated 741 aircraft, which is 118 aircraft more than the fleet currently operated by the largest carrier, American.

While the largest declines in fleet sizes were recorded for US-based airlines, the largest increases come from carriers based in emerging market countries. The biggest relative increase is recorded

by Turkish Airlines, which is now the 20th largest FSNC by fleet and added 16 aircraft to its fleet, which is an increase of 16.5%. This carrier joined Star Alliance and continues an ambitious growth strategy. It is, like its counterparts from Arabia, located strategically at the crossroads between Europe and Asia and can therefore very effectively organise traffic flows between these continents via its hub at Istanbul. The second highest growth rate was shown by Emirates, which is also among the 20 largest FSNCs by fleet for the first time. Its fleet grew by 15.7% and is now the 19th largest in the world. Also growing at a considerable pace are carriers from China, such as China Eastern Airlines (+8.6%) and Air China (+7.3%). Alitalia is no longer listed among the top 20 FSNCs. The carrier, entangled in serious economic problems, reduced its fleet by 28.5% year-over-year from 144 to 103 aircraft.

The list of largest low cost carrier fleets is dominated by Southwest Airlines. Despite the difficult economic situation, which led other airlines in the US to reduce their capacities, Southwest increased its fleet by 3.5% in 2008 to 536 aircraft. Second and third largest low cost airlines in the world are Ryanair and the combined fleet of easyJet, easyJet Switzerland and former GB Airways with 167 and 165 aircraft respectively. The third largest low cost carrier from the European Union is airberlin, which now operates 123 aircraft. While Ryanair and easyJet are focussed on short- and medium-haul flights, airberlin also operates 14 wide-body aircraft for intercontinental services.

Table 2-8: The 20 largest low cost airlines by fleet size at year-end 2008

Pos.	Operator	Total fleet 2008	Total fleet 2007	Percentage Change	Regional jets and turboprops (20-69 seats)	Small single aisle jets (70-119 seats)	Medium single aisle jets (120-169 seats)	Large single aisle/small twin jets (170-239 seats)	Intermediate twin aisle jets (240-349 seats)
1	Southwest Airlines	536	518	3.5%	0	0	536	0	0
2	Ryanair	167	150	11.3%	0	0	0	167	0
3	easyJet/easyJet Switzerland*	165	152	8.6%	0	0	152	13	0
4	jetBlue Airways	142	134	6.0%	0	35	107	0	0
5	AirTran Airways	135	137	-1.5%	0	86	49	0	0
6	airberlin**	123	101	21.8%	0	0	35	74	14
7	GOL Linhas Aereas	85	78	9.0%	0	0	41	44	0
8	Kingfisher Airlines/Kingfisher red***	80	80	0.0%	26	8	17	29	0
9	WestJet	76	70	8.6%	0	13	63	0	0
10	AirAsia****	74	65	13.8%	0	0	0	44	0
11	Flybe	67	73	-8.2%	8	59	0	0	0
12	Virgin Blue Airlines	64	53	20.8%	0	17	22	25	0
13	Frontier Airlines	52	63	-17.5%	0	11	39	2	0
14	TUfly	46	51	-9.8%	1	0	17	28	0
15	Jetstar/Jetstar Asia	43	36	19.4%	0	0	0	0	0
16	Norwegian Air Shuttle	34	25	36.0%	1	0	28	5	0
17	Lion Air	33	31	6.5%	0	0	16	17	0
18	Jet2	29	30	-3.3%	0	0	20	9	0
19	Spirit Airlines	28	36	-22.2%	0	0	26	2	0
20	Virgin America	28	13	115.4%	0	0	28	0	0
Total fleet operated by 20 largest operators		2007	1896	5.9%	36	229	1196	459	14
Percentage of world fleet:		10.2%	9.6%		0.8%	8.9%	17.2%	14.7%	0.7%

Source: Ascend Online Fleets, data as of January 2009

*) Figure for 2007 includes GB Airways for comparison, which was taken over by easyJet and ceased operations on 30th March 2008

***) Figures for 2007 and 2008 include the fleet of LTU

***) Figure for 2007 includes Air Deccan for comparison, which was merged on 30th April 2008 with Kingfisher Airlines and currently operates as Kingfisher Red

****) Figures for 2007 and 2008 include AirAsia, Indonesia AirAsia and Thai AirAsia

The biggest growth among low cost carrier fleets was seen by Virgin America, which has now more than doubled its fleet to 28 aircraft. After a lengthy approval process, the carrier, which is partly owned by the UK-based Virgin Group, began service in August 2007 and has expanded rapidly since then. Uncommonly for a low cost carrier, it features a three-class service and operates mainly on coast-to-coast routes in the US.

The biggest growth among European LCCs was recorded by Norwegian Air Shuttle, which is also based at several airports in the European Union, such as Warsaw, Stockholm and Copenhagen. Norwegian increased its fleet from 25 to 34.

By 2008, the 20 largest low cost carriers already operate more than 10% of the world's passenger aircraft fleet, a total of more than 2000 aircraft.

Table 2-9: The 20 largest regional airlines by fleet size at year-end 2008

Pos.	Operator	Total Fleet 2008	Total Fleet 2007	Percentage Change	Regional jets and turboprops (20-39 seats)	Regional jets and turboprops (40-69 seats)	Small single aisle jets (70- 119 seats)
1	SkyWest Airlines	266	266	0.0%	56	127	83
2	ExpressJet Airlines	242	271	-10.7%	0	242	0
3	American Eagle Airlines	226	256	-11.7%	34	167	25
4	Atlantic Southeast Airlines	169	171	-1.2%	0	131	38
5	Pinnacle Airlines	144	140	2.9%	0	123	21
6	Air Canada Jazz	137	135	1.5%	36	85	16
7	Comair	126	134	-6.0%	2	96	28
8	Mesa Airlines	115	124	-7.3%	14	63	38
9	Chautauqua Airlines	111	118	-5.9%	10	101	0
10	Mesaba Airlines	102	67	52.2%	49	17	36
11	Lufthansa Cityline	72	74	-2.7%	0	42	30
12	Republic Airlines	69	57	21.1%	0	0	69
13	Air Wisconsin	69	69	0.0%	0	69	0
14	Air Nostrum	66	66	0.0%	0	50	16
15	Regional	64	62	3.2%	14	28	22
16	KLM Cityhopper	57	55	3.6%	0	13	44
17	Piedmont Airlines	54	52	3.8%	44	10	0
18	Horizon Air	53	70	-24.3%	0	0	53
19	PSA Airlines	49	49	0.0%	0	35	14
20	Grand Xinhua Express	46	33	39.4%	29	10	7
Total fleet operated by 20 largest operators		2237	2269	-1.4%	288	1409	540
Percentage of world fleet		11.4%	11.5%		21.4%	44.6%	21.1%

Source: Ascend Online Fleets, data as of April 2008

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. SkyWest Airlines has replaced ExpressJet Airlines as largest regional airline. It operates for United Airlines, Delta Air Lines and Midwest Airlines in the US. The biggest increase in fleet size is reported for Mesaba Airlines, a subsidiary of Delta Air Lines. It increased its fleet size by more than 50% as it took the delivery of 21 new regional jets from Bombardier and also leased in several aircraft formerly operated by Pinnacle Airlines. Strong growth is also reported from Grand Xinhua Express from China, which grew by almost 40%.

The largest European regional airlines are subsidiaries of network carriers, such as Lufthansa (Lufthansa Cityline), Iberia (Air Nostrum) and Air France-KLM (Regional, KLM Cityhopper). The growth of these carriers, however, is rather moderate with up to 3.6%. Other European regional airlines operate significantly smaller fleets, often with less than 30 aircraft.

Overall, the 20 largest regional airlines operate 11.4% of the world fleet. The group comprising regional jets and turboprop aircraft with 40 to 69 seats represents 44.6% of the world fleet.

Table 2-10: The 10 largest holiday/charter airlines by fleet size at year-end 2008

Pos.	Operator	Total Fleet 2008	Total Fleet 2007	Percentage Change	Medium single aisle jets (120-169 seats)	Large single aisle/small twin aisle jets (170-239 seats)	Intermediate twin aisle jets (240-349 seats)	Large twin aisle jets (350+ seats)
1	Thomson Airways*	61	64	-4.7%	10	40	11	0
2	Thomas Cook Airlines**	45	33	36.4%	0	36	2	7
3	Condor Flugdienst	34	35	-2.9%	0	12	22	0
4	Monarch Airlines	27	31	-12.9%	0	22	0	5
5	Skyservice Airlines	20	20	0.0%	0	20	0	0
6	Air Transat	18	16	12.5%	0	0	18	0
7	SunExpress	18	13	38.5%	0	18	0	0
8	Onur Air	14	16	-12.5%	10	3	1	0
9	Sunwing Airlines	13	9	44.4%	0	13	0	0
10	Pegasus Airlines	13	13	0.0%	4	9	0	0
Total fleet operated by 10 largest operators		263	250	5.2%	24	173	54	12
Percentage of world fleet:		1.3%	1.3%		0.3%	5.5%	2.9%	2.0%

Source: Ascend Online Fleets, data as of January 2009

*) Thomsonfly and First Choice Airways merged into Thomson Airways on 1st May 2008. For comparison the figure for 2007 is combined for both carriers

**) Thomas Cook Airlines and MyTravel Airways merged on 30th March 2008, operating under the brand of Thomas Cook Airlines. For comparison the figure for 2007 is combined for both carriers. The figure does not include Thomas Cook Airlines Belgium and Scandinavia.

The holiday airlines segment is fairly small compared to those following other business models, a fact which is also reflected in the fleet sizes. However, in 2008, several structural changes occurred in this market segment. With the merger of Thomsonfly and First Choice Airways in May 2008, the world's largest holiday carrier was formed with a fleet size of now 61 aircraft. Another merger took place with the combination of Thomas Cook Airlines and MyTravel Airways, which now form the second largest holiday carrier with 45 aircraft. Also among the largest holiday airlines are the German-Turkish joint venture SunExpress and the second largest

Turkish airline, Pegasus. Following the merger of LTU and airberlin, LTU is no longer listed here, as the fleet of the merged company is now shown as an LCC.

2.1.4 Airline financial performance

2.1.4.1 Introduction

In comparison to 2007, 2008 was a very troubled year for the airline industry as well as for the overall economy. The developments on the oil market and the effects of the crisis in the financial sector directly affected the financial performance of the different companies. Especially the rising costs for jet fuel as a result of the significant increase in oil prices in the first half of 2008 created worries concerning the continuing growth of the business. Particularly low cost carriers discussed higher kerosene surcharges to make ends meet, which led to a discussion on whether this segment is already coming to the end of its life.

While the struggle with jet fuel prices as a rising cost factor determined the airline sector until the middle of 2008, the fear of a fall in demand as a result of the economic crisis became the most dominant theme in the second half of the year. American markets had to ride the price waves in crude oil without a currency buffer, crude oil being traded in US dollars. The high Euro to the dollar exchange rate⁵ (1 EUR equalled 1.578 USD on average in July 2008) gave European airlines some cushioning at least for a limited time by partially levelling out the price rise. Nevertheless, the financial performance of the European airlines in 2008 shows a differentiated but not only negative picture. The big airlines in the network carriers group were for the most part still successful in maintaining their stable growth in revenues. The same development can be stated for the low cost carriers. Nevertheless, much greater losses with regard to the operating income of airlines in both segments compared to 2007 indicate that the development of costs became the most important factor for the financial performance of airlines in 2008.

2.1.4.2 Fuel price development

The overall discussion in the world economy in the first half of 2008 was mainly determined by an unprecedented rise in oil prices which reached an all-time record of \$145 a barrel in July 2008. Accordingly, the jet fuel price then stood at 423 US-cents per gallon. This marked an increase of 53.6% compared to the beginning of the year and proved that fuel still remained one of the biggest challenges on the cost side for the airline industry in 2008. The common reaction of many companies was a new up-rating of kerosene surcharges.

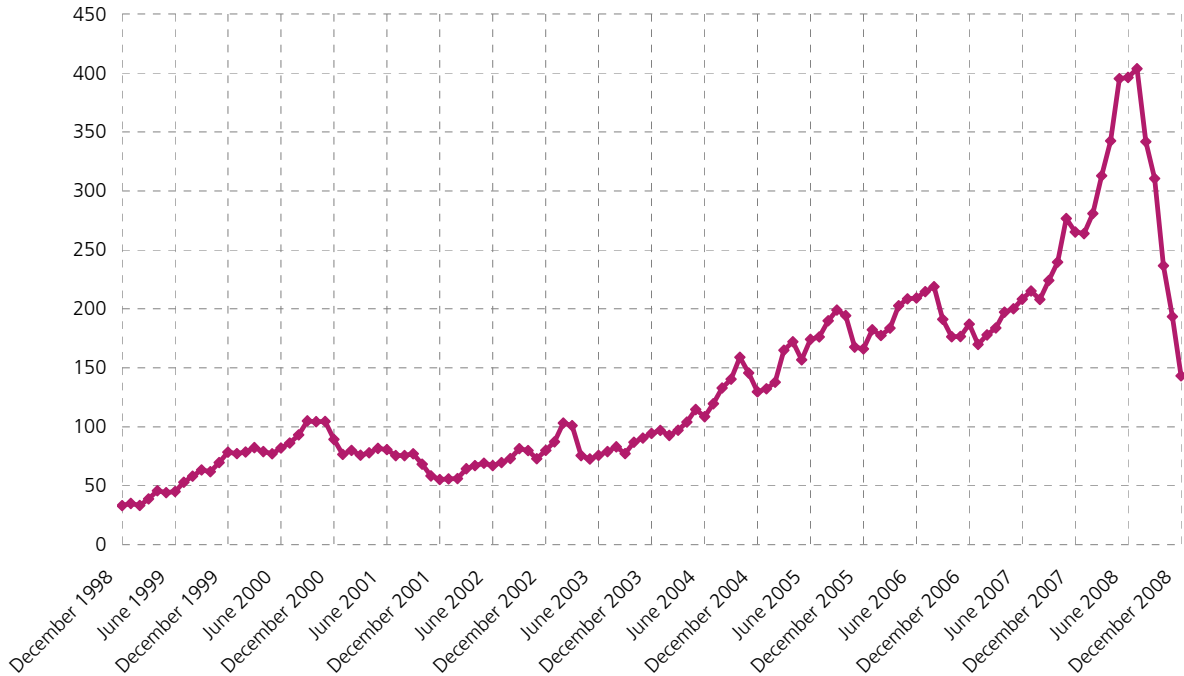
This situation relaxed somewhat in autumn 2008. Due to falling worldwide demand as a result of the global economic crisis, oil prices began to decrease. The corresponding price for jet fuel stood at 134 US-cents at the end of December. This is only about a quarter of the price airlines had to pay for jet fuel five months earlier. However, a long-term calming of the oil market is not likely in the future. The finiteness of the oil reserves and corrections of the quantities supplied by

⁵ according to OANDA Corporation for interbank rates

OPEC will soon lead to a new increase in prices. This development is also indicated by the long-term price development for jet fuel which is shown in the following figure.

Figure 2-29: Price of jet fuel at Rotterdam in US-cents from 1998 to 2008

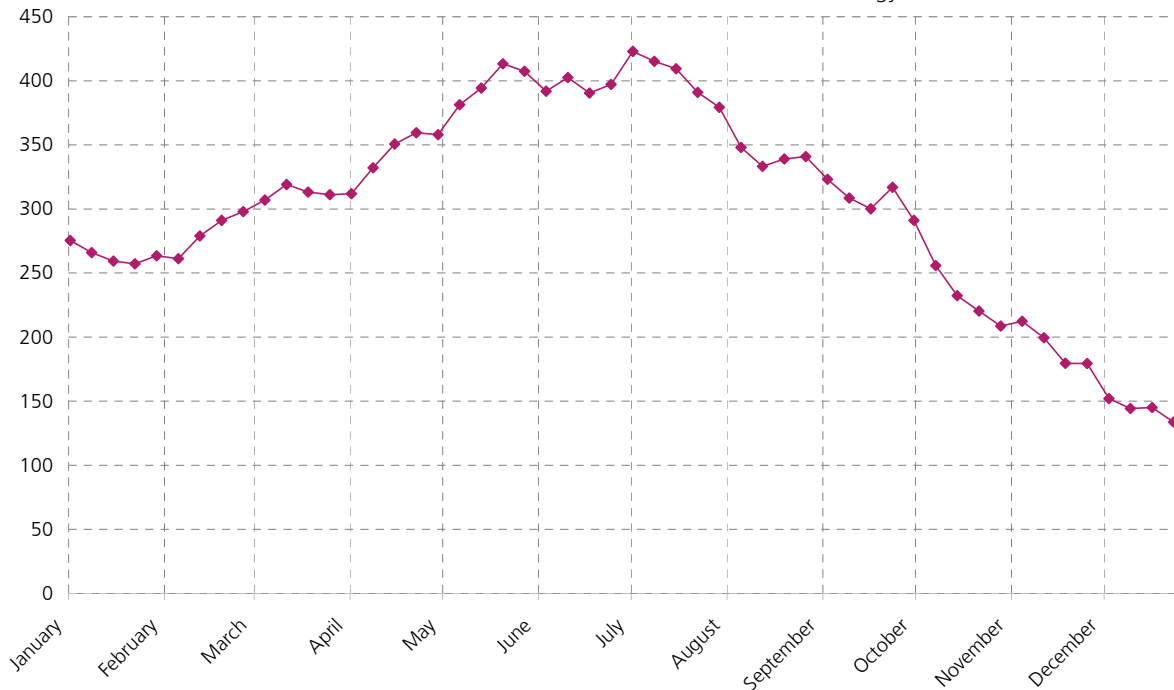
Source: US Energy Information Administration



The market for jet fuel prices with a focus on 2008 was determined by ups and downs and a peak in July as is presented in Figure 2-30.

Figure 2-30: Price of jet fuel at Rotterdam in US-cents from January to December 2008

Source: US Energy Information Administration



2.1.4.3 European network carriers' financial results

The following table gives an overview of the revenues and operating profits for different European network carriers in the years 2007 and 2008. Although the financial data does not cover these time spans in all cases exactly (as a result of the chosen carriers having different business years), it can be assumed that the chosen information shows general tendencies. The only exception in this case is Alitalia for which financial information was only available for the first three months of 2008, leading to its relatively weak position within the ranking. To make comparisons between the selected carriers easier all figures were converted into € by applying the exchange rate at the end of the analyzed period. The presented revenues also integrate aviation and non-aviation business.

Table 2-11: Revenues and operating results of selected European network carriers for the fiscal years 2007 and 2008

Source: Quarterly and annual reports of the respective airlines/airline groups; Air Transport World

Pos.	Airline group	Revenues in million €2008			Operating profit in million €		Fiscal year ending
		2007	2008	change	2008	2007	
1	Lufthansa Group	24,870	22,420	10.9%	1,354	1,378	31.12.2008
2	Air France-KLM Group	23,975	24,127	-0.6%	-129	1,414	31.03.2009
3	British Airways	9,661	9,409	2.7%	-236	943	31.03.2009
4	Iberia Group	5,223	5,304	-1.5%	-79	284	31.12.2008
5	SAS Group	4,894	4,655	5.1%	-70	119	31.12.2008
6	Virgin Atlantic	2,898	2,674	8.4%	77	39	28.02.2009
7	THY Turkish Airlines*	2,850	2,261	26.1%	273	336	31.12.2008
8	Austrian Airlines	2,462	2,469	-0.3%	-312	42	31.12.2008
9	Finnair	2,263	2,181	3.8%	-52	142	31.12.2008
10	Aer Lingus	1,357	1,285	5.3%	-18	79	31.12.2008
11	Alitalia Group	1,075	1,061	1.3%	-161	-113	31.12.2008 (here: Q1 data)

* included as representative airline of a candidate country for EU membership

The table shows a differentiated picture for 2008. On the one hand almost all of the selected airlines were successful in increasing their revenues. The general revenue growth rate was 6% on average. On the other hand a predominant decrease in operating results from 2007 to 2008, which involves many losses, indicates that costs increased similarly. This is also shown by the development of the operating margin for the observed business years in the following table.

Table 2-12: Operating margins of selected European network carriers

Source: Quarterly and annual reports of the respective airlines/airline groups

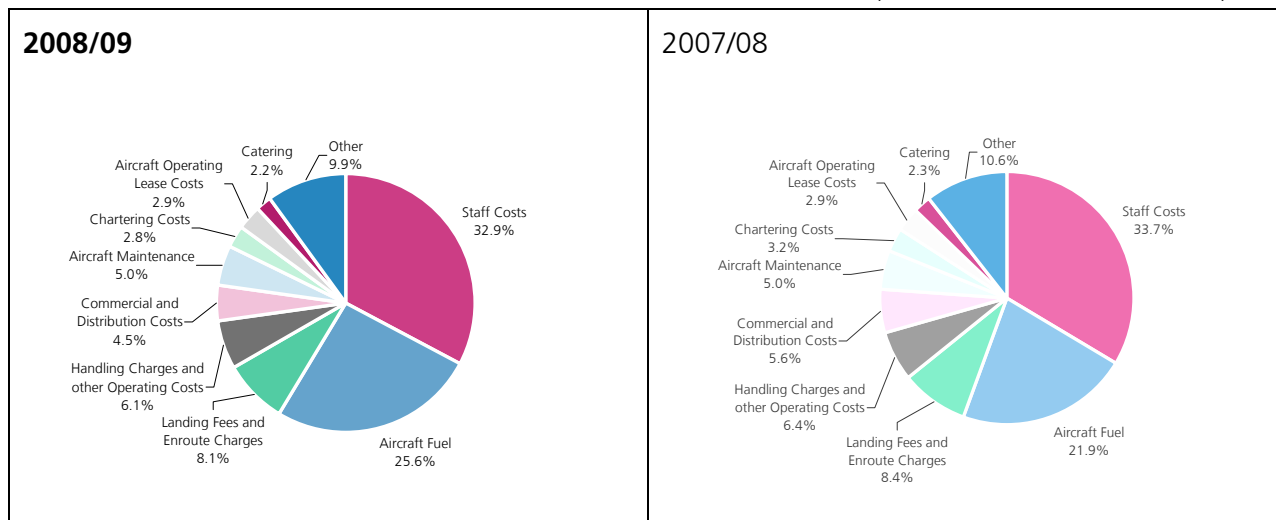
Pos.	Airline group	Operating margin in %	
		2008	2007
1	THY Turkish Airlines*	9.6	14.9
2	Lufthansa Group	5.4	6.1
3	Virgin Atlantic	2.7	1.5
4	Air France-KLM Group	-0.5	5.9
5	Aer Lingus	-1.3	6.1
6	SAS Group	-1.4	2.6
7	Iberia Group	-1.5	5.4
8	Finnair	-2.3	6.5
9	British Airways	-2.4	10.0
10	Austrian Airlines	-12.7	1.7
11	Alitalia Group	-15.0	-10.7

* included as representative airline of a candidate country for EU membership

One reason why the partly increased revenues in 2008 could not cover the increased costs is most probably the considerable rise in jet fuel prices until summer 2008. The following cost structure of the Air France-KLM Group for the time span from April 2008 to March 2009 shows that jet fuel is the biggest cost factor for airlines besides salaries. While all other cost categories do not differ so much from each other in relative values from 2007/08 to 2008/09, the share of jet fuel in the overall costs increased from 21.9% to 25.6% within this period. This development proves that price changes on the oil market can reach the companies in a very short time, depending on their hedging policies, with significant effects on the financial performance.

Figure 2-31: Operating expenses of the Air France-KLM Group for the business years 2008/09 and 2007/08

Source: Annual reports of the Air France-KLM Group



2.1.4.4 European network carriers' share price development

Especially with regard to the turbulence on the financial markets in 2008, it is necessary to look at the share price developments of European airlines to get a complete overview of these companies' financial performance.

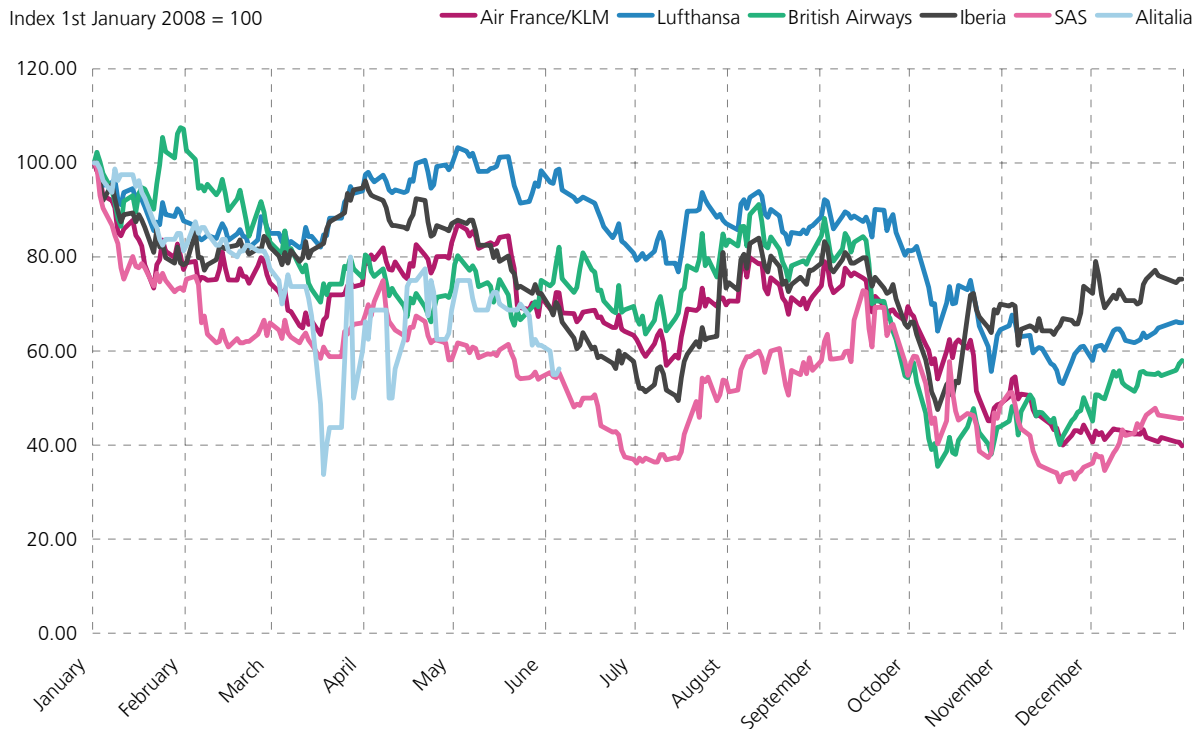
The following chart presents the development of the share prices of six important EU network carriers. To make comparisons easier, all values in the home currency of the chosen carriers were indexed by standardizing the share price to 100 on 1st January 2008. Additionally, splits and dividends have been left out to guarantee a view of the total performance.

A first look at the chart shows no surprising picture with regard to the share price development of the chosen carriers. High losses and a strong downward trend correspond directly to the general situation on the financial markets in 2008. While the performance of the overall market as measured by the Dow Jones EURO STOXX Index was -46% at the end of 2008, the chosen airlines altogether had an performance of -43% on average. This only marks a small difference.

The reason for the heavy decline in the values of the airline shares can be seen in different factors. The first issue which can be made responsible for the decrease in share prices is the significant rise in oil prices in the first half of 2008. In fact, there is a historically negative correlation between both factors. High oil prices directly affect the profitability of airlines as an important cost factor and therefore make it unattractive to invest in airline shares. Besides the dependency on oil prices, airline shares were also influenced by the financial crisis in 2008. The global common loss of trust in the financial markets within the second half of 2008 led to a general drop in share prices.

Figure 2-32: Share price development of major European network carriers in 2008

Source: Historical stock quotes on www.yahoo.com, adjusted for splits and dividends



Nevertheless, the results of the development for the respective European network carriers differed. The biggest loser in 2008 is Air France-KLM followed by the SAS Group. An investor who bought shares of Air France-KLM for € 100 on 1st January 2008 could only get € 39.82 for these shares at the end of December. For SAS, an investment of SEK 100 on 1st January 2008 only had the value of SEK 45.66 twelve months later. Compared to these companies, Iberia showed the best performance in 2008. While the shares of Air France-KLM and SAS decreased by more than 50% in value, shares of Iberia only showed a decrease of 25%. One reason for this development can be seen in the ongoing speculations about a possible takeover of Iberia - a situation which normally creates an optimistic mood on the market.

The airline which certainly underwent the strongest changes in 2008 is Alitalia. Ongoing financial trouble and turbulent takeover negotiations without success led to an indefinite trading stop for Alitalia shares at the stock exchange in Milan in June 2008. Meanwhile, Alitalia has been bought by the private investor group Italian Air Company (CAI) and is going through a restructuring process.

2.1.4.5 European Low Cost Carriers' financial results

Low cost carriers with their cost-sensitive business model especially faced a serious challenge in 2008 as a result of the intermittently high jet fuel prices. Somewhat lower revenue growth rates than in the years before and losses which determined the operating income of many airlines in this segment indicate that the market for low cost travel has changed. Higher competition and

decreasing cost reduction potential for the future make it difficult to claim a strong position in the market.

Nevertheless, the ranking of selected European low cost carriers as it is presented in the following table for the years 2008 and 2007 – with the exception of easyJet and Ryanair whose business years do not cover this time span exactly – shows a mixed picture. The average revenue growth rate remained strong at 24.8% and Air Berlin and easyJet kept – next to Ryanair – their positions in the group of the biggest low cost carriers in Europe also in terms of financial figures. However, it is significant that none of the presented companies were able to report a significant increase in their operating results. Instead, negative operating results dominate the picture in 2008 as half of the chosen airlines indicate such a development.

Table 2-13: Revenues and operating results of selected European Low Cost Carriers for the years 2008 and 2007

Source: Quarterly and annual reports of the respective airlines/airline groups

Pos.	Airline group	Revenues in million €			Operating result in million €		Fiscal year ending
		2008	2007	change	2008	2007	
1	Air Berlin	3,401	2,537	34.1%	14	21	31.12.2008
2	easyJet	2,990	2,274	31.5%	115	218	30.09.2008
3	Ryanair	2,942	2,714	8.4%	93	537	31.03.2009
4	Norwegian Air Shuttle	639	433	47.6%	-35	14	31.12.2008
5	Vueling Airlines	439	363	20.9%	-31	-72	31.12.2008
6	SkyEurope Airlines*	261	249	4.8%	-59	-24	30.09.2008
7	InterSky	29	23	26.0%	n.a.	n.a.	31.12.2008

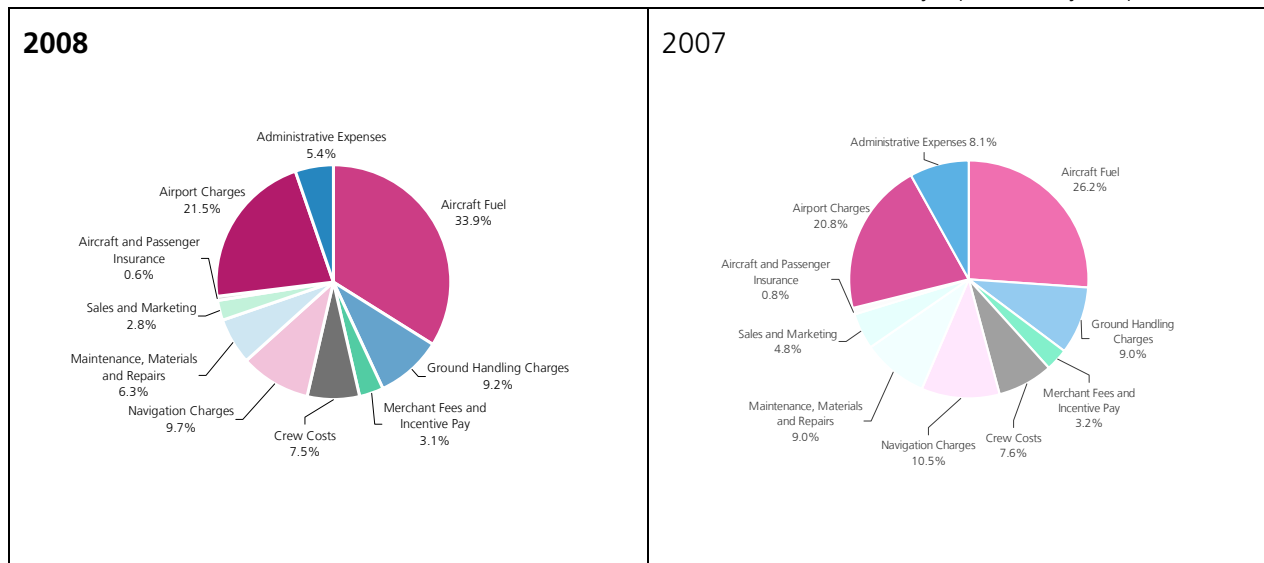
n.a. = non available

* The business year of SkyEurope Airlines normally ends with September 30th but the presented revenues, operating results and operating expenses were annualized with regard to the full years 2008 and 2007 to make especially the expenses analysis below (cf. Figure 2-33) more comparable to the corresponding figures of Air France-KLM (cf. Figure 2-31).

Within the time span from September 2007 to September 2008 easyJet was able to increase its revenues from € 2.274 billion to € 2.990 billion. This marks an increase of 31.5%. Within the same period the operating result decreased by 47.2% from € 218 million to € 115 million. This downward trend can again be interpreted as a result of the tense cost situation for many low cost carriers until summer 2008 due to extremely high prices for jet fuel. The following figure showing the cost structure of SkyEurope Airlines for the years 2008 and 2007 supports this thesis.

Figure 2-33: SkyEurope's operating expenses structure for 2008 and 2007

Source: Quarterly reports of SkyEurope Airlines



The overview shows that the expenses for fuel represent the most important cost factor for SkyEurope's business with a share of 33.9%. The pressure exerted by this figure can easily be understood when compared to 2007 when fuel only accounted for 26.2% of total costs within SkyEurope's operations. A comparison to the Air France-KLM Group gives an additional hint on how problematic rising jet fuel prices for low cost carriers really are. While the network carrier allocated 25.6% of its total expenses to buying jet fuel from April 2008 to March 2009, SkyEurope's expenses in this field were about 8% higher. Considering the fact that the low cost business model is based on cost leadership, the competitive advantage in this situation can be clearly seen as being on the side of the Air France-KLM Group.

Besides fuel expenses, the second biggest share in SkyEurope's cost structure belongs to airport charges which are responsible for 21.5% of all expenses, followed by navigation charges with 9.7%. In both cases the differences to 2007 are only marginal. As is typical for low cost carriers, sales and marketing costs as well as merchant fees contribute little to the total expenses. In spite of a cost-sensitive business style the airline was not able to finish the year 2008 with a positive operating result. The operating loss increased from € 24 million to € 59 million in comparison to 2007 while revenues rose - in comparison to other European low cost carriers - only moderately by 4.8%. This disadvantageous relation between revenues and operating income is also expressed in the operating margin of -22.8% for 2008.

A healthy revenue development is shown in Air Berlin's annual report by an increase of 34.1% from € 2.537 billion to € 3.401 billion in comparison to 2007. The aviation business share of this development especially contributed to this development as the aviation-specific revenues grew from € 2.319 billion to € 3.105 billion during the same time span. This is an increase of 33.9%. Meanwhile, the operating result fell from € 21 million to € 14 million in 2008. Nevertheless, the

operating margin of 0.4% shows that Air Berlin managed the cost side in 2008 better than some other low cost carriers, whose operating margins were negative.

2.1.4.6 European Low Cost Carriers' share price development

The following figure presents an overview of the share price development of selected European low cost carriers.

Figure 2-34: Share price development of major European low cost carriers in 2008

Source: Historical stock quotes on www.yahoo.com, adjusted for splits and dividends



The same downward trend as for the European network carriers is visible here, but it is more severe. In general, the performance of all airline shares downgraded to -66.5% while the network carriers showed a performance result of -43% in 2008. This can probably be explained by the fact that low cost carriers who base their business strategy on cheap transport are much more affected by the negative impact of high oil prices, while network carriers convince with quality and service on the market and are less dependent on the development of fuel costs. Another reason is that the European network carriers are established players on the market and in times of trouble as in 2008 probably seen as a more secure investment than low cost carriers.

Nevertheless, the low cost carriers themselves show differences with regard to their share price development. Best performer of the group was Ryanair. From an investment of £ 100 in shares in the company on 1st January 2008, a value of £ 66.52 still remained 12 months later. In contrast, SkyEurope Airlines experienced a dramatic decline in its share prices. They fell about 86.5% within one year, followed by the price decrease for Vueling Airlines of 63.6% and Air Berlin of 61.9%.

2.1.5 Alliances

Airline alliances comprise a multitude of marketing instruments, such as code sharing, blocked space agreements or joint frequent flyer programs through 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 Qualifyer 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, Qualifyer, 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 2-35 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 21 airlines in 2007. Varig left the Star Alliance in 2007, whereas Air China and Shanghai Airlines entered Star Alliance in 2007. In 2008, Turkish Airlines and Egypt Air joined Star Alliance. SkyTeam consists of 11 members, with China Southern joining the alliance in 2007. The oneworld alliance comprised ten airlines in 2007. Japan Airlines, Malev and Royal Jordanian joined oneworld in 2007, 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.

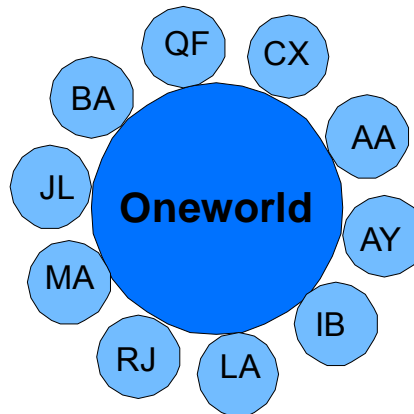
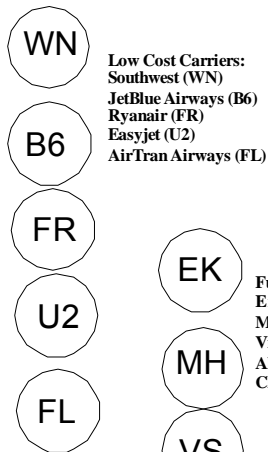
Figure 2-35: Airline alliances 2008

Source: OAG 2008, DLR

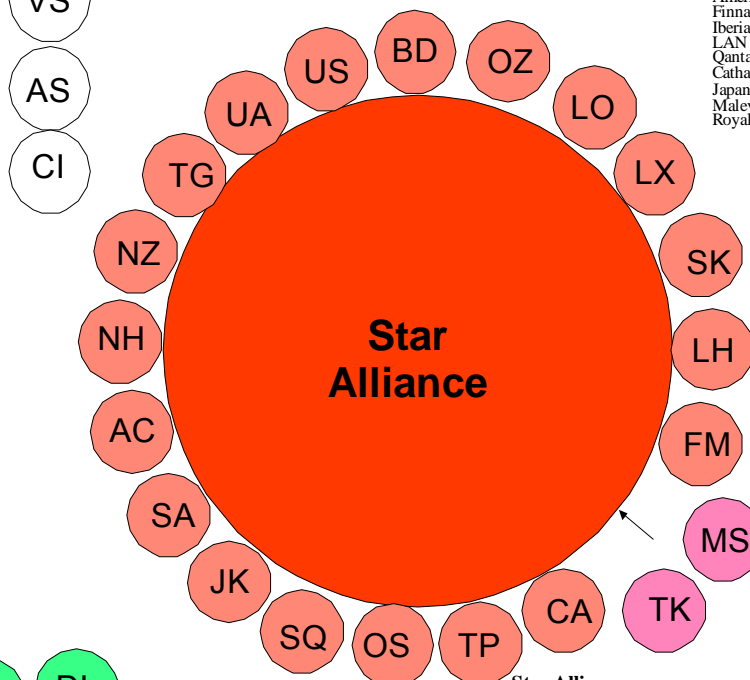
Airline Alliances

Non-Alliance Airlines

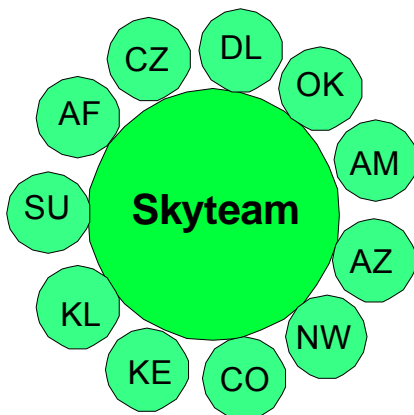
2008



Oneworld:
British Airways (BA)
American Airlines (AA)
Finnair (AY)
Iberia (IB)
LAN Chile (LA)
Qantas (QF)
Cathay Pacific (CX)
Japan Airlines (JL)
Malev (MA)
Royal Jordanian (RJ)



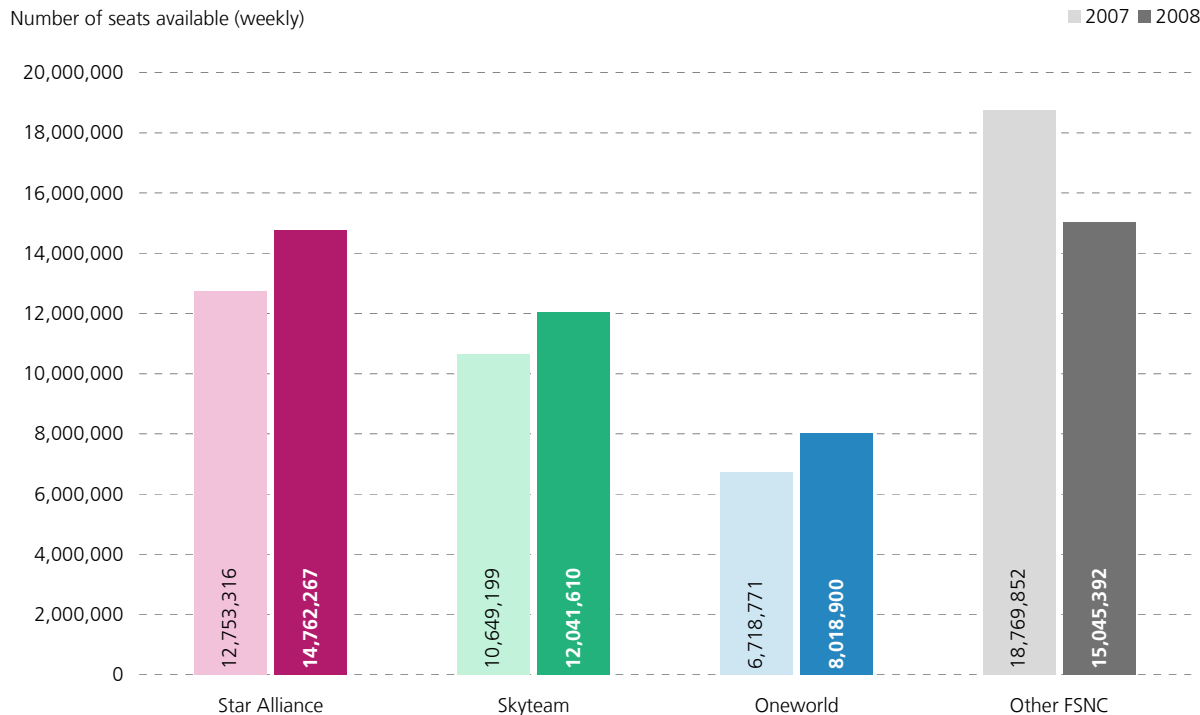
Star Alliance:
Air Canada (AC)
Air New Zealand (NZ)
ANA (NH)
Austrian (OS)
Asiana Airlines (OZ)
bmi (BD)
LOT Polish Airlines (LO)
Lufthansa (LH)
Scandinavian Airlines (SK)
Singapore Airlines (SQ)
Spanair (JK)
TAP Portugal (TP)
Thai Airways (TG)
United (UA)
US Airways (US)
South African (SA)
Swiss (LX)
Air China (CA)
Shanghai Airlines (FM)
Turkish Airlines (TK)
Egypt Air (MS)
2008 New Entry: Egypt Air (MS)
2008 New Entry: Turkish Airlines (TK)



Skyteam:
Air France (AF)
Delta Airlines (DL)
Korean Air (KE)
Aeromexico (AM)
KLM (KL)
Northwest (NW)
Continental (CO)
Alitalia (AZ)
Czech Airlines (OK)
Aeroflot (SU)
China Southern (CZ)

Figure 2-36: Weekly seats available by Alliance

Source: OAG 2008



The figure above displays the number of seats offered worldwide by airline alliance for the years 2007 and 2008. Star Alliance accounts for 28% of these, followed by Skyteam with 25%. Oneworld owns a share of 16%. FSNCs which belong to no airline alliance account for almost 31% of all take-offs worldwide. This group consists of FSNCs with a high share of domestic air transport. The “non-alliance FSNCs” group is composed of some airlines with a high number of take-offs, such as Olympic airlines, and many airlines with a small number of take-offs. Compared with 2007, all major airline alliances managed to increase their number of seats offered in a range between 9% and 20%. However, FSNCs belonging to neither alliance cut their number of seats offered by almost 20%.

Figure 2-37 shows the weekly seat capacity offered worldwide by airlines belonging to the Star Alliance for the years 2007 and 2008. United Airlines had the highest number of seats available in 2008, which sum up to more than 2.4 million seats per week, followed by US Airways with about 2.2 million seats per week and Lufthansa with nearly 1.7 million seats per week being the first European carrier in this ranking. Changes compared to 2007 are generally rather small and lie in a range of about +/- 5%. The two largest outliers are TAP Air Portugal and bmi british midland with an increase in seats offered per week of 27% and 16% respectively from 2007 to 2008.

Figure 2-37: Number of weekly seats available worldwide of Star Alliance airlines in 2007 and 2008

Source: OAG 2008

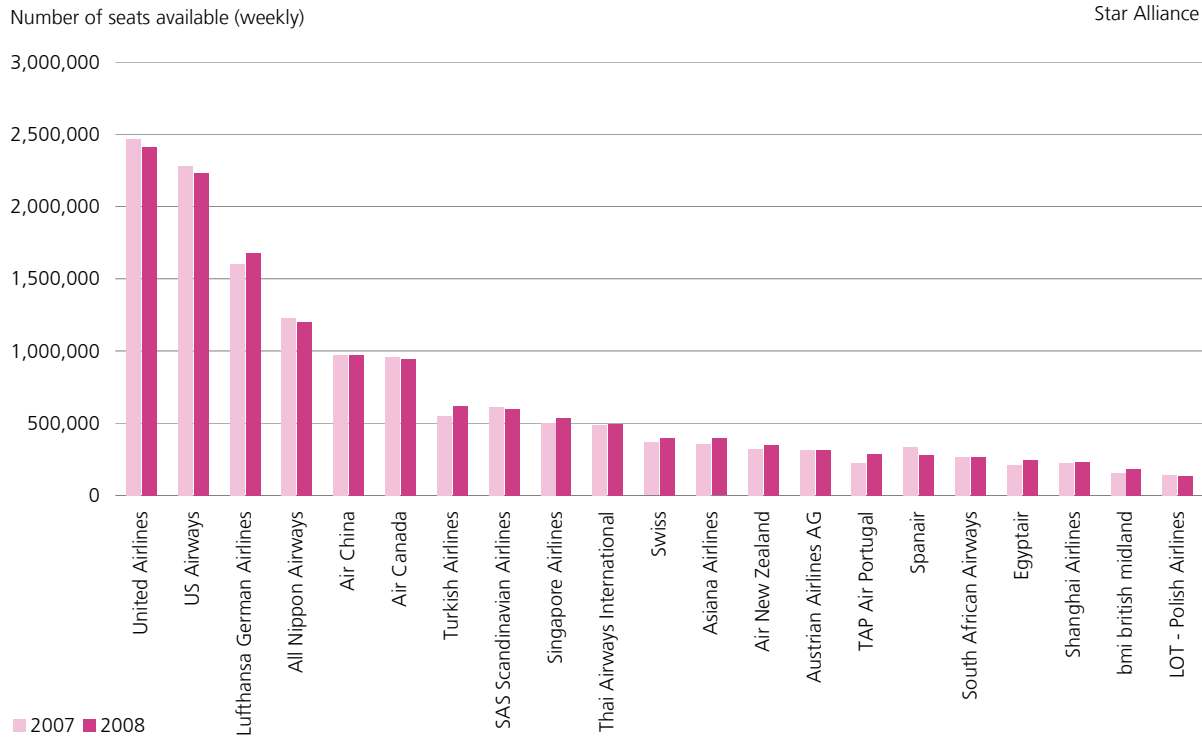
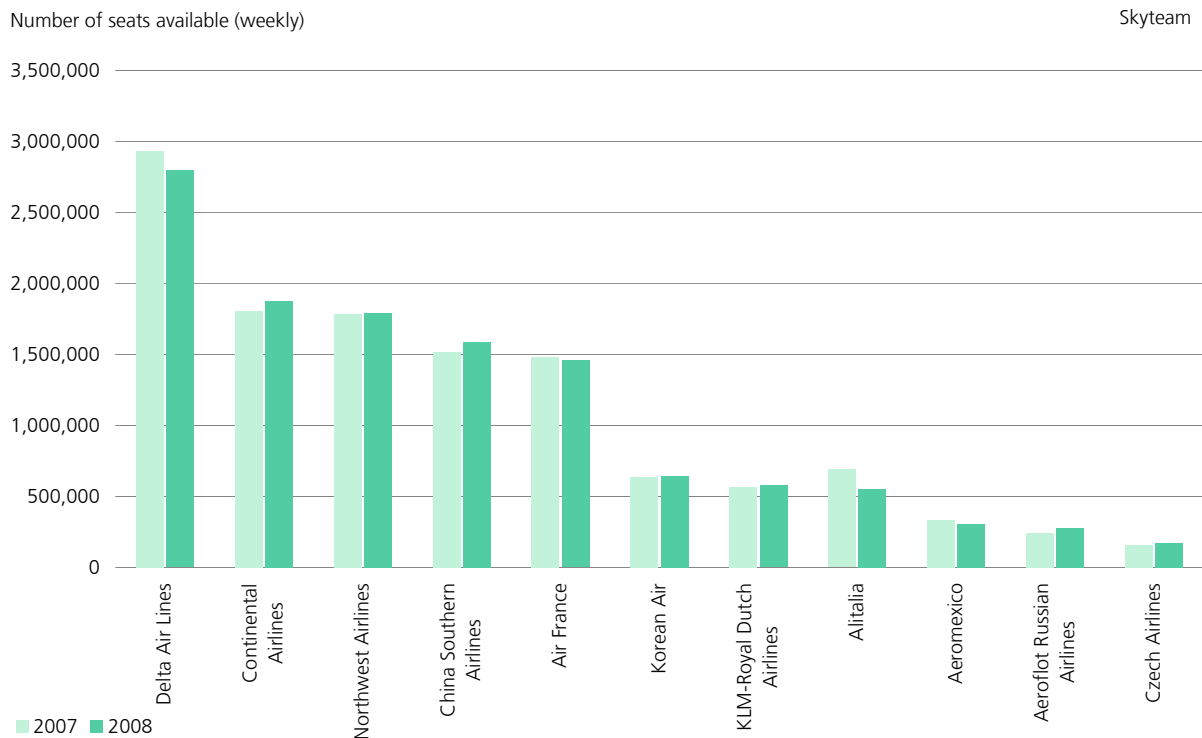


Figure 2-38: Number of weekly seats available worldwide of SkyTeam alliance airlines in 2007 and 2008

Source: OAG 2008



Delta Airlines is the leading member of the SkyTeam alliance in terms of seats available in 2007 and 2008 as illustrated by Figure 2-38. Delta Airlines offered around 2.7 million seats per week in 2008, followed by Continental Airlines and Northwest Airlines each offering 1.8 million seats per week. The first European carrier in the SkyTeam alliance is Air France on rank five with 1.5 million seats offered per week in 2008. Changes compared to 2007 are in most cases rather small and lie in a range of about +/- 5%. The two largest outliers are Alitalia and Aeroflot Russian Airlines with -20% and +13% seats offered per week respectively.

Figure 2-39: Number of weekly seats available worldwide of oneworld alliance airlines in 2007 and 2008

Source: OAG 2008

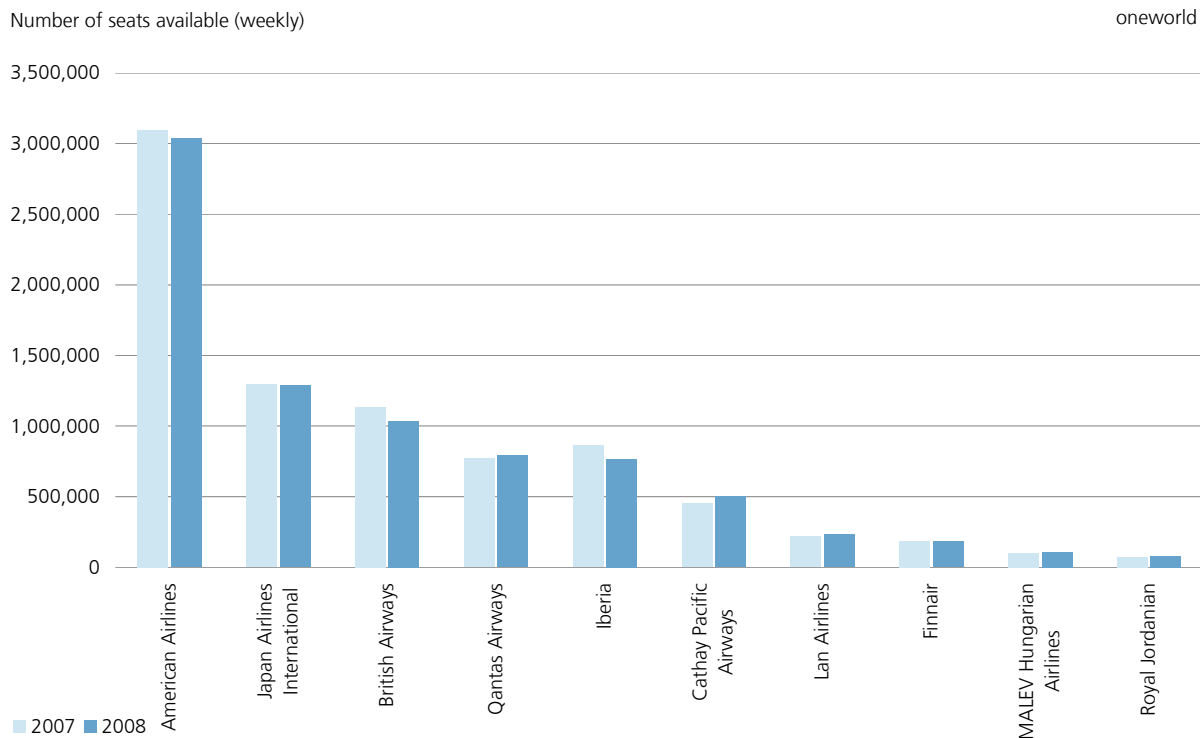


Figure 2-39 shows the number of seats available in 2007 and 2008 for the members of oneworld. The two major airlines in terms of seat capacity are American Airlines and Japan Airlines International with 3 million seats and 1.3 million seats offered per week respectively in 2008. The first European carrier in this ranking is British Airways with around 1 million seats offered per week in 2008. Changes compared to 2007 are generally rather small and lie in a range of about +/- 5%. The two largest outliers are Iberia and Cathay Pacific with -12% and +11% seats offered per week respectively.

Figure 2-40: Number of weekly seats available worldwide of non-alliance FSNCs in 2007 and 2008

Source: OAG 2008

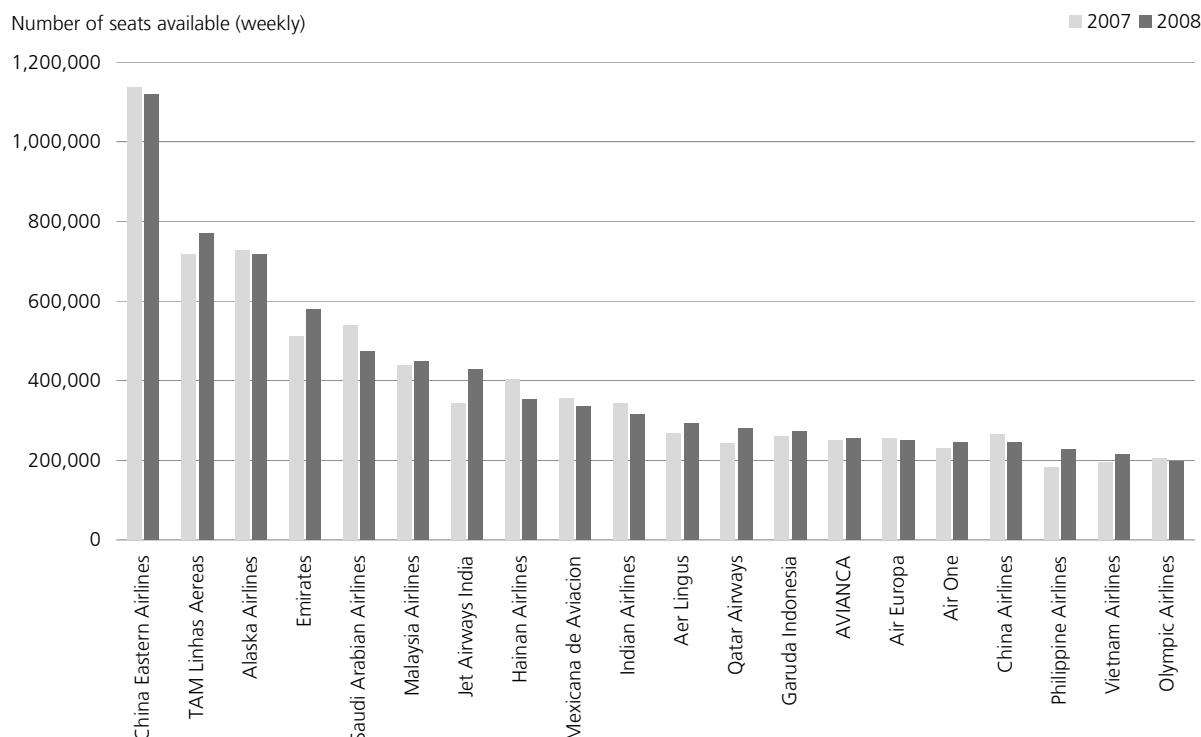


Figure 2-40 shows the number of seats available per week in 2007 and 2008 for the 20 largest non-alliance full service network carriers, of which China Eastern Airlines is the biggest with 1.1 million seats offered in 2008. The first European non-alliance FSNC is Turkish Airlines (which joined Star Alliance in July 2008) on place four with 620 000 seats offered per week in 2008. Changes compared to 2007 are in most cases rather small and lie in a range of about +/- 5%. The two largest outliers are Iberia and Cathay Pacific with -12% and +11% seats offered per week respectively.

Figures 2-41 and 2-42 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, Amsterdam, Paris Charles de Gaulle, London Heathrow, Madrid and Vienna 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 2-41. However, London Heathrow is an exception to the rule as both Star Alliance and oneworld have a considerable market share. Furthermore, nearly 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 47% 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 nearly 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, 76% of the total offered seat capacity is made up of low cost traffic.

Figure 2-41: Airline alliances at major European airports

Source: OAG 2008

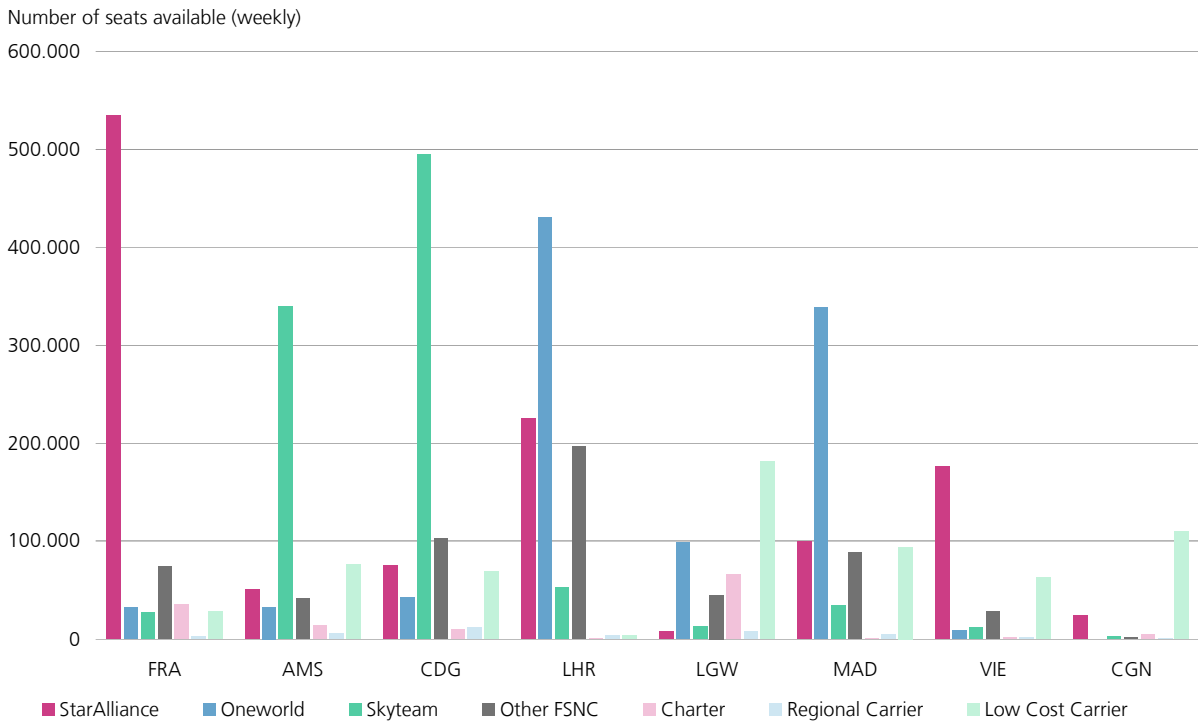
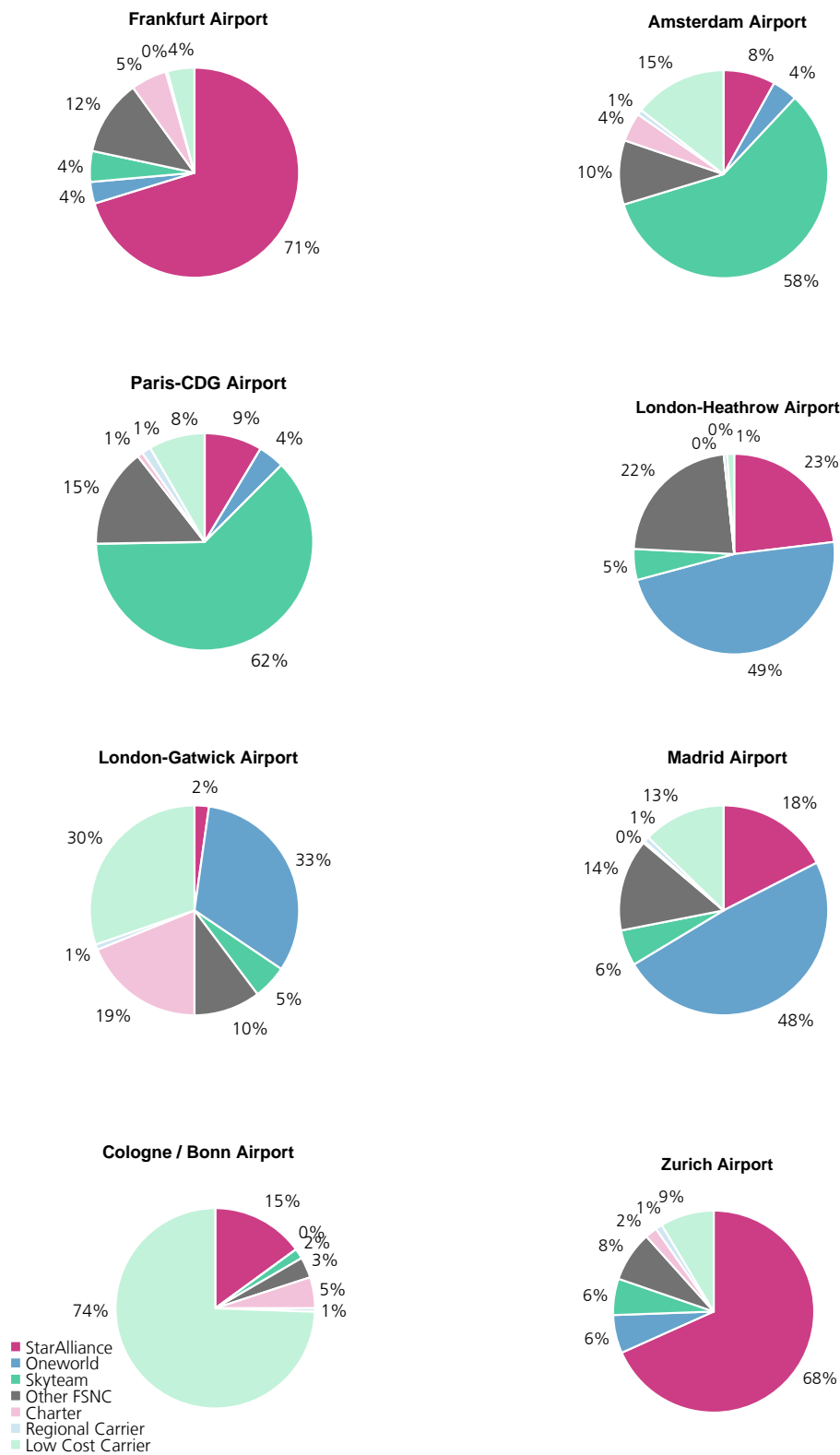


Figure 2-42: Market share of airline alliances at major European airports in detail

Source: OAG 2008



2.1.6 Competition

Figure 2-43: Share of flights offered, including code share flights and actually operated in 2008

Source: OAG 2008

Figure 2-43 shows the share of flights departing from European airports (EU 27) in 2007 and 2008 per week which were offered in total including code share arrangements and those that were actually operated by an airline. Altogether, 225 000 flights were offered per week in 2008, whereas only 132 000 were actually operated. Therefore, 41% of the flights offered per week in 2008 were code sharing flights. Thus, code sharing has increased slightly by 1% since 2007.

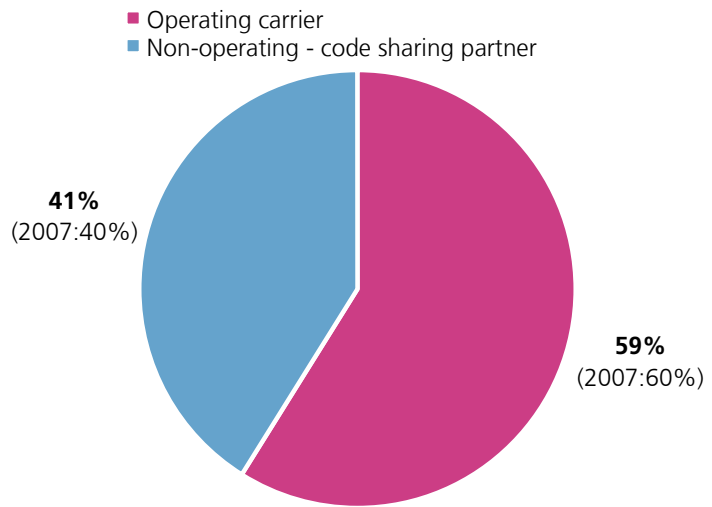


Figure 2-44: Ranking of airlines according to the number of code sharing partners in Europe

Source: OAG 2008

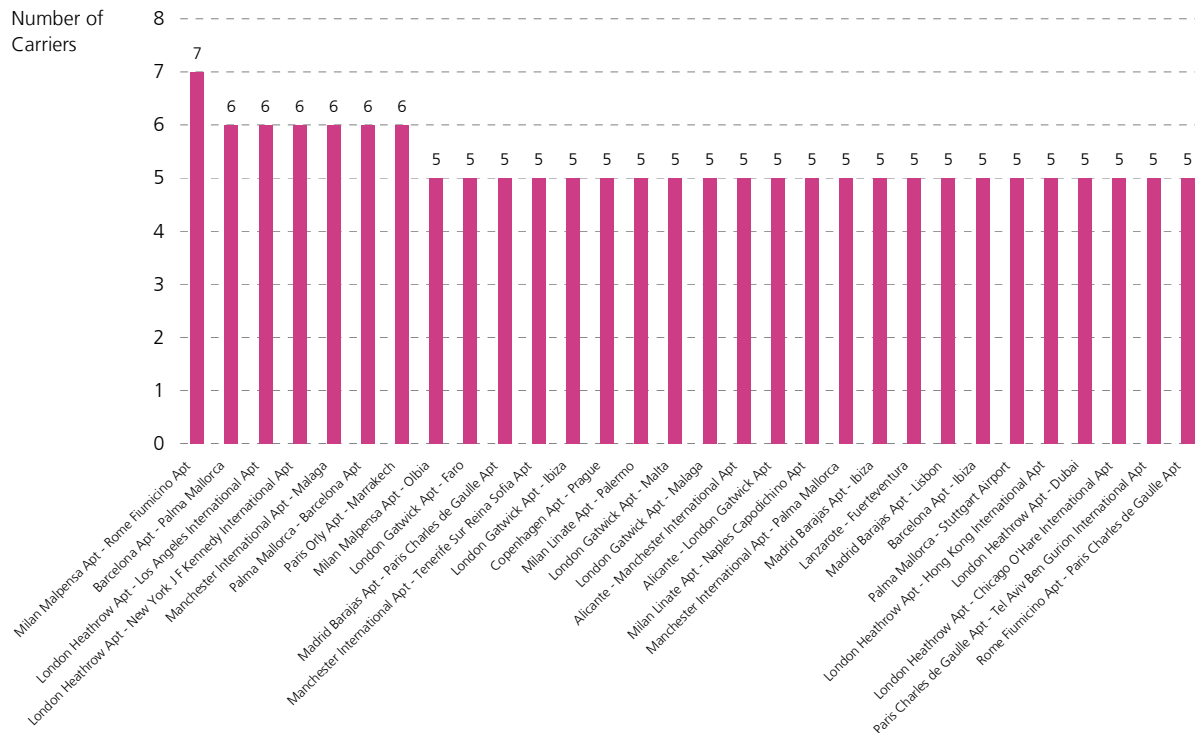


Figure 2-44 ranks airlines according to their number of code sharing partners in Europe. The top three airlines are Austrian, Air France and Lufthansa with 42, 29 and 29 code sharing partners

respectively. The number of code sharing partners declines slowly with flyLAL having the smallest number of code sharing partners, that being six partners. As Figure 2-44 illustrates, the number of code sharing partners does not depend on airline size. For example, Lufthansa has 29 partners, whereas British Airways only has eleven partners. On the other hand, Austrian and LOT Polish Airlines have 42 and 26 code sharing partners respectively.

Figure 2-45: Top routes in Europe in terms of the number of carriers operating

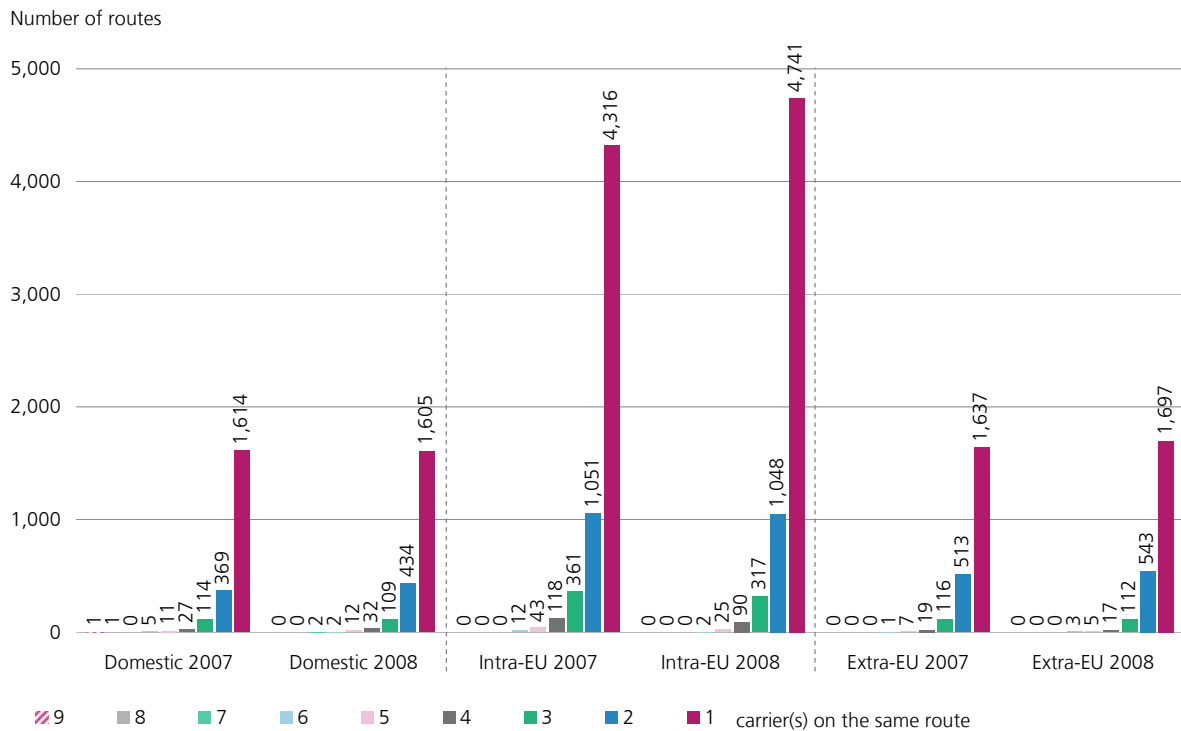
Source: OAG 2008



Closely related to airline alliances is the number of carriers operating on specific routes. Figure 2-45 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 seven different carriers, followed by Barcelona – Palma de Mallorca and London Heathrow – Los Angeles International and four more routes with seven different carriers. The high number of different carriers on certain routes is often a result of low cost operations.

Figure 2-46: Number of routes with one or more carriers in 2008

Source: OAG 2008



In order to give an indication of competition among carriers in the European network, Figure 2-46 shows the share of routes served by only one or by competing carriers for 2007 and 2008. In 2008, about 74% of the routes in Europe are served by only one carrier and a share of 19% by two carriers, thus only 7% of the routes in Europe are served by three carriers or more. In fact, Milan Malpensa – Rome Fiumicino and back are the only two routes served by seven carriers in 2008. The number of routes has increased by about 4% since 2007; however, the number of routes served only by one or two carriers has increased by about one and a half percent compared to 2007. The increase of the number of these routes is highest in Intra-EU travel and reached a share of 93% in 2008 (2007: 91%). This may be at least partially due to the growth in the European low cost carrier segment, which focuses on domestic and European air travel. Low cost carriers typically serve small and medium-sized airports; this may be one reason for the huge number of routes served by only one or two carriers.

Figure 2-47: Market entry / market exit in 2007 and 2008

Source: OAG 2008

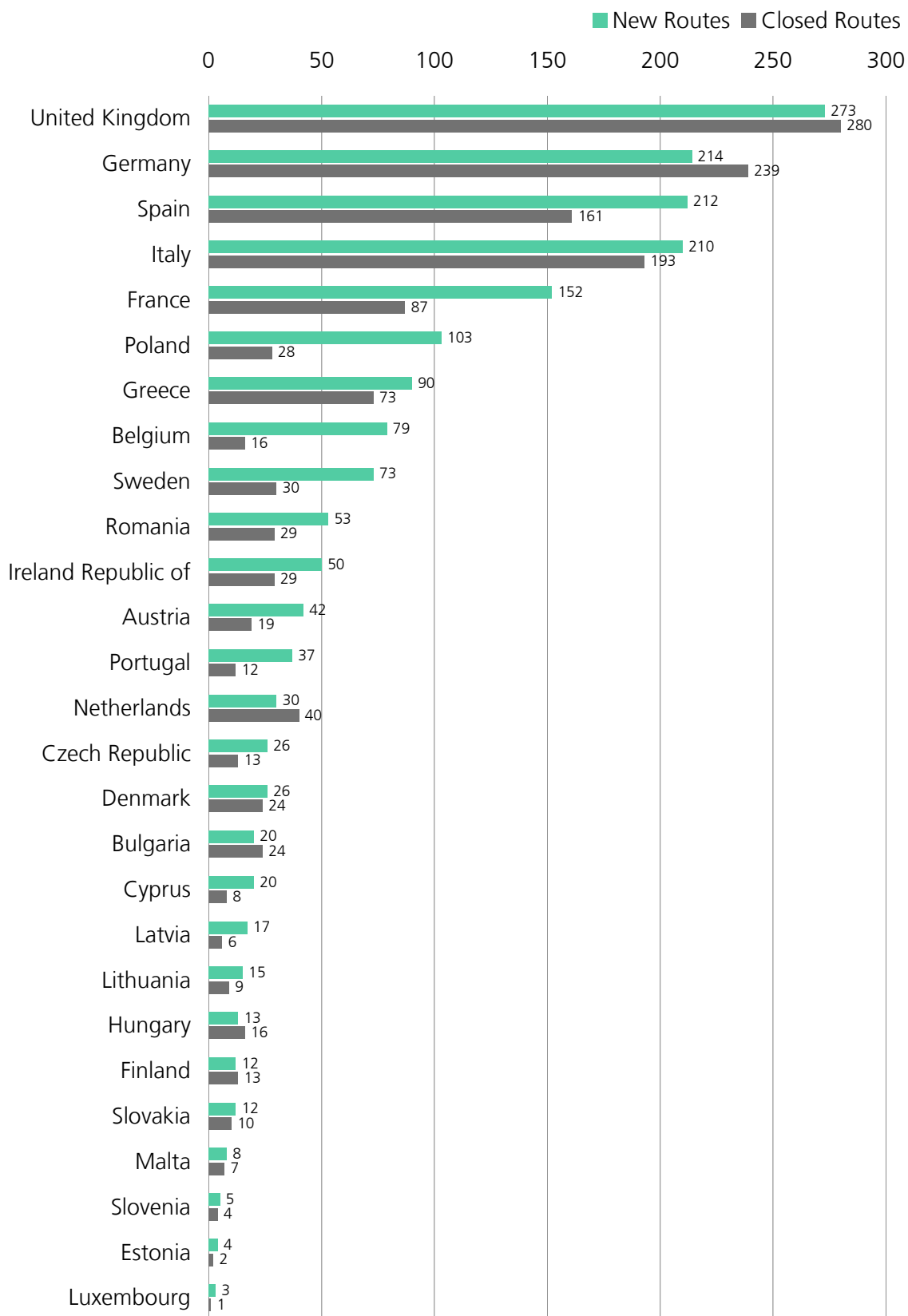


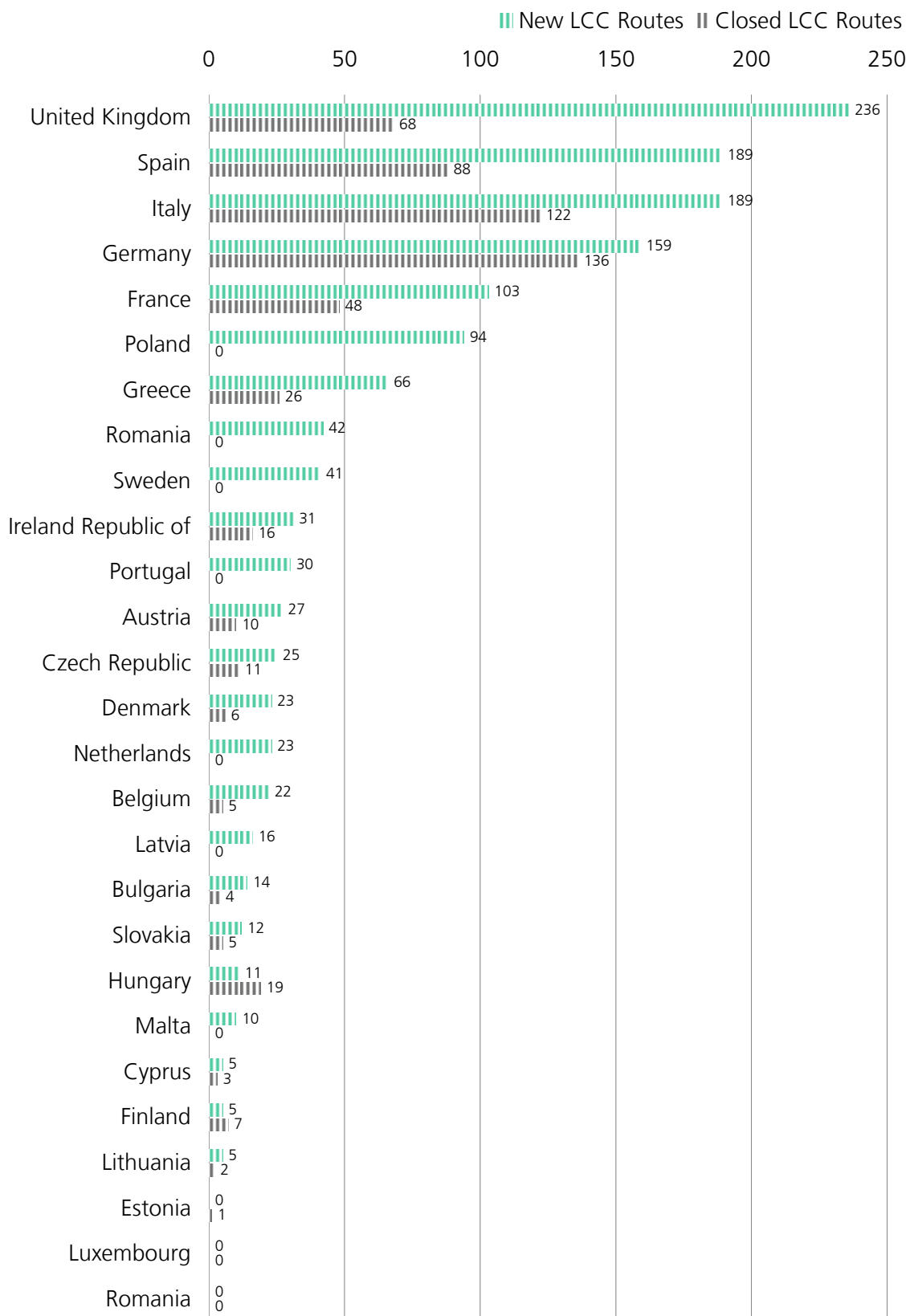
Figure 2-47 describes the number of new routes against the number of routes closed per country in 2008. Unlike in 2007, there is no clear trend towards more or less routes in 2008. In 2007, there was a net increase of routes in almost in every country. However, the high oil price in 2008 forced some airlines to reconsider their network strategy in terms of profitability. In addition, the financial crisis and global economic downturn have led to lower passenger numbers since the second half of 2008, therefore exerting further pressure on the profitability of some routes. There is a net decrease especially in countries with an already high number of routes, such as the United Kingdom and Germany, whereas in several small countries there is still a net increase of new routes because there is still market potential for new routes and destinations.

Figure 2-48 displays the number of new low cost routes against those closed in 2008 per country. In most cases, there is still a net increase in the number of routes, with the networks of Hungary and Estonia being the only exceptions with more routes closed than new ones opened. However, this occurs on a very low level of up to 20 routes closed in 2008. Changes in the number of routes are 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 2-46 and 2-47 reveals. The largest net changes in networks occur in the United Kingdom, Spain and Italy (descending order).

The market development of the low cost segment with regard to new routes is in many cases (e.g. United Kingdom and Spain) very different from the total market development as a comparison between Figures 2-47 and 2-48 reveals. This is mainly due to the fact that Figure 2-47 looks at airlines as a whole and thus does not differentiate between different carrier types, e.g. LCCs and FSNCs. In contrast, Figure 2-48 displays only the development of the LCCs. Differences in net increases / net decreases between those figures mainly result from LCCs opening new routes between city pairs which are already served by a different carrier type, e.g. an FSNC. Such a case does not represent a new route opened in Figure 2-46, as it is already served by a carrier regardless of its type. However, in Figure 2-47 this represents a new LCC route, because it was not served by any LCC previously. Therefore, a comparison between Figure 2-46 and 2-47 reveals the increased tendency of LCCs opening new routes which are already served by an airline of a different type instead of developing new routes which were not served by any carrier so far.

Figure 2-48: Market entry and market exit of low-cost carrier routes in 2008

Source: OAG 2008



The following tables show European airline market entries and exits in 2008. With five entries each, Greece, Italy and Sweden saw the largest numbers of new air service providers. In total, 39 companies announced their foundation in 2008 while 20 airlines ceased operations. With six failed businesses, Great Britain lost the highest number of airlines in 2008. Probably the most well-known one was XL Airways UK which ceased operations of its 21 medium and heavy size jets due to the bankruptcy of its parent company, XL Leisure Group Plc. XL Airways Germany and France were not affected because of their new owner which is a holding of a Reykjavik-based Investment Bank.

Table 2-14: Market entries of carriers in Europe during 2008

Source: Ascend

Airline	Country	formed	remarks
AccelJet Flugtaxi	Iceland	2008	on demand air services to individuals and businesses in Iceland and throughout Europe
Aero VIP	Portugal	2008	on demand air services within Portugal
Air Cargo Germany	Germany	2008	German airfreight company based at Frankfurt-Hahn Airport offering services with B747-400SF
Air Cosmos	Germany	2008	German airfreight company, survived just 4 months after starting in August, insolvency in November
Air European	U.K.	2008	no public schedule in 2008
Argo Airlines	Greece	2008	cargo operations between Greece, the new accession countries of the European Union in the region such as Bulgaria, Cyprus and Romania, and the Balkan states such as the republics of the former Yugoslavia, Albania and also into Turkey
Alis Aerolinee Italiane	Italy	2008	cargo services between northern Italy and long-haul markets such as North America, India, China, Japan and southeast Asia
Alitalia Cargo	Italy	2008	merger with Air One and Alitalia; operational start scheduled for 2009
Anadolu Jet	Turkey	2008	Low cost subsidiary of Turkish airlines (THY); serves domestic THY markets
Andalus Lineas Aereas	Spain	2008	regional airline based in Malaga, Spain
ArGo Airways	Greece	2008	ArGo Airways is a new consumer airline located in Volos, which provides a seaplane service as an alternative mode of transportation in the region.
Astra Airlines	Greece	2008	backed by Greek tour operator Interaviator
Athens Airways	Greece	2008	new private owned airline, based in Athens International Airport. Operates scheduled daily flights from Athens to 14 destinations plus other domestic services
Ayjet	Turkey	2008	Turkish flight school Ayjet is to begin operating domestic flights using Bombardier Q400s, formerly operated by SAS Group
Bremenfly	Germany	2008	scheduled for start of operations in 2009 with its single 737-400
Cimber Sterling	Denmark	2008	On 3 December 2008 Cimber Air bought parts of Sterling Airlines, which had filed for bankruptcy on 29 October 2008
Danube Wings	Slovakia	2008	brand name of scheduled and non-scheduled flights operated by VIP Wings s. r. o.
FlairJet	U.K.	2008	the latest is British air-taxi start-up
Fly Lappeenranta	Finland	2008	regional airline based in Lappeenranta, Finland, offering domestic flights between Lappeenranta and Helsinki three times daily
flyLAL Charters	Lithuania	2008	FlyLAL's charter subsidiary based at Vilnius International Airport
Harbour Air Ireland	Ireland	2008	no public schedule in 2008
IMD Airways	Spain	2008	Airline Charter Company
Italiatour Airlines	Italy	2008	domestic services with two AVRO RJ
Jet Republic	Portugal	2008	private jet company with fractional ownership concept offering premium on demand air services
Lufthansa Italia	Italy	2008	Milan-based subsidiary of German network carrier Lufthansa
Maxiejet Airlines	U.K.	2008	no public schedule in 2008
MCA Airlines	Sweden	2008	scheduled to start operations in 2009
North East West South	Sweden	2008	no public schedule in 2008
Pantheon Airways	Greece	2008	new temporary name of the privatised Olympic Airlines
Project James	U.K.	2008	launch of services scheduled for 2009
Quality Lineas Aereas	Spain	2008	no public schedule in 2008
Tailwind Airlines	Turkey	2008	Istanbul-based charter airline, operational start in 2009
Tor Air	Sweden	2008	on demand air service provider based in Gothenburg
Trawel Fly	Italy	2008	Mediterranean charter airline
Traxxair	Sweden	2008	no public schedule in 2008
Turkuaz Airlines	Turkey	2008	Turkish charter airline with two A320 and one A321
Universal Airlines	Spain	2008	no public schedule in 2008
West Atlantic	Sweden	2008	merger of West Air Sweden and Atlantic Airlines U.K.
Wingo	Finland	2008	Wingo is a marketing company and travel agency. It's flights are operated by Avitrans Nordic.

Table 2-15: Market exits of carriers in Europe during 2008

Source: Ascend

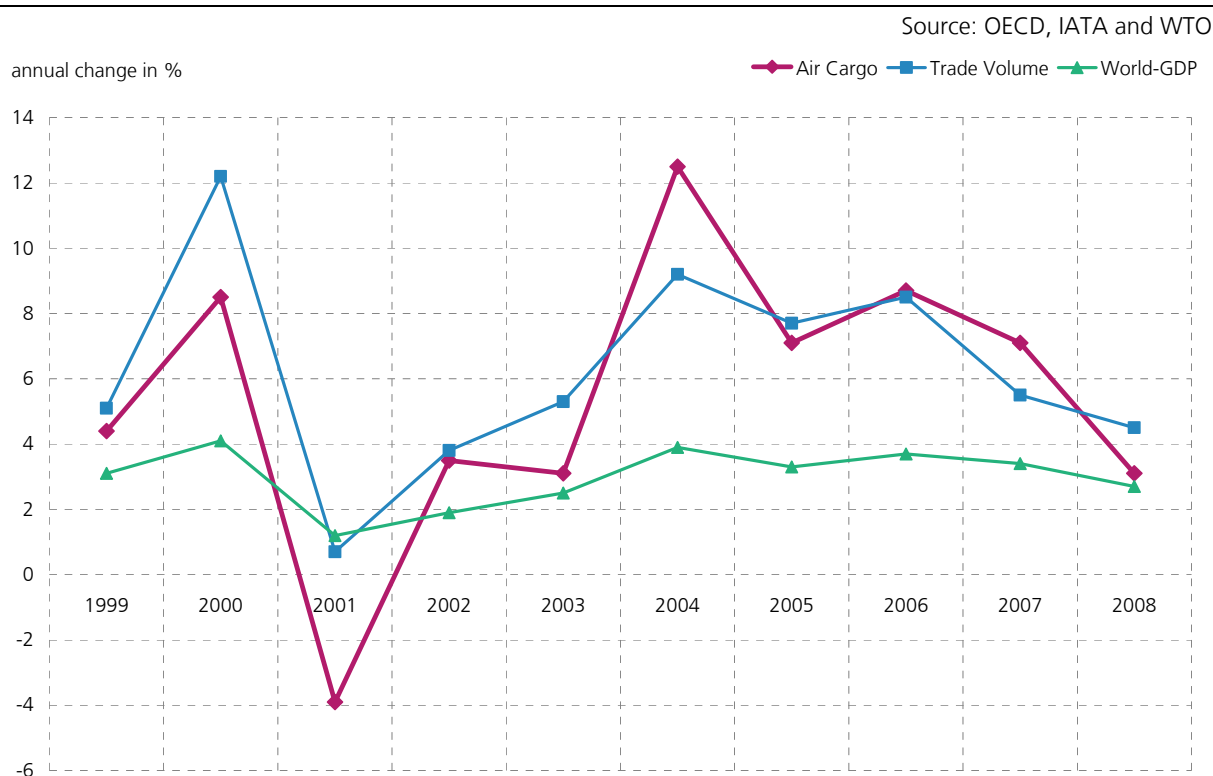
Airline	Country	formed	ceased	remarks
Aero Airlines	Estonia	2000	04-Jan-08	market exit
Aerocondor	Portugal	1984	25-Mar-08	market exit
Apatas	Lithuania	1994	30-Jun-08	market exit
Bravo Airlines	Spain	2004	15-Oct-08	market exit
BritishJet.com	Malta	2005	08-Jan-08	market exit
City Star Airlines	Island	2004	30-Jan-08	market exit
Club328	U.K.	2002	11-Jul-08	market exit
Coast Air	Norway	1988	23-Jan-08	market exit
European Aircharter	U.K.	1993	30-Nov-08	market exit
Flightline	U.K.	1989	03-Dec-08	market exit
Futura Gael	Ireland	2007	08-Sep-08	market exit
Futura International Airways	Spain	1989	08-Sep-08	market exit
Inter Airlines (Turkey)	Turkey	1999	13-Nov-08	market exit
Lagun Air	Spain	2001	09-Oct-08	suspension
LTE	Spain	1987	01-Dec-08	market exit
Ocean Airlines	Italy	2003	25-Apr-08	market exit (suspension already in 2007)
Prima Charter	Poland	2005	15-Jan-08	market exit
Silverjet	U.K.	2006	30-May-08	market exit
XL Airways UK	U.K.	1994	12-Sep-08	market exit
Zoom Airlines (UK)	U.K.	2006	28-Aug-08	market exit

2.2 Cargo Airlines

In the shadow of the worst worldwide economic crisis in decades: “The financial crisis” and a number of coexisting factors like weaker demand, depressed/lower net yields and higher fuel costs significantly reduced air cargo growth and took even the wisest experts by surprise. Capacity reduction measures only partially offset this downturn.

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)



Trade volumes began to drop as the global economy, led by weakening demand, began to falter in March 2008. As the credit crisis spread, volumes slid further, resulting in a 2008 growth in air trade of just 3.1 percent - far away from the 7.1 percent of the previous year. The following year will be one tough year for the air freight sector and the road to recovery is likely to be long.

2.2.1 Cargo Airlines – Supply

There are various types of providers in the air freight market. These 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 specialised in courier businesses, the major players in the sector – FedEx, UPS, TNT and DHL – are now transporting an increasing amount of general 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. Carriers such as Atlas Air Holdings and Evergreen provide wetlease-services. According to estimates by Airbus, the proportion of air freight transported on a wetlease basis in 2005 was as much as 8.7 percent.

Table 2-16: Freight tonne kilometres in 2008

Source: Airline Business

AIRLINES	2008	2007
No Ranking, Choice of some Cargo Airlines (Data is not confirmed yet)	FTK	FTK
FedEx	14,272	15,710
Air France-KLM Group	9,947	10,871
United Parcel Service (UPS)	9,255	10,961
Lufthansa Cargo	7,545	8,348
Emirates	5,605	5,497
Cargolux Airlines International	4,882	5,482
British Airways	4,435	4,624
Atlas Air	4,327	
American Airlines	2,697	2,726
LAN Airlines	2,659	

values in billion

Measured in terms of FTK, FedEx was – based on available data - by far the largest air freight carrier in 2008, with an overall total of 14,272 billion FTK. Following in second place by a considerable margin is Air France-KLM, with a total of 9,947 billion FTK. The table shows a choice of results available for cargo airlines in 2008, compared to the change in 2007. Cargo traffic includes freight and mail, scheduled and charter, measured in freight tonne kilometres.

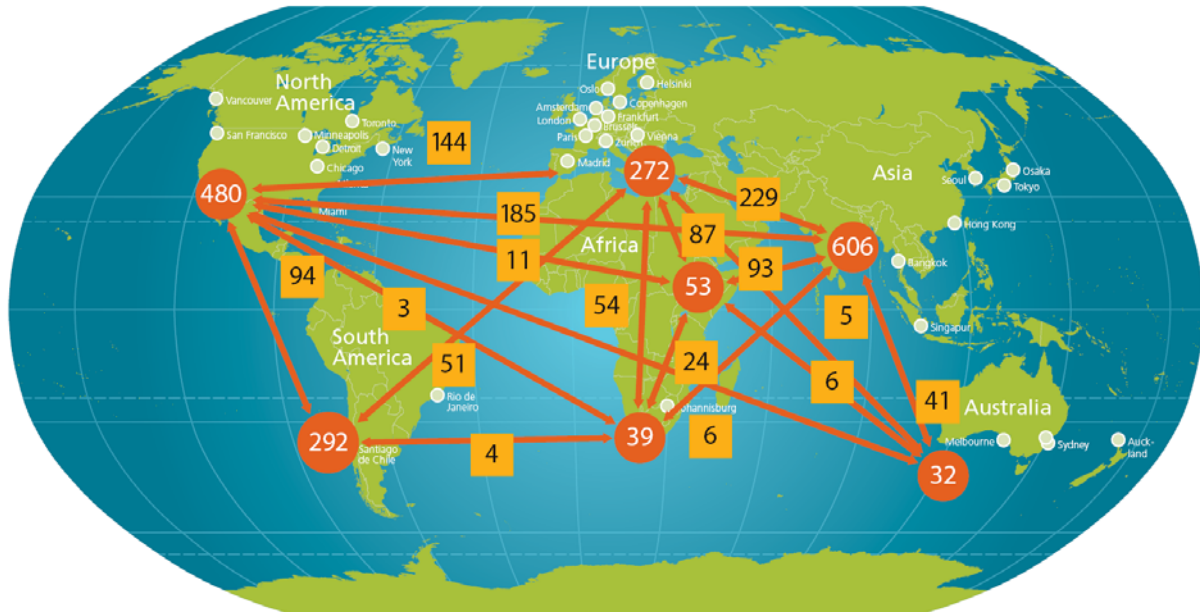
2.2.1.1 Cargo Airlines - Freight Capacity

A general analysis of OAG data over one week in July 2008 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 2-49 below. The highest capacity was once again provided on the Europe-Asia routes, with 229 thousand tonnes (same result as last year), followed by North America-Asia routes, with 185 (last year 204). The third highest level was achieved on services between Europe and North America, but at only 144 (146) thousand tonnes this fell well below the first two routes. Following behind by a substantial margin were capacities of 93 (93) thousand tonnes on Asia-Middle East routes, 94 (90) for North America-South America and 87 (90) for 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 606 (631) and 480 (550) thousand tonnes

respectively. Well below this are both Europe with 272 (282) thousand tonnes and South America with 292 (202) thousand tonnes.

Figure 2-50: World airline traffic 2008: air freight capacity in thousand tonnes (one week in July)

Source: OAG, DLR



2.2.2 Cargo Airlines – Demand

In response to the challenges of the worldwide economic crisis, the AEA members did cut some air freight capacity, but the relief was slight. In the first half of 2008, it was possible to see a reduction in growth of international capacity and to anticipate further declines in the third

quarter of the year. The net result: Total international air cargo capacity of AEA members reduced by 2.8% in 2008.

Trade volumes began to lose height as the global economy, led by weakening demand, softened since March 2008. As the spread out, slid further, resulting in 2008 in total scheduled of -2.8% far away last year.

2008	Traffic million TFTKs	change % vs. 2007
Domestic (1)	108.6	-7.3
Cross-border Europe (2)	723.3	-10.0
Total Europe (1+2)	831.9	-9.6
Europe - North Africa (3)	183.8	-3.9
Europe - Middle East (4)	999.6	1.0
Intl Short/Medium Haul (2+3+4)	1,907.1	-3.9
North Atlantic (5)	10,485.9	-2.3
Mid Atlantic (6)	1,454.6	-3.3
South Atlantic (7)	2,705.9	2.7
Europe - Sub Saharan Africa (8)	3,403.8	0.5
Europe - Far East/Australasia (9)	16,572.7	-4.3
Total Longhaul (5 to 9*)	34,624.3	3.3
Total International (2 to 9*)	36,531.5	-2.8
Total Scheduled (1 to 9*)	36,640.1	-2.8

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

Table 2-17: Scheduled cargo services of AEA member airlines in 2008

Source: AEA

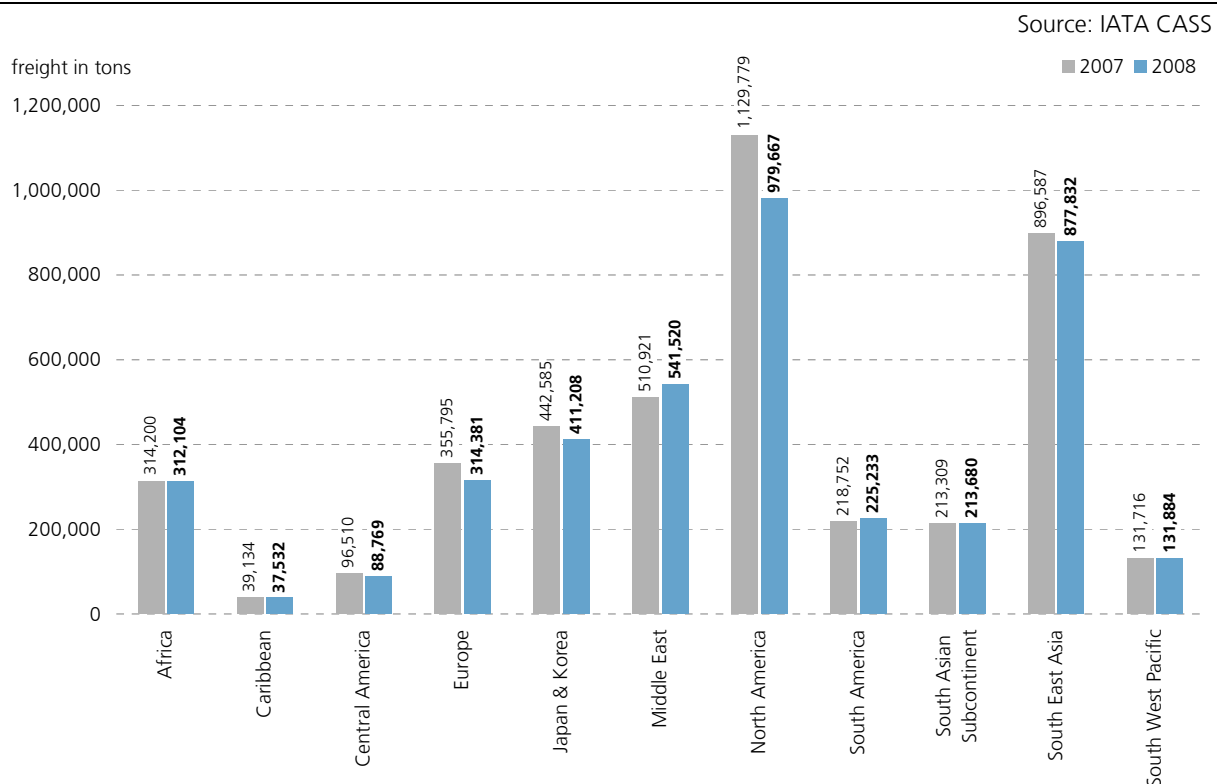
Measured against the global volume of air freight using the AEA data, the

European cross-border air freight market has shown with -10.0% the biggest decline. Freight traffic is measured in TFK (Total Freight Tonne-Kilometres) all-cargo services, excluding mail. Growth rates have been adjusted for changes in membership.

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.

Figure 2-51: Freight out of European CASS⁶ member states to various regions, 2007 vs. 2008

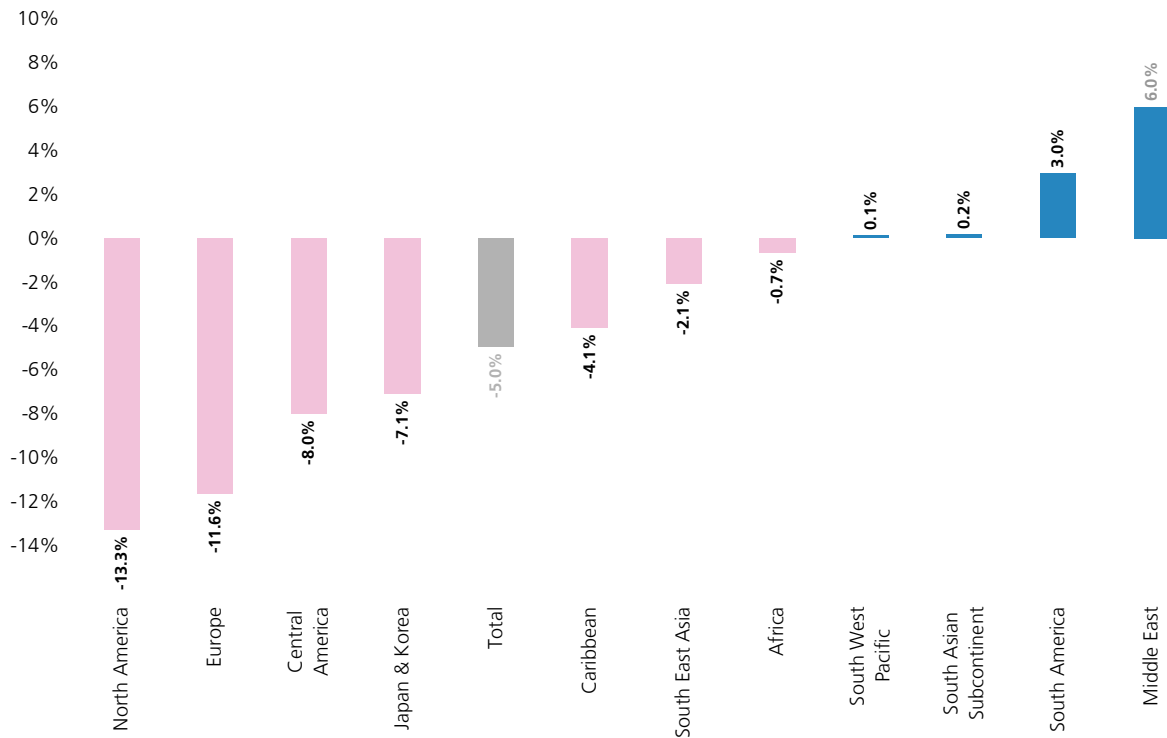


This view is also supported by the next chart. According to this data, the air freight market within Europe has suffered a clear decline of 11.6 percent. The flow of freight out of Europe saw a heavy decline of 5.0 percent in 2008 compared to the previous year.

⁶ The IATA CASS System (Cargo Accounts Settlement System) is a system to simplify the billing between freight forwarders and airlines. CASS data is billing data taken from the air waybills' data fields. Analyses of cargo based on IATA airway bills are export-oriented (documents to retrace the cargo's origin and destination – includes also trucked air freight). At present, CASS data is available from following countries: Austria, Belgium, Cyprus, Denmark, the Czech Republic, Finland, France, Germany, Greece, Hungary, 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 Figure 1-7 in the first chapter.

Figure 2-52: Percentage change in freight originating in Europe (CASS), 2007 vs. 2008

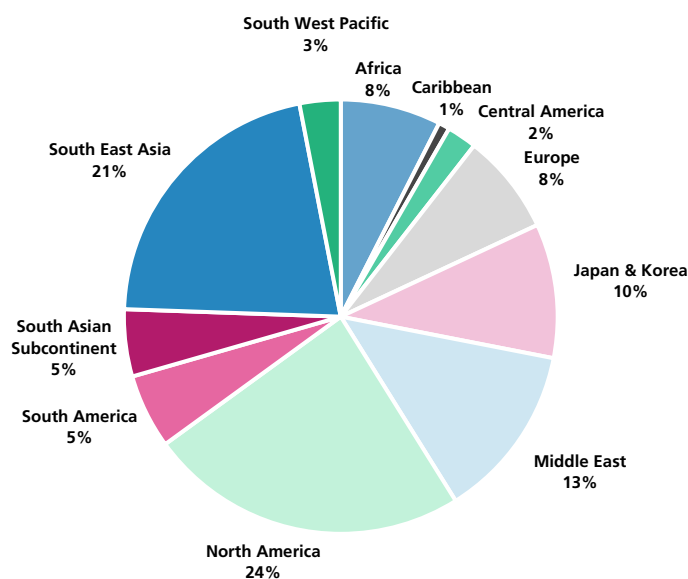
Source: IATA CASS



If the proportion of demand for air freight in 2008 is considered on the basis of the countries covered by the IATA CASS system, then the major flows of air freight out of Europe remained close to the levels of 2007: to North America (24 percent) and to South East Asia (e.g. China and Hong Kong; 21 percent).

Figure 2-53: Percentage distribution of freight out of Europe in 2008

Source: IATA CASS



2.2.2.2 Cargo Airlines - Freight Kilometres

Figure 2-54: Air freight traffic originating in Europe carried by CASS members by region; 2007 vs. 2008

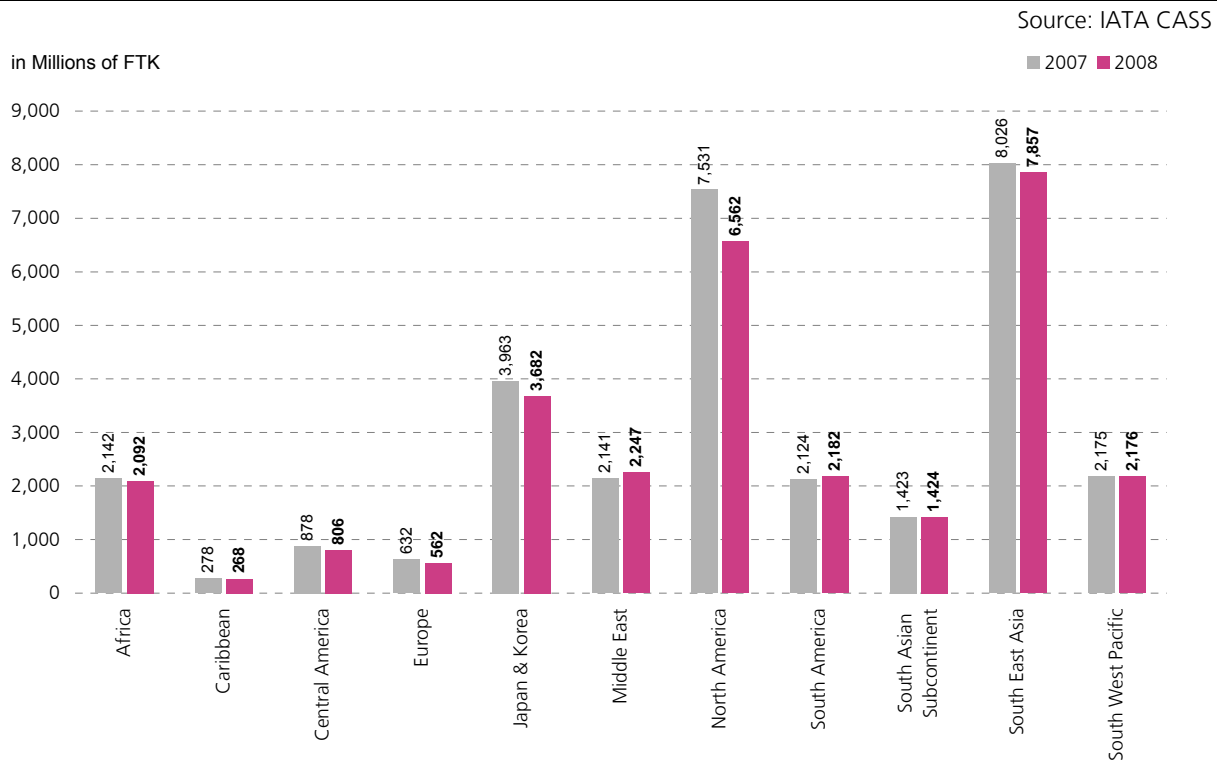
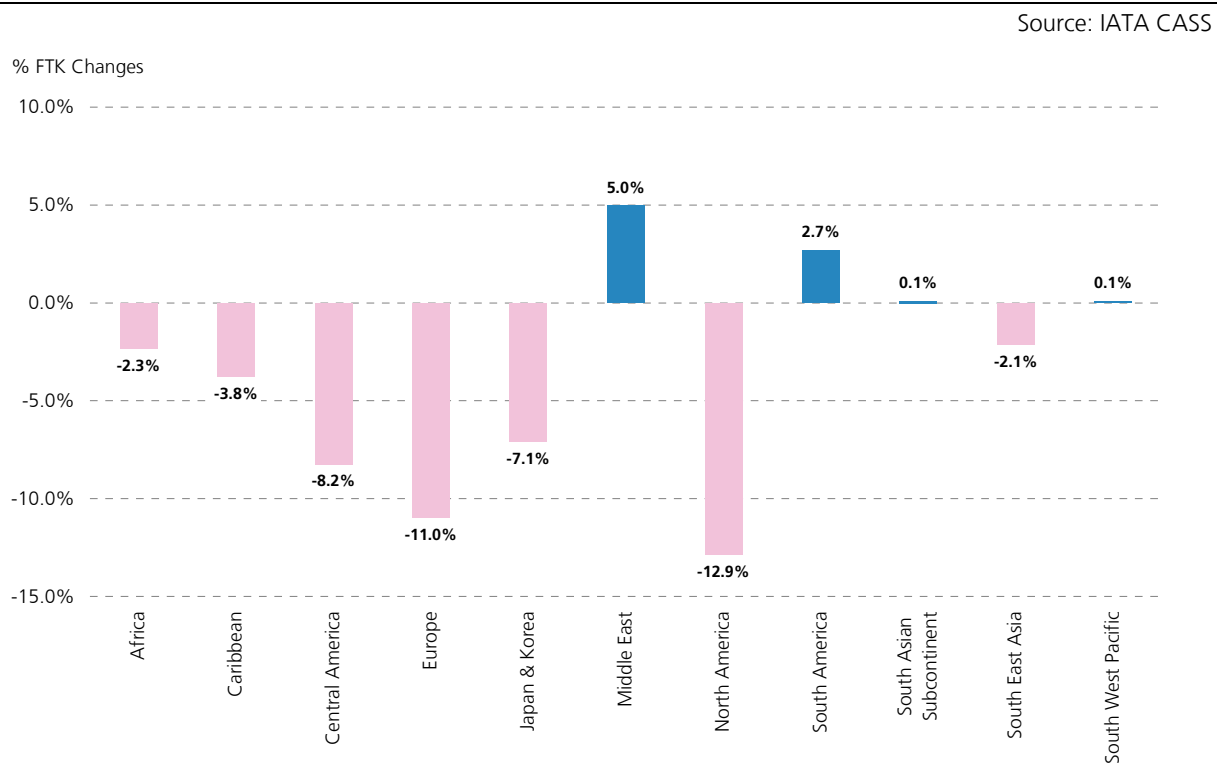


Figure 2-55: Growth of air freight traffic originating in Europe carried by CASS members by region; 2007 vs. 2008



If the air freight carried by AEA members in 2008 is considered in comparison to 2007, then the market leaders in Europe are clear: the German carrier Lufthansa (with 8,176 million TFTKs), only exceeded when combining the figures of the merged Air France (5,831 million TFTKs) and KLM (4,787 million TFTKs), Cargolux (5,324 million TFTKs) and British Airways (4,700 million TFTKs) form the core group accounting for 79 percent of the total freight tonne kilometres of AEA airlines.

2008		Traffic	Change
		million TFTKs	% vs. 2007
LH	DEUTSCHE LUFTHANSA AG	8,176.1	-2.0
AF	AIR FRANCE	5,830.9	-5.1
CV	CARGOLUX	5,324.3	-2.9
KL	KLM ROYAL DUTCH AIRLINES	4,786.9	-2.2
BA	BRITISH AIRWAYS PLC	4,699.9	1.6
LX	SWISS INTERNATIONAL AIRLINES	1,247.6	7.2
AZ	ALITALIA	1,198.7	-27.6
IB	IBERIA	1,056.9	-5.8
VS	VIRGIN ATLANTIC AIRWAYS	1,521.5	2.1
SK	SAS - SCANDINAVIAN AIRLINES	542.6	-4.9
TK	TURKISH AIRLINES	533.0	9.6
OS	AUSTRIAN	420.8	-9.7
TP	TAP PORTUGAL	330.4	5.7
AY	FINNAIR	542.6	10.9
BD	BMI	120.6	24.6
SN	BRUSSELS AIRLINES	94.8	18.2
LO	LOT POLISH AIRLINES	78.9	-5.2
OA	OLYMPIC AIRLINES	69.1	5.0
OK	CZECH AIRLINES	27.3	-17.1
CY	CYPRUS AIRWAYS	19.2	-56.7
MA	MALEV HUNGARIAN AIRLINES	11.0	-57.5
KM	AIR MALTA	8.3	-3.7
PS	UKRAINE INTERNATIONAL AIRLINES	7.8	12.4
RO	TAROM ROMANIAN AIR TRANSPORT	6.2	11.7
JU	JAT AIRWAYS	3.5	-10.9
OU	CROATIA AIRLINES	2.3	4.8
JP	ADRIA AIRWAYS	1.9	-47.0
LG	LUXAIR	0.0	
Σ AEA		36,640.1	-2.8

Table 2-18: AEA members' air freight traffic in 2008

Source: AEA

2.2.3 Cargo Fleet

The world's largest cargo fleets are operated by integrators. The two largest operators, FedEx and UPS, alone operate 17.9% 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. Also DHL, which is an integrator owned by Deutsche Post, is among the top three providers of global express logistics services. DHL uses to a large extent either fully owned subsidiaries, partly owned subsidiaries or wet lease arrangements with other carriers. In the following statistics, the DHL Group consists of their fully owned

Freight traffic is measured in TFTK (Total Freight Tonne-Kms) on passenger and all-cargo services, excluding mail.

subsidiaries: DHL Aero Expreso, DHL Ecuador, DHL de Guatemala, DHL Air UK, European Air Transport and SNAS. Not included are other airlines operating fully or partially for DHL, which are only partly owned by DHL or Deutsche Post, such as Blue Dart Aviation, Air Hongkong, Polar Air Cargo or Tasman Cargo Airlines. With the arrival of newly acquired Boeing 777-200LR freighters, another partially owned DHL airline, AeroLogic, a joint venture with Lufthansa, will enter the market soon. In addition DHL decided in 2008 to change their provider for express logistics services in the US domestic market, which is expected to have serious consequences for their subsidiaries and contractors. In total, the 20 largest operators account for 53.2% of the payload capacity of the world's cargo fleet and 30.5% of all cargo aircraft. Notable changes occurred in 2008 in fleet size compared to 2007:

While no significant changes in fleet sizes of the top two operators FedEx and UPS occurred, both Cargolux and Cathay Pacific increased their fleets of Boeing 747 freighters by more than 13% and almost 16% respectively. Measured by payload capacity, Cargolux advanced from 11th largest operator in 2007 to 7th place in 2008. Southern Air, an operator specialised in wet leasing of Boeing 747 cargo aircraft increased its fleet by 5 jumbo jets, equally 50% of its 2007 fleet size. The operator jumped from position 22 to 11. Kalitta Air, also based in the USA, in contrast, decreased its active fleet from 18 to 11, owing to two total losses and putting into storage another five aircraft, some of which are more than 35 years old. Interestingly, also renowned carriers Northwest Airlines and Japan Airlines decreased their fleets substantially in 2008, probably owing to the weakened demand in the cargo sector.

Additionally, it is worth mentioning that the US cargo carrier Gemini Air Cargo ceased operations in August 2008. Gemini belonged to the 40 largest cargo operators in the world with a fleet of six DC-10 and four MD-11 freighters with a total freight capacity of about 570 tons. Most of Gemini's freight capacity was removed from the market, as in the current environment their DC-10 freighters with an average age of more than 35 years are not demanded in the global aircraft market.

Table 2-19: The 20 largest cargo airlines by fleet payload capacity at year-end 2008

Source: Ascend Online Fleets, data as of January 2009

Pos. 2008	Pos. 2007	Operator	Operator Country	Fleet Payload Capacity in t 2008	Aircraft in Fleet 2008	Fleet Payload Capacity in t 2007	Aircraft in Fleet 2007	Year-over-year change payload capacity	Year-over-year change fleet size
1	1	FedEx	USA	15,761	353	15,684	355	0.5%	-0.6%
2	2	UPS	USA	12,161	242	12,071	242	0.8%	0.0%
3	3	Korean Air	South Korea	2681	24	2579	23	4.0%	4.3%
4	6	Cathay Pacific	China/Hong	2538	22	2190	19	15.9%	15.8%
5	4	China Airlines	Taiwan	2479	20	2480	20	0.0%	0.0%
6	5	ABX Air	USA	2251	83	2325	88	-3.2%	-5.7%
7	11	Cargolux	Luxemburg	2094	17	1860	15	12.6%	13.3%
8	7	Atlas Air	USA	2064	18	2051	18	0.6%	0.0%
9	8	DHL Group*	Multinational	2031	62	1991	62	2.0%	0.0%
10	9	Volga-Dnjepir Airlines	Russia	2030	22	1935	20	4.9%	10.0%
11	22	Southern Air	USA	1626	15	1094	10	48.6%	50.0%
12	12	Singapore Airlines Cargo	Singapore	1612	13	1736	14	-7.2%	-7.1%
13	14	Evergreen International	USA	1403	13	1574	15	-10.9%	-13.3%
14	21	EVA Air	Taiwan	1381	16	1150	14	20.1%	14.3%
15	15	Antonov Airlines	Ukraine	1380	10	1413	13	-2.3%	-23.1%
16	18	Astar Air Cargo	USA	1279	43	1279	43	0.0%	0.0%
17	10	Kalitta Air	USA	1181	11	1879	18	-37.1%	-38.9%
18	25	Polar Air Cargo	USA	1089	9	979	8	11.3%	12.5%
19	16	Northwest Airlines	USA	1087	10	1409	13	-22.9%	-23.1%
20	17	Japan Airlines	Japan	1085	11	1404	14	-22.7%	-21.4%
Total fleet operated by 20 largest operators				59,213	1014	59,083	1024	0.2%	-0.9%
Percentage of world cargo fleet				53.2%	30.5%	49.6%	29.7%		

*) DHL Group includes DHL Aero Expreso, DHL Ecuador, DHL de Guatemala, DHL Air, European Air Transport and SNAS.

Table 2-20: Cargo aircraft in service at year-end 2007/2008

Source: Ascend Online Fleets, data as of January 2009

Aircraft Class Max. Payload	2008	2007	Change
1000–10,000 kg	1219	1285	-5.1%
10,001–25,000 kg	649	668	-2.8%
25,001–50,000 kg	796	814	-2.2%
50,001–100,000 kg	322	338	-4.7%
100,001–250,000 kg	336	341	-1.5%
Total cargo fleet	3322	3446	-3.6%

Table 2-20 shows the development of the world cargo aircraft fleet from 2007 to 2008. Overall, the decline in the world fleet, which was already observed from 2006 to 2007 continued, albeit at a faster pace. While from 2006 to 2007 the world cargo fleet declined by 15 aircraft, from 2007 to 2008 it was reduced by 124 aircraft, or 3.6% of the total. Again, a particularly high number of aircraft with only a comparably small maximum payload (less than 10t) have been withdrawn from service, while also the number of aircraft in all other payload classes declined.

Table 2-21 shows the average age of the world cargo aircraft fleet. In comparison to the world

Aircraft Class Max. Payload	Aircraft Age in Years	
	2008	2007
1000–10,000 kg	27.3	26.5
10,001–25,000 kg	33.2	32.4
25,001–50,000 kg	21.6	20.7
50,001–100,000 kg	20.0	19.9
100,001–250,000 kg	14.5	15.4
Total cargo fleet	25.1	24.5

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. The average age of freighters has increased in 2008 to more than a quarter century.

Table 2-21: Average age in years of cargo aircraft at year-end 2007/2008

Source: Ascend Online Fleets, data as of January 2009

The average age in the class of very high maximum payloads between 100t and 250t declined due to the high number of Boeing 747-400F/ERF delivered throughout 2008. A total of 14 aircraft of this type was handed over to their operators. Also the withdrawal of some of the oldest very large freighters contributed to the decline in average age. Six Boeing 747 freighters were retired in 2008, while the number of 747 freighters in storage increased from 33 to 63.

2.2.4 Cargo Airlines - Financial Performance

Although 2008 was a year full of challenges for the worldwide economy negative results of the economic crisis did not reach the European cargo sector as fast as other industries. Revenues and the operating income stayed relatively stable in comparison to the passenger transport segment where many European airlines were faced with negative results within the year 2008.

Best performer in terms of cargo revenue growth in 2008 was **Cargolux**. The company was able to increase its revenues by 18.1% from € 1.207 billion up to € 1.425 billion in comparison to the previous period in 2007. While the amount of tonnes of cargo carried rose only moderately by 0.1% within the same time, Cargolux could report a good performance in terms of operating

income. An improvement from € -24 million in 2007 to € 10 million in 2008 obviously proves, that the cargo operator was successful in business despite the economic crisis.

In line with Cargolux **Lufthansa Cargo's** figures indicate a similar development. For 2008 the company reported an increase of revenues by 6.3% from € 2.736 billion in 2007 to € 2.907 billion in 2008. In addition, operating income was with € 164 million in 2008 the second highest one in the history of the cargo unit since 1994. Nevertheless, this positive result is not a reflection of the traffic performance. The amount of tonnes of cargo carried decreased by 6.0% from 2007 to 2008 while revenue tonne kilometres fell from 8.451 million to 8.283 million. This situation already hints at the impact of the economic crisis in form of a falling demand for air cargo traffic.

Air France-KLM Cargo, which is operating a fleet of 14 747 freighters, suffered among the selected companies obviously most strongly from the breakdown of the general cargo market in late 2008 and early 2009. In its annual report, which covers the period from April 2008 to March 2009, the company states a revenue decrease by 2.4% within one year. The operating income fell within the same time from € 39 million to € -207 million. This downward trend is also reflected by a reduction of revenue tonne kilometres from 11.365 million to 10.840 million.

Looking at the cargo traffic performance figures of **British Airways**, these show similar results by a decline of 4.4% in revenue tonne kilometres and a decline of 3.5% in the amount of tonnes of cargo carried from April 2008 to March 2009. Nevertheless, the company was still able to defend its revenue growth. An amount of € 723 million revenues in March 2009 compared to € 661 million twelve months ago points out that British Airways was obviously able to balance falling demand with rising revenues.

In retrospect, 2008 was still a stable year for the European cargo carriers. Revenue growth rates stayed relatively high with the exception of Air France-KLM Cargo. The same was the case for the operating income, where Air France-KLM Cargo was again the only company, which failed in improving this figure. Nevertheless, decreases in the amount of carried cargo and reduced figures for revenue tonne kilometres, which indicate a lower profitability, show that the competitive environment especially with regard to the high oil prices in the middle of 2008 and falling demand starting in autumn created new challenges for the industry in 2008.

2.2.5 Cargo Airlines - Alliances

Following on from the trend of passenger businesses towards alliances that started a few years earlier, some air freight carriers also joined to form alliances. The aim of these co-operations was, 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 known. 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 was established in April 2000 by Lufthansa Cargo, SAS Cargo and Singapore Airlines. Japan Airlines joined the alliance in July 2002. The participating airlines had access to a network of 523 destinations in more than 100 countries. The alliance had over 43 freight aircraft and access to the belly capacity of 760 passenger aircraft. In 2004 WOW achieved a global market share of 12 percent 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.

In March 2008, the Lufthansa Cargo board announced that the airline would reduce its activities in the WOW alliance. The collaboration with the WOW partners had become unnecessary because their own airlines' route networks were now dense enough. Also, they said that the freight alliance had never functioned as well in passenger transport as the Star Alliance, whose success they wanted to match. Experts say that the cause of this is not least the lack of reservation systems and customer loyalty programmes. The final nature of this decision by the Lufthansa board was underscored by the fact that the WOW logo and WOW livery on the Group's own MD-11 aircraft were removed during scheduled maintenance. This will mean that the WOW Alliance, or Lufthansa Cargo's membership now only exists on paper.

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.

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 percent 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). Sky Team Cargo's objectives were: uniform transportation standards, global networks, fast goods handling at airports from one alliance partner to another, and comparable service

offerings. According to a Sky Team Cargo Manager, these objectives had only been marginally achieved at best and the alliance now really only exists on paper.

Air cargo alliances on the retreat

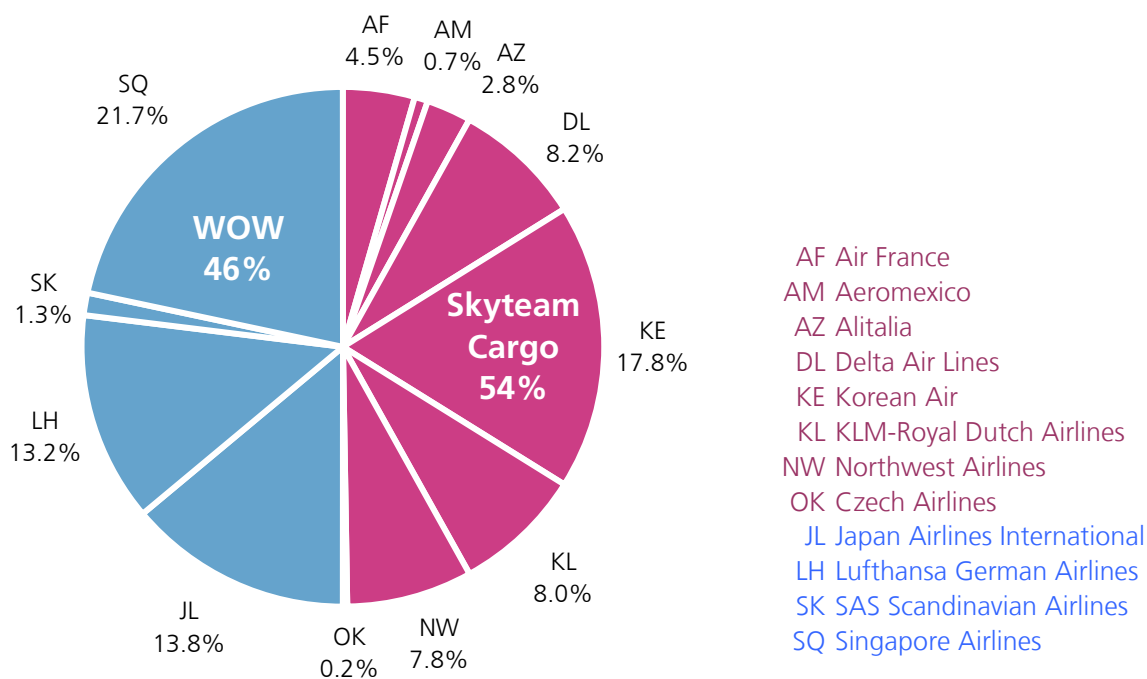
The above-mentioned developments in the air cargo alliances show that they were not able to fulfil expectations and that they are now on the retreat. There was originally good success potential for the cargo groupings, especially WOW. There, the three cargo divisions of Lufthansa, Singapore Airlines and SAS established themselves as legally independent companies at an early stage.

Comparison of WOW vs. SkyTeam Cargo

The following chart shows a comparison between the freight capacities offered by the two cargo alliances in 2008 – at least on paper.

Figure 2-56: Available freight capacity in tonnes (belly & freighters) WOW vs. SkyTeam Cargo – worldwide (one week in July 2008)

Source: OAG



2.2.6 Cargo Airlines - Competition

The quickly developing air cargo industry is characterised by rising costs and increasing customer demand for better service and information. An optimal integration of all these processes is a critical challenge for every company which wants to be successful in the air cargo market.

Concentration on the core business along the entire value chain is of increasing importance to the majority of aviation managers. This is the opinion of around two-thirds of managers from passenger and cargo airlines and airports in over 20 countries who were questioned in the recent aviation study by Droege & Comp. in cooperation with BARIG e.V. In the network airline business, more than 80 percent are working to adjust their depth of added value, especially in connection with ground personnel. Also in the case of the cargo airlines, the ground personnel has, with 60 percent, priority over technology and IT measures. A reduction of the depth of added value, especially in ground traffic services, is expected from the airport operators. Around 85 percent of those interviewed from purchasing departments are planning cost reduction measures in passenger traffic in future, ahead of the reduction of personnel costs. Almost 80 percent are also starting to target the fuel prices (e.g. through hedging) and the network management, e.g. discontinuing routes or parking aircraft.

Irrespective of this survey, the air cargo industry was once again characterised by rising costs in 2008. The main reason for the high price increase was the crude oil price trend, which reached its peak in the third quarter of 2008. The impact of this was record levels of airlines' kerosene surcharges, which couldn't even be compensated by the heavy reductions in basic cargo rates. As the kerosene surcharges had already begun to go down again in August and September, however, the price index increase in comparison to the previous period (the second quarter of 2008) ended somewhat lower (8.4%) than in the second quarter of 2008 (+9.6 percent in comparison to the first quarter in 2008). Due to the now heavily decreased oil price, a further damping of the price growth was anticipated for air cargo for the fourth quarter of 2008.

Two-digit price increase rates were measured in air cargo transport in all regions of the world in comparison to the previous year. These were especially high for transports into the Asia-Pacific region: the prices increased there by an average of 44.9 percent. Transports to China even saw increases of 59.4 percent. The most moderate rise was observed on routes to Central and South America (+21.9 percent). Here, transports to Mexico showed a particularly low increase rate of only 13.4 percent.

Table 2-22: Price index for air cargo

Source: Federal Statistics Office, applying data from IATA CargoIS

**Price index for air freight
2006=100**

Destination	Q2/2007	Q3/2007	Q4/2007	Q1/2008	Q2/2008	Q3/2008
Index						
Total index	95.8	98.7	105.4	111.6	122.3	132.6
Asia-Pacific	94.8	98.9	106.2	115.8	129.8	143.3
thereof China	95.1	98.6	109.6	120	137.6	157.1
North America	94.5	96.4	103	108	115.8	122.6
thereof USA	94.3	96.2	102.9	107.6	115.2	122.2
Latin and South America	97.4	100.3	105.7	106.8	114.9	122.2
thereof Mexico	97.1	101.1	105.6	103.5	109.4	114.6
North Africa, Middle East	97.8	100.8	107.5	114	128.2	142.1
thereof United Arab Emirates	99	102.2	111.1	118.7	138.9	159.1
Rest Africa	97.8	100.4	106.1	108.7	115.3	126.5
Europe	99.3	101.1	107.8	114.4	124.5	133.8
% change on previous year's quarter						
Total index	–	–	–	18.8	27.7	34.3
Asia-Pacific	–	–	–	25.6	36.9	44.9
thereof China	–	–	–	28.1	44.7	59.4
North America	–	–	–	15.1	22.4	27.2
thereof USA	–	–	–	15.1	22.1	27
Latin and South America	–	–	–	11	18	21.9
thereof Mexico	–	–	–	6.6	12.8	13.4
North Africa, Middle East	–	–	–	21.9	31.1	40.9
thereof United Arab Emirates	–	–	–	28	40.2	55.6
Rest Africa	–	–	–	11.5	17.9	26
Europe	–	–	–	18.9	25.4	32.3

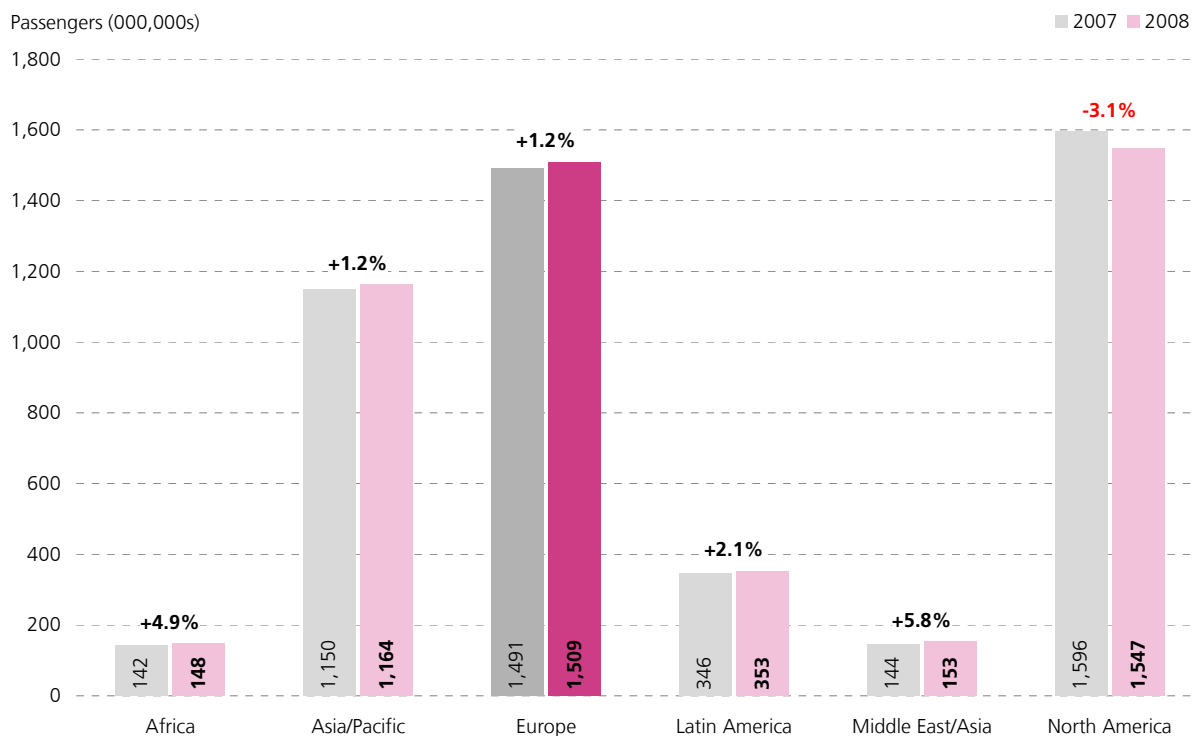
3 Airports

3.1 Passengers

The total number of passengers⁷ handled worldwide in 2008 was 4.874 billion and thus nearly equal to the result of the year before with a marginal growth of one per mill. The airport umbrella organisation Airports Council International ACI had reported annual growths beyond five percent in the preceding years but a sharp slump in capacity usage has since stopped the kind of results we had become accustomed to. Number of worldwide domestic passengers reduced by 1.4% which was levelled off by increased passenger numbers (+2.4%) on international flights, accounting for 42% of global air traffic. Both an unparalleled increase in fuel prices (see Figure 2-29 on page 82) which boosted costs for the airlines in summer 2008 and the severity of the financial and economic crisis, which spread out across nearly all markets at least in the second half of 2008, reversed the positive growth rates gained within the first half year.

Figure 3-1: Passengers by region

Source: ACI⁸, calculations by DLR



As mentioned above, the severe impact of the world economic crisis was felt by the end of 2008 at the latest and catered for a reverse in growth trends, for example in Europe and Latin America whose aviation markets reported distinctly negative figures from around the middle of

⁷ Passenger numbers include enplaned and deplaned passengers, transit passengers counted once

⁸ As by ACI, 1357 of 1679 it's member airports, thereof 486 from Europe - representing approximately 98% of global air traffic - contributed data to the 2008 statistics (ACI Media Release as of 27 July 2009).

September. Their annual growth rates still managed to achieve 1.2% and 2.1% respectively due to the late beginning of the crisis. The Asia/Pacific region reported negative growth as early as July, rounding off the overall result to 1.2%. Africa, with its high number of developing and emerging national economies remained largely unaffected by the economic developments in 2008. Apart from the months of September and December 2008, which show a year-on-year decline, more passengers were counted in every month. The respectable annual growth of 4.9%, as achieved by the Africa region, was only topped by the Middle East boom region. An average growth figure of 5.8% despite the crisis (and not even one month where figures went into the red) impressively demonstrates the potential of those markets. It is therefore not surprising that 4 of the world's 5 fastest growing airports in terms of passenger numbers came from this region: Abu Dhabi (UAE, +30.2%), Sharjah (UAE, +22.1%), Sharm El Sheikh (Egypt, +20.8%) and Bahrain (Bahrain, +19.6%). Istanbul (Turkey) – which is part of the ACI region Europe – very successfully bucked the stagnating trend with 23.1% growth and participated in its strengthened role as a link between Asia and Europe. North America, however, was hit first by the crisis due to the traffic-dominance in the originating country, the USA. It is the only region which lost passenger numbers (-3.1%) for the overall year according to the ACI categorisation.

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

Source: ACI Annual World Airport Traffic Report 2008, calculations by DLR

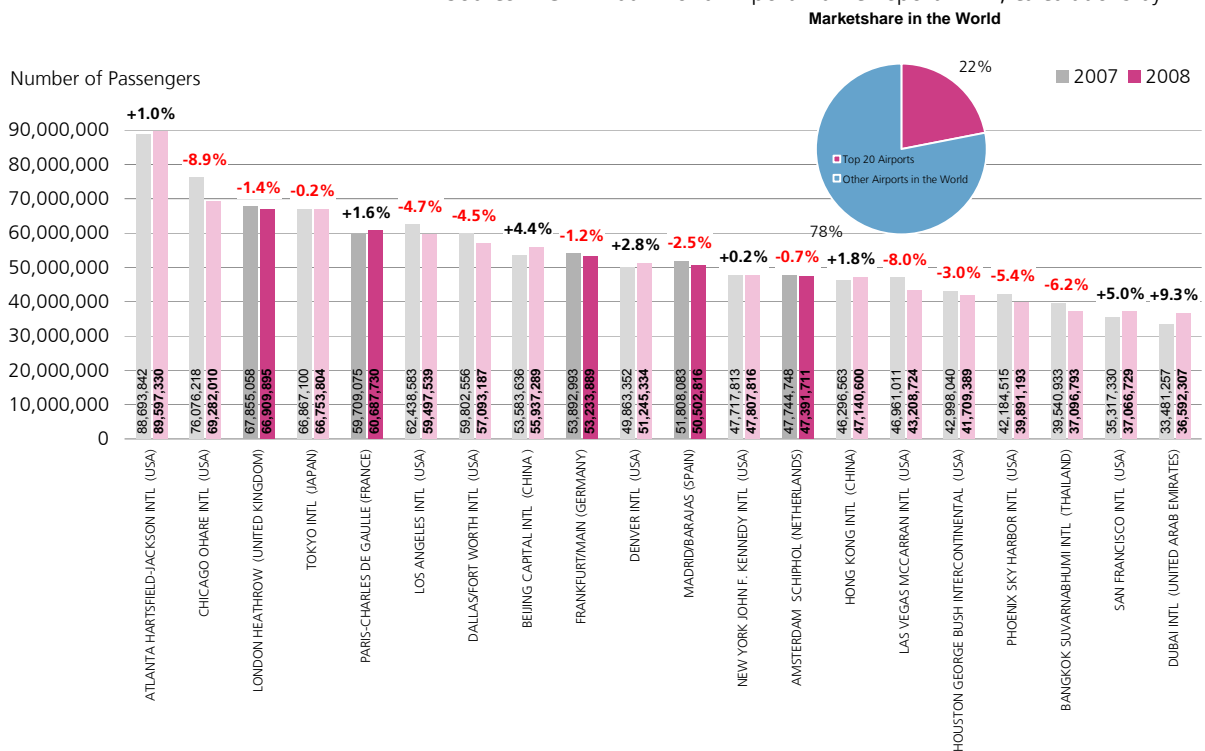


Figure 3-2 shows the world's top 20 airports in terms of passengers handled in 2008. These 20 airports handle 22% of the commercial air passengers worldwide; the degree of concentration is thus higher than in the case of aircraft movements (see chapter 3.2) and has decreased slightly since 2007 (23%). Again, Atlanta Hartsfield-Jackson International and Chicago O'Hare

International occupy places one and two respectively. Atlanta recorded a slight growth of 1% to 90 million passengers. At Chicago O'Hare – in 2008 a site of intensive construction alterations to extend capacity – around 9% fewer passenger were counted (just over 69 million) and at the second local airport, Chicago Midway Airport, 10% fewer passengers were served (around 17 million).

Of the EU airports, London Heathrow is ranked third with 67 million passengers handled (-1 million compared to 2007) and Paris Charles de Gaulle is on place five with just fewer than 61 million passengers in 2008 (2007: 60 million). The airports Frankfurt/Main (53 million passengers, minus 700k compared to 2007), Madrid Barajas (50.5 million passengers, minus 1.3 million compared to 2007) and Amsterdam Schiphol (47 million passengers, minus 400k compared to 2007) follow on places nine, eleven and thirteen respectively. The reason for London Heathrow moving eight 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. In contrast, 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 five Asian airports: Tokyo International/Haneda (67 million passengers), Beijing Capital International (56 million passengers), Hong Kong International (47 million passengers), Bangkok International (37 million passengers) and Dubai International (37 million passengers).

Figure 3-3 displays the top 20 European airports in terms of commercial passengers handled. These airports handle 14% of the worldwide air passengers and 44% of the passengers at European airports. The total number of passengers at European airports increased by a moderate 1.2% to 1.5 billion in 2008, but due to the staggered regional effect of the downturn, the worst may still be to come for European airports in 2009. 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 high 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 67 million for London Heathrow to 19 million for Oslo. The first five places among Europe's top 20 airports are occupied by the main international hubs of Europe, followed by national hubs for European or selected intercontinental destinations.

London Heathrow's passenger numbers reduced in 2008 by 1.4% year-on-year, not affecting its top position in Europe. Besides the generally problematic economic environment, the highly dissatisfactory start of operations at the new British Airways-dedicated Terminal 5 impacted upon the traffic results. The cause was the failure of the newly designed baggage management system which remained out of service for several days. However, Heathrow still managed to achieve a comparatively good result – the year 2008 brought all seven British subsidiary airports

of BAA Ltd.⁹ a decline in passenger numbers of only 2.8% (according to their own figures) thanks to a strengthened long-haul market (+3.5%) at the hub. Of the five largest airports in Europe, only Paris Charles de Gaulle (CDG) achieved an increase in passenger numbers (+1.6%), which is mainly thanks to growth in the number of long haul passenger numbers (+3.2%). But the strong growth among low cost carriers (+10.9%, primarily thanks to easyJet and Transavia.com) stabilised the growth at the two largest Aéroports de Paris subsidiary airports, CDG and Orly, which, grasping the moment of opportunity, swam against the general trend. Frankfurt, the third largest European airport, achieved 53.2 million passengers - a result 1.2% lower than that of the previous year. Connections to the West European finance centres were over-proportionally affected by a decline in the economy¹⁰. The inner-European traffic in general reported a decline of 1.9%. Intercontinental connections with their one-percent increase in passenger numbers contributed greatly to a stabilisation in demand in Frankfurt despite considerable losses on routes to Asia (-4.7%) and the USA (-1.1%). The driving forces were instead the destination regions of South America, the Caribbean and Canada. One airport with a strikingly positive traffic result is Rome Fiumicino with 34.8 million passengers (+7.2%). Part of this gain was due to the shifting of the Alitalia hub from Milan Malpensa to Rome as part of the reorganisation of the struggling airline. This boosted Alitalia flights by 16% at Rome¹¹. The reduction in the supply from Alitalia, the former main customer, at Malpensa airport by around 75% (which went much further than just the shifting of capacity)¹² correlates to a decline in the number of passengers in summer (May-August) 2008 of around 20%¹³, for which reason this airport is no longer among the top 20 (2007: 12th place). Barcelona's ranking also dropped considerably (-8.0%). This was mainly caused by the introduction of a high-speed rail link to Madrid (-2.5%). This is the busiest city pair in European air transport¹⁴, with its 19,952 flights in 2008 (oneway), even when taking into account the 17% reduction in flights since 2007. Quite remarkable are the dynamics at the Atatürk airport in Istanbul. Its traffic figures have doubled since 2004 and had almost reached 29 million passengers in 2008. The 23.1% increase from 2007 to 2008 alone caused the airport to jump from 15th to 10th place thanks to the increased supply by many European carriers. The local Turkish Airlines contributed to this development particularly due to its enormous growth (+18.4% passengers in total).

⁹ Source: BAA News Releases (e.g. 25 February 2009)

¹⁰ Source: Fraport Annual Report 2008

¹¹ Source: DLR's calculations based on OAG data (number of flights offered by Alitalia departing FCO); data of 3rd week of July 2007 (1337 flights) vs. 2008 (1550 flights)

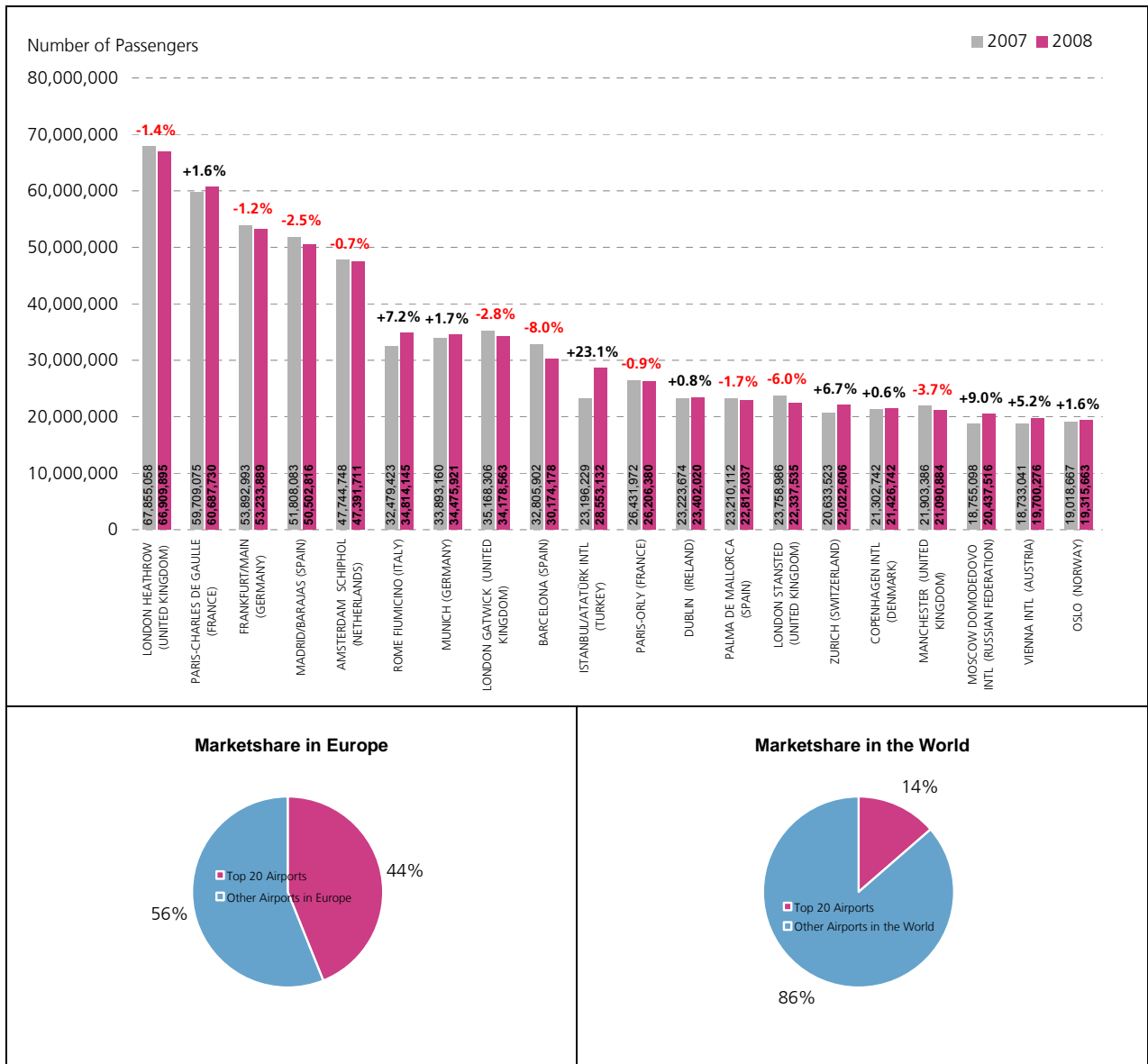
¹² Source: DLR's calculations based on OAG data (number of flights offered by Alitalia departing MXP); data of 3rd week of July 2007 (1245 flights) vs. 2008 (322 flights)

¹³ Source: ACI Europe: Communiqué Airport Business : October 2008

¹⁴ Source: Eurocontrol CODA: Delays to Air Transport in Europe. Digest – Annual 2008

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

Source: ACI Annual World Airport Traffic Report 2008, calculations by DLR



3.2 Aircraft Movements

There were 77 million aircraft movements¹⁵ at airports worldwide, according to ACI, in 2008, which is a decline of 2.1% from 2007. Commercial passenger flights accounted for the largest proportion with 55.8 million flights, transporting on average 87 passengers per flight. Regional air traffic developed quite diversely and qualitatively corresponds more or less to the trend in passenger numbers (see previous chapter). However, the flight movements show a larger decline, or a smaller growth, than the passenger numbers – except for in the Asia/Pacific region.

¹⁵ For statistical coverage, please refer to footnote number 8 on page 121.

That was the only region where the growth in movements (+2.5%) exceeded the growth in passenger numbers (+1.2%). The largest relative and absolute loss (-6.0%; a decline of more than 2 million flights) was recorded in the North America region.

Figure 3-4: Movements by region

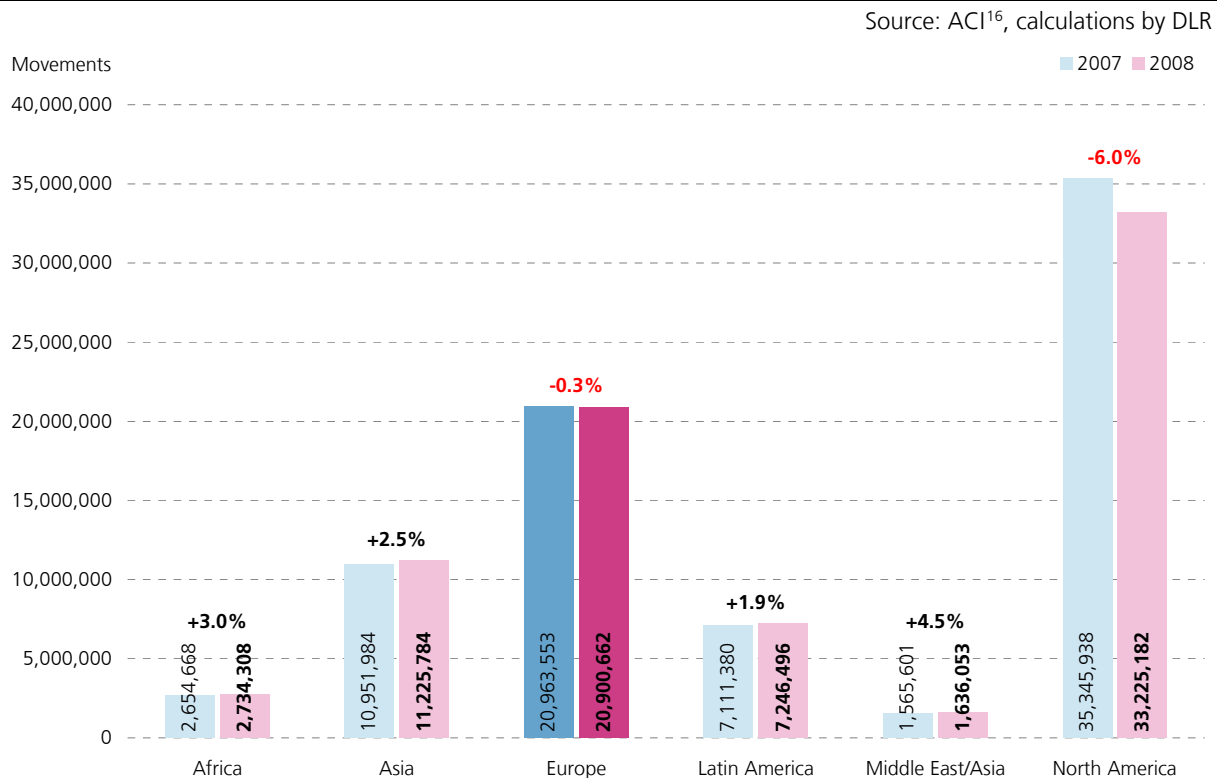


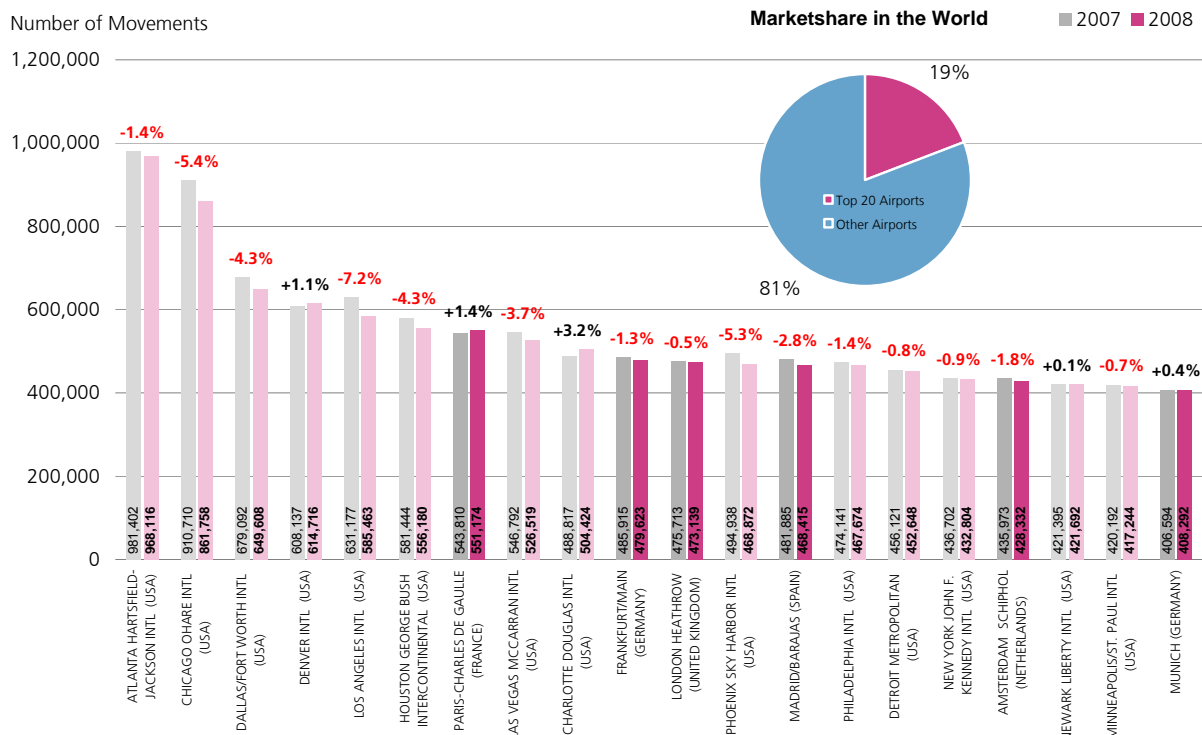
Figure 3-5 shows the busiest 20 airports worldwide in terms of commercial aircraft movements in 2008. The two busiest airports by far are Atlanta Hartsfield-Jackson International and Chicago O’Hare International, both in the USA. Places three to six are also occupied by US airports.

The biggest non-US airport regarding aircraft movements is Charles de Gaulle in Paris, on place seven. The second busiest European airport is Frankfurt/Main in 2008 on place 10. The European Airports London Heathrow, Madrid Barajas, Amsterdam Schiphol and Munich follow on the places 11, 13, 17 and 20 respectively.

¹⁶ Please refer to footnote number 8 on page 121.

Figure 3-5: The 20 biggest airports in terms of flight movements worldwide

Source: ACI Annual World Airport Traffic Report 2008, calculations by DLR



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 in Figure 3-5 shows a large decline in the number of aircraft movements for the airport ranked second, Chicago O’Hare International ORD, and for the third-ranked airport, Dallas/Fort Worth DFW. In Chicago there was a collapse in international connections (-7.7%), which, however, only influenced the overall result with a weighting of around ten percent, as almost 9 out of 10 flights are domestic services (-4.9%)¹⁷. In Dallas, the airline traffic only reduced by a total of 974 individual flights (-0.2%) of its 477 thousand movements. Almost one third of all flight movements are, however, performed by so-called Air Taxi Services and these reported a decline of 14.1%¹⁸. In general, 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 than at European or Asian airports.

Figure 3-6 displays the busiest 20 airports in Europe in terms of commercial aircraft movements for 2008. They cover 11% of worldwide commercial aircraft movements, which sum up to 6.2 million. The total number of European commercial aircraft movements in 2008 was 16.3 million, of which Europe’s top 20 airports cover 38%. The number of aircraft movements at the 20

¹⁷ Source: ORD Airport Activity Statistics December 2008 (<http://www.ohare.com/Statistics/stats/1208ORDSUMMARY-REVISED.pdf>)

¹⁸ Source: DFW Traffic Statistics 2008 (<http://www.dfairport.com/stats/>)

busiest airports lies in a range between 551,174 for Paris Charles de Gaulle and 196,996 for Dublin airport. The top five places are occupied by international hub airports in Europe: Paris Charles de Gaulle (+1.4%), Frankfurt/Main (-1.3%), London Heathrow (-0.5%), Madrid Barajas (-2.8%) and Amsterdam Schiphol (-1.8%). The remaining airports comprise national hub airports, which mainly serve European and selected intercontinental destinations.

Figure 3-6: The 20 biggest airports in terms of flight movements in Europe

Source: ACI Annual World Airport Traffic Report 2008, calculations by DLR

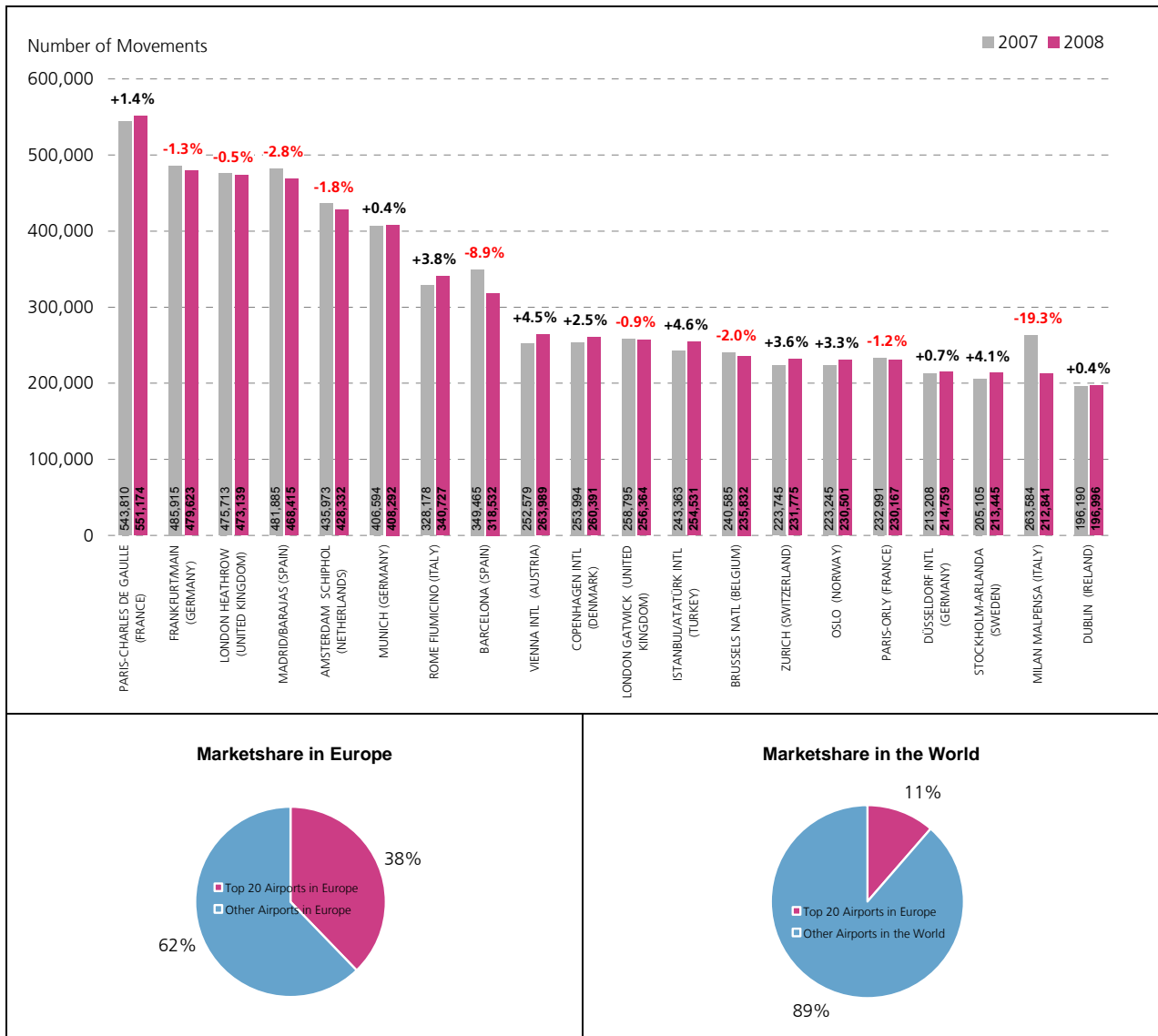
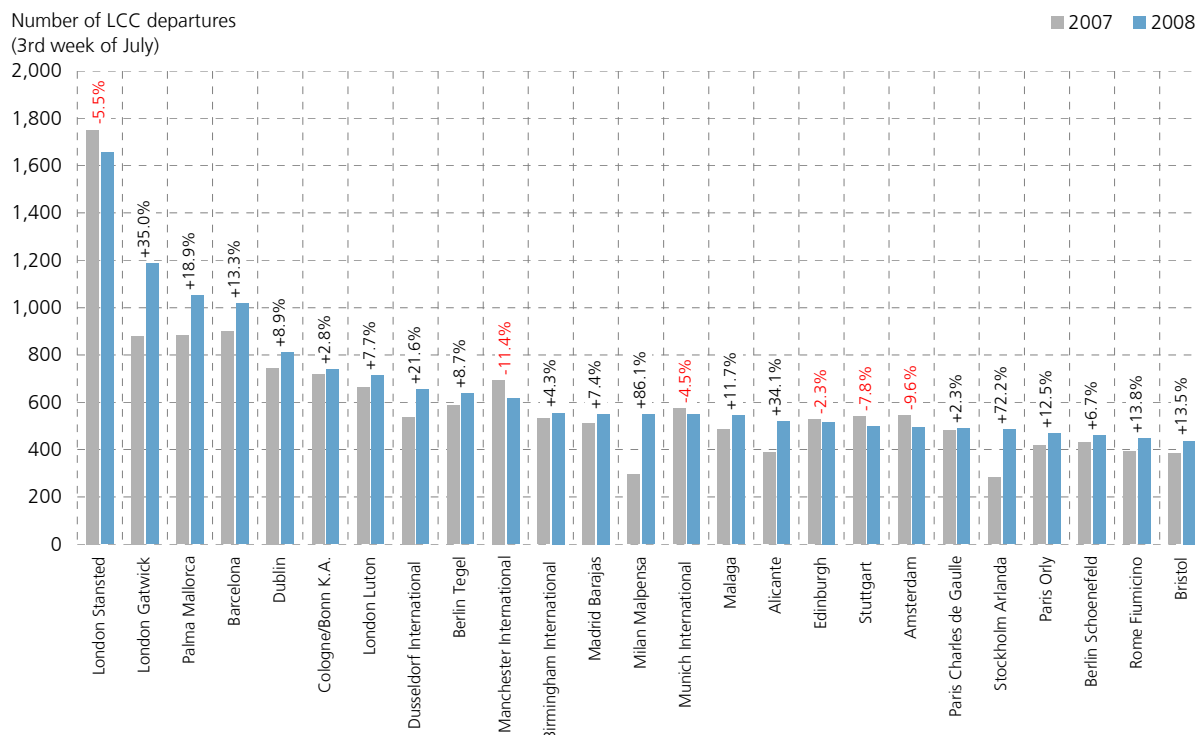


Figure 3-7 shows the top 25 low cost airports in Europe in terms of aircraft departures per week with the third week in July 2008 being the reference. London Stansted has the highest number of low cost carrier take-offs of any airport in Europe. The number of low cost carrier departures per week sums up to 1 655. The airports London Gatwick and Palma de Mallorca follow on places two and three with 1 188 and 1 050 low cost carrier take-offs respectively. Compared to 2007 most airports show significant increases due to the growth of the low cost segment. These

are as large as up to 86% for Milan-Malpensa airport (see Figure 3-7), which was less severely hit by Alitalia's decision to de-hub the airport thanks to this growth. The largest decrease is 11.4% for Manchester International airport. The average growth of low cost traffic handled at the top 20 low cost airports was almost 10% in 2008.

Figure 3-7: Top 25 low-cost carrier airports in Europe

Source: OAG 2008



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 weekly number of low cost carrier take-offs varies between 450 and 700. However, compared to the total number of commercial aircraft movements, their share is still low. 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)

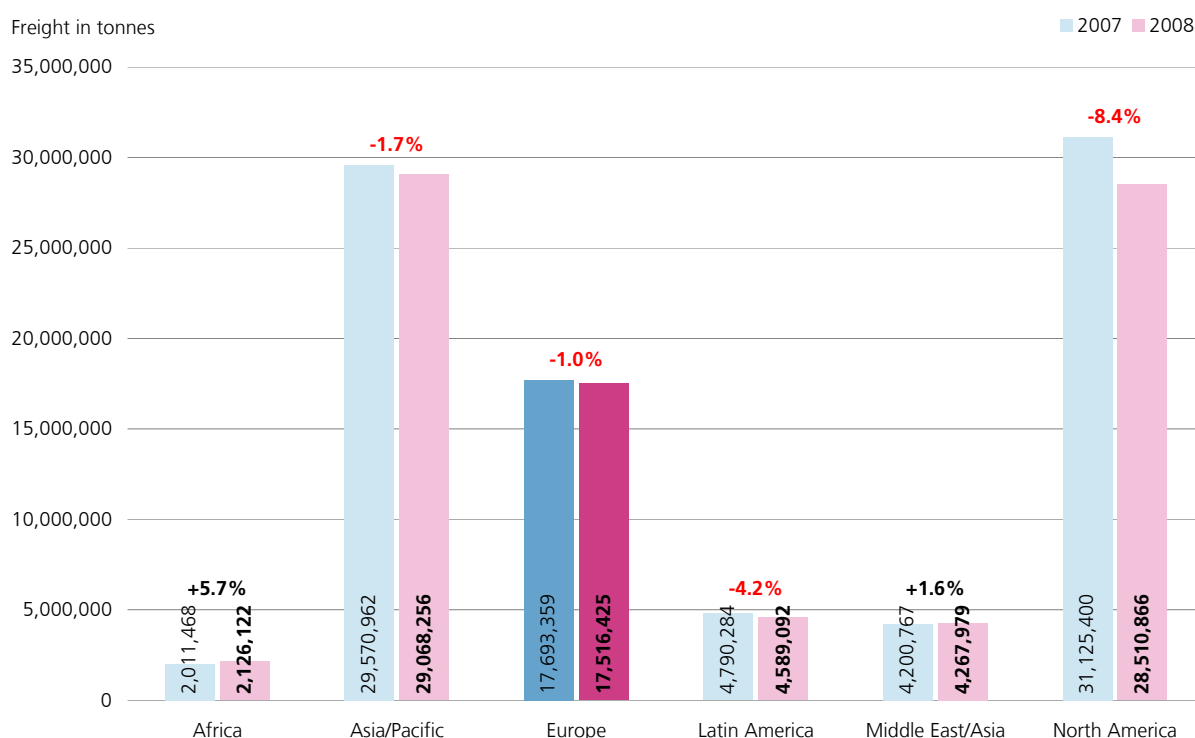
3.3 Freight

Freight comprises cargo carried by passenger aircraft as belly freight as well as by freighters. The total volume of freight handled (loaded and unloaded) at airports worldwide was 86 million tonnes in 2008 and thus represents a decline of 3.7%. Air cargo can be used as a barometer for the developments on the world's markets and thus directly suffered the effects of the economic downturn. The slump in goods production from around summer 2008 was followed by the slump in world trade in the fourth quarter. The downward spiral continued to accelerate and the air cargo sector experienced an unprecedented collapse (two-digit figures) in December 2008. The month December 2008 closed ACI-wide with 19.7% less air freight volumes (in tonnes) year-on-year. In Europe this figure even reached a minus of 22.4%¹⁹.

Africa, the smallest region in terms of volume achieved a plus of 5.7% in freight tonnes carried in 2008 and the Middle East region also boasted a significant +1.6%. All other regions reported year-end figures below those of the previous year, Europe for example with -1.0%.

Figure 3-8: Freight by region

Source: ACI²⁰, calculations by DLR



The top 20 freight airports worldwide as displayed by Figure 3-9 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 EU airports. The world's largest freight airport is Memphis in the USA with 3.7 million tonnes of freight handled, closely followed by Hong Kong International (3.6 million tonnes of

¹⁹ Source: ACI Media Releases (e.g. as of 30 January 2009)

²⁰ Source: ACI Media Release, Geneva, 27 July 2009

freight). There is a notable difference in the freight volume between the two biggest airports and the 3rd biggest airport Shanghai Pudong International in China, which handled 2.5 million tonnes of freight in 2008. Total air freight figures range from 3.7 million tonnes at the airport of Memphis in the USA to 1.2 million tonnes at Bangkok Suvarnabhumi International. The top 20 airports handled almost half (47%) of the worldwide freight volume in tonnes in 2008 and therefore air freight is more concentrated on the top 20 airports than commercial passengers or aircraft movements. The largest European air freight airport is Paris Charles de Gaulle on place seven, closely followed by Frankfurt/Main. Amsterdam Schiphol and London Heathrow follow on places 13 and 16 respectively.

As shown in the region overview in Figure 3-8, it is not surprising that all seven US airports in the top 20 ranking had to deal with more (Anchorage; -17.2%) or less (Memphis, Louisville; up to -5%) bitter volume losses. In the case of Anchorage, there is an overlapping of effects. One point is that the weakening economy directly affects the trade volume, but that applies to many other airports too. But FedEx and UPS, two large integrators, operate transshipment centres at Anchorage and their business is strongly correlated to trade volume

Figure 3-9: The 20 biggest airports in terms of commercial air freight worldwide

Source: ACI Annual World Airport Traffic Report 2008, calculations by DLR

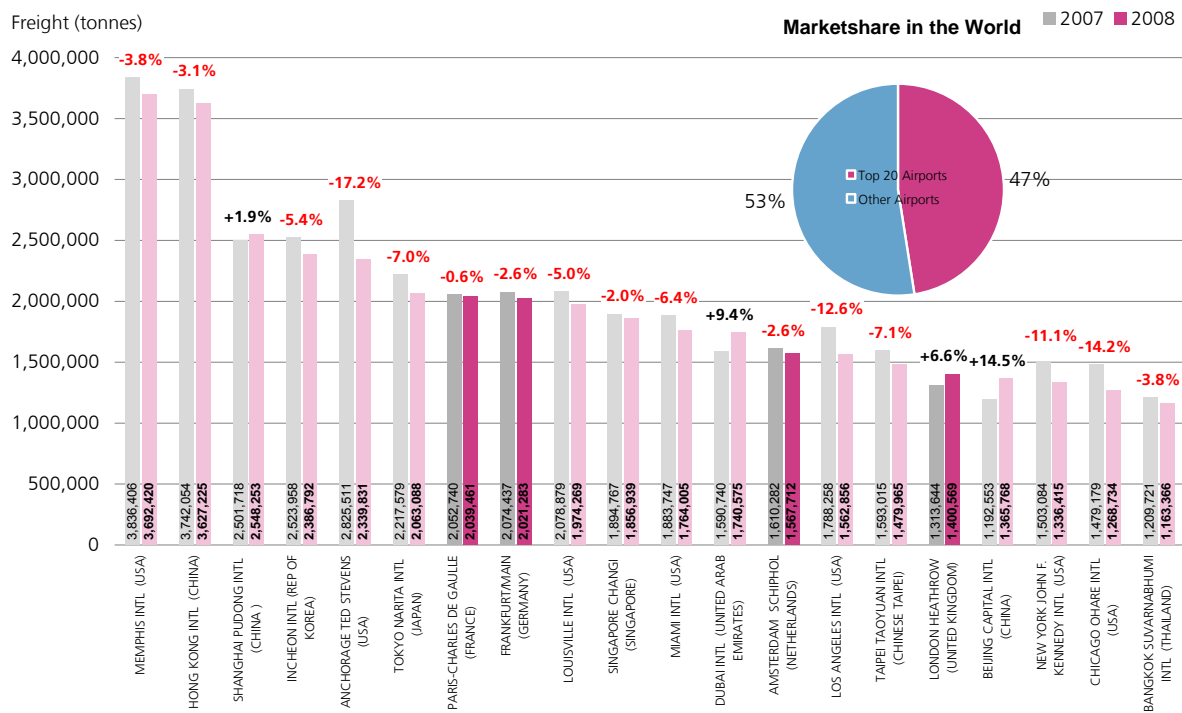


Figure 3-10 illustrates Europe's top 20 freight airports. The total volume of freight handled at these airports was 12.8 million tonnes in 2008. The largest freight airport in Europe is Paris Charles de Gaulle with 2 million tonnes of freight in 2008, followed by the previous year's rank leader Frankfurt/Main with almost an equal amount of tonnage. Other large freight airports in Europe comprise Amsterdam Schiphol with 1.6 million tonnes of freight on place three and London Heathrow with 1.4 million tonnes of freight on place four. The remaining 16 airports

handled below 1.0 million tonnes of freight each. Freight handled at the top 20 European airports lies between 2.0 million tonnes for Frankfurt/Main and 0.138 million tonnes for Helsinki-Vantaa. In 2008, these airports handled 16% of the worldwide air freight volume in tonnes; in contrast they handled 79% 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 2008, as their overall share is only 16%.

The list of the top 20 cargo airports reflects the effects of the economic downturn. 13 airports recorded negative figures, but there were also success stories to be told. London Heathrow, for example, with fewer passengers and flight movements than of the previous year, reported strong growth of +6.6% in air cargo. The domestic volume in 2008 was exactly the same as that in the previous year, while the (lower) cargo volume at the two other London BAA airports, Gatwick (-37.1%) and Stansted (-3.4%), declined distinctly²¹. Cargo in Intra-European market reduced by 3.9%, but the long haul catered for a positive result with its strong growth. The driving force behind the increase was particularly the traffic from and to North America (+9.4%). Frankfurt airport²² mostly blamed the economic situation for its decrease in cargo (-2.6%) – and the considerable consequences of the industrial action at Lufthansa, its main customer, in summer 2008 which caused the cancellation of numerous flights. With its loss of 18.1%, Brussels airport is also not among the winners of 2008. In spring 2008, its most important cargo customer at that time, DHL, transferred its European hub to Leipzig/Halle in Germany. According to the airport's figures²³ the remaining cargo market grew by 11.1%, but the overall result clearly demonstrated the big share of the business DHL used to have at Brussels. DHL also withdrew from the German Cologne/Bonn airport in order to centralise its European services at the expanding Leipzig/Halle airport. Cologne/Bonn lost a similar amount of cargo volume in 2008 as Brussels - although UPS, its long standing breadwinner, operates its European hub there and FedEx has also recently begun operations out of Cologne/Bonn. The beneficiary of these hub transfers - Leipzig/Halle Airport in the Free State of Saxony – quadrupled its cargo volume and thus made its debut in the European top 10 cargo airports. Belgium's Liege airport²⁴ (TNT's European hub) is also experiencing growth. With a year-on-year cargo increase of 5.8% (and +20% for passengers) the airport seemed to disregard the crisis. The airport's result was bolstered by the arrival of new airlines: Ethiopian Airlines (operated by Southern Air) in March, which had turned its back on Brussels, El Al from Israel in October, and Ukraine International Airlines. As a result of the volume increases in the months following the arrival of the new customers in 2008, Liege airport expects additional annual volume of over 110,000 tonnes of freight.

²¹ Source: BAA 10 years record 1999-2008

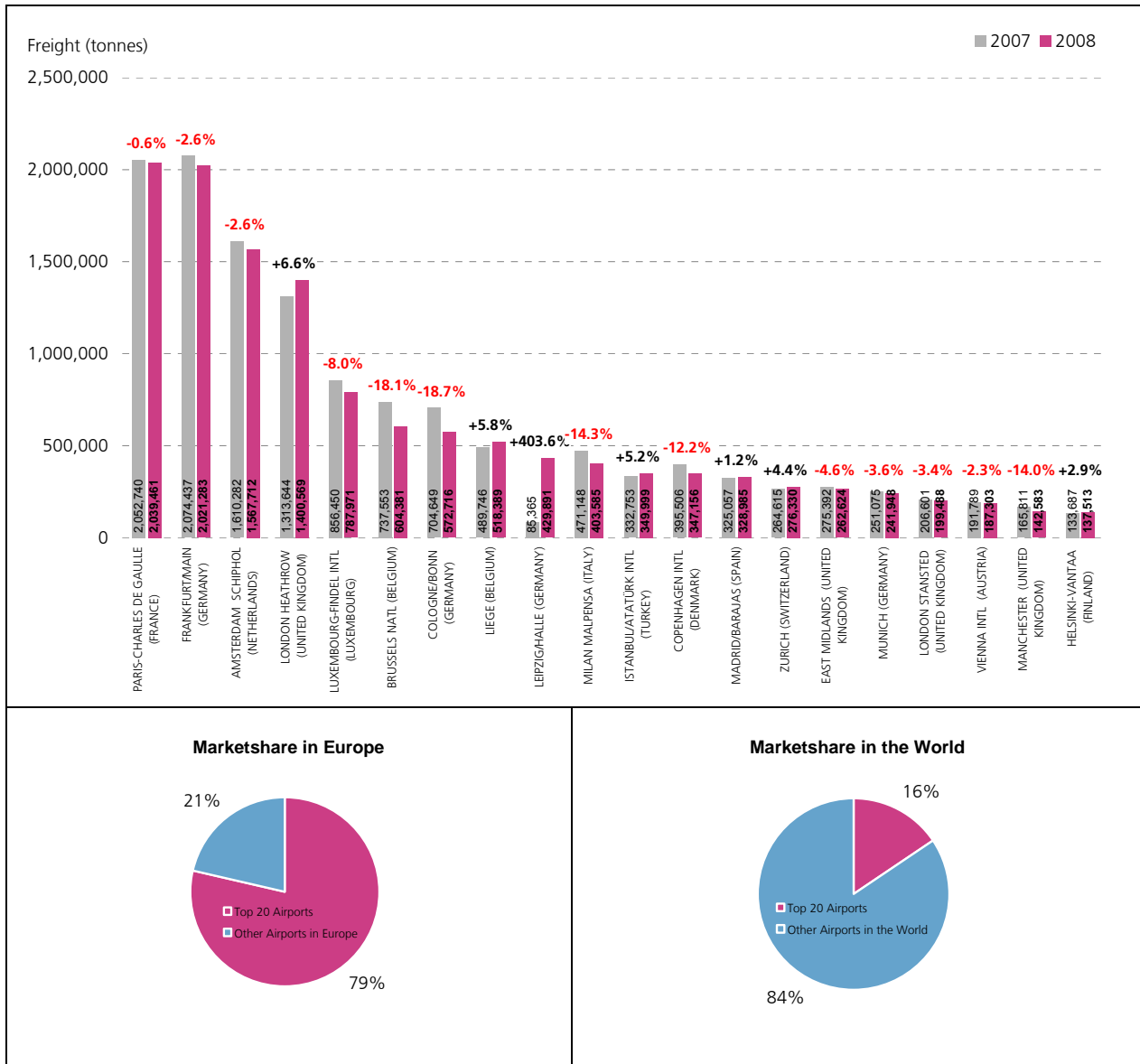
²² Source: Fraport Annual Report 2008

²³ Source: <http://www.brusselsairport.be/en/news/newsItems/333151>

²⁴ Source: Liege airport Press file as of 21 January 2009

Figure 3-10: The 20 biggest European airports in terms of commercial air freight

Source: ACI Annual World Airport Traffic Report 2008, calculations by DLR



3.4 Ground handling

3.4.1 General

Ground handling services make an essential contribution to the efficient use of air transport infrastructure. 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 as well as basic services such as ramp handling, fuelling and defuelling operations, aircraft maintenance and the provision of catering services.

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 ground handling services 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.

The Directive essentially stipulates that ground handling service providers have free market access at the larger EU airports and that for certain categories of services the number of suppliers may be no fewer than two for each category of service. Moreover, at least one of these suppliers should be entirely independent of the airport or the dominant air carrier at that airport. Similar provisions exist with regard to self-handling, which means that airlines provide the services in question for themselves: for these services there should at least be two air carriers admitted.

While the process of transposing the Directive into the national legislation of each Member State has not always been smooth, the positive impact can now be seen throughout the EU: the number of suppliers has increased soundly along with the growth in air transport in general, the prices for ground handling services have decreased and the quality of services has generally improved.

3.4.2 Economic contribution

The economic importance of this industry, working behind the scenes, is to be demonstrated with the help of four ground handling companies selected to represent this business. They represent independent companies (aviapartner) or business models belonging to airlines (SAS Ground Services), subsidiaries of logistic service providers (Menzies) or business units of large construction groups (Swissport). Each of the portrayed companies employs several thousand people and achieves a turnover in the 9-digit euro range. The service providers are under high pressure to be successful due to the lively tendering culture for ground handling services and the high number of international competitors. As ground handling is a business dominated by personnel costs and because the greatest optimisation potential is to be found there, the companies strongly invest in employee training and in service quality in general. Chapter 7 provides an overview of the average service quality in the baggage clearance field, measured on the punctuality of the delivery to the destination. Here, the success of the entire ground handling business is closely linked to the condition of the aviation core business, which is borne by the airlines.

Table 3-1: The economic importance of this industry on the basis of four heterogeneous examples

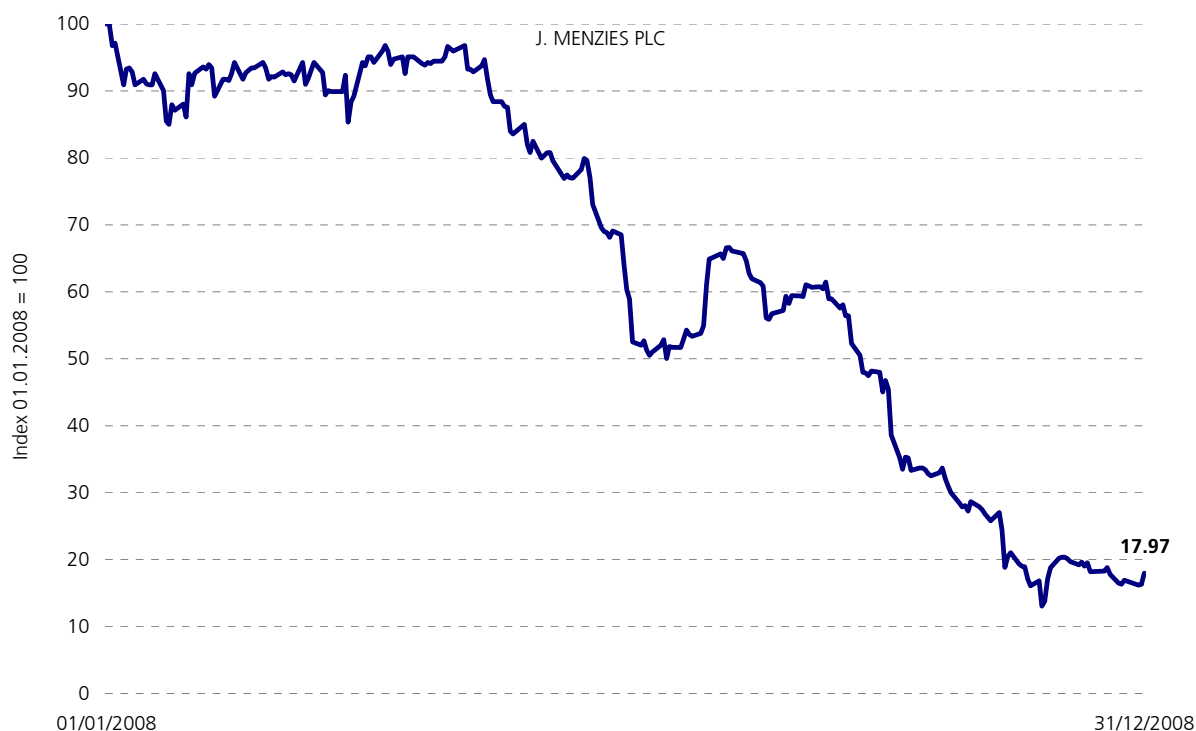
Source: Company report/websites; data partly rounded and/or without stating the reference date in certain cases

	Aviapartner	Menzies Aviation	SAS Ground Services	Swissport
Parent company	<i>independent</i>	John Menzies plc	SAS Group	Grupo Ferrovial
Headquarter	Brussels, Belgium	Edinburgh, United Kingdom	Stockholm, Sweden	Madrid, Spain
Reporting year	2007	2008	2008	2007
Employees	6,000	14,000	8,200	30,000
Annual turnover	€ 378,600,000	£1,450,000,000	€ 670,000,000	€ 1,266,000,000
Stations	37	124	160	187
Countries	5	28	40	43
Flights handled	268,000	575,000	506,000	>2,000,000
Passengers handled	31,190,000	87,000,000	74,000,000	>70,000,000
Cargo handled (tonnes)	1,448,000	1,800,000	396,000	3,500,000

With its economic downturn, 2008 has not just dampened business for the airlines - the ground handling service providers are also affected. It is hardly possible to gain reliable figures for this industry, since most of the companies are not obliged to submit reports or the ground handling is just a division of a large conglomerate. Nevertheless, the J. Menzies plc share price reflects the trend of the economic crisis which has impacted upon the aviation industry and catered for gloomy forecasts. The aviation division at J. Menzies plc generates around one third of the overall turnover at the logistic group, but the share price reflects the value of the entire company. Slumps in share prices are typical for 2008 starting from around the middle of the year with the trend becoming more severe around autumn. From 100 euros invested at the beginning of 2008, only 18 euros remained on 31 December 2008 – a value well under the share price performance of most of the European airlines considered in Chapter 2.1.4.

Figure 3-11: Ground handler's share price development example

Source: Historical stock quotes on www.yahoo.com, adjusted for splits and dividends





4 Air transport forecasts

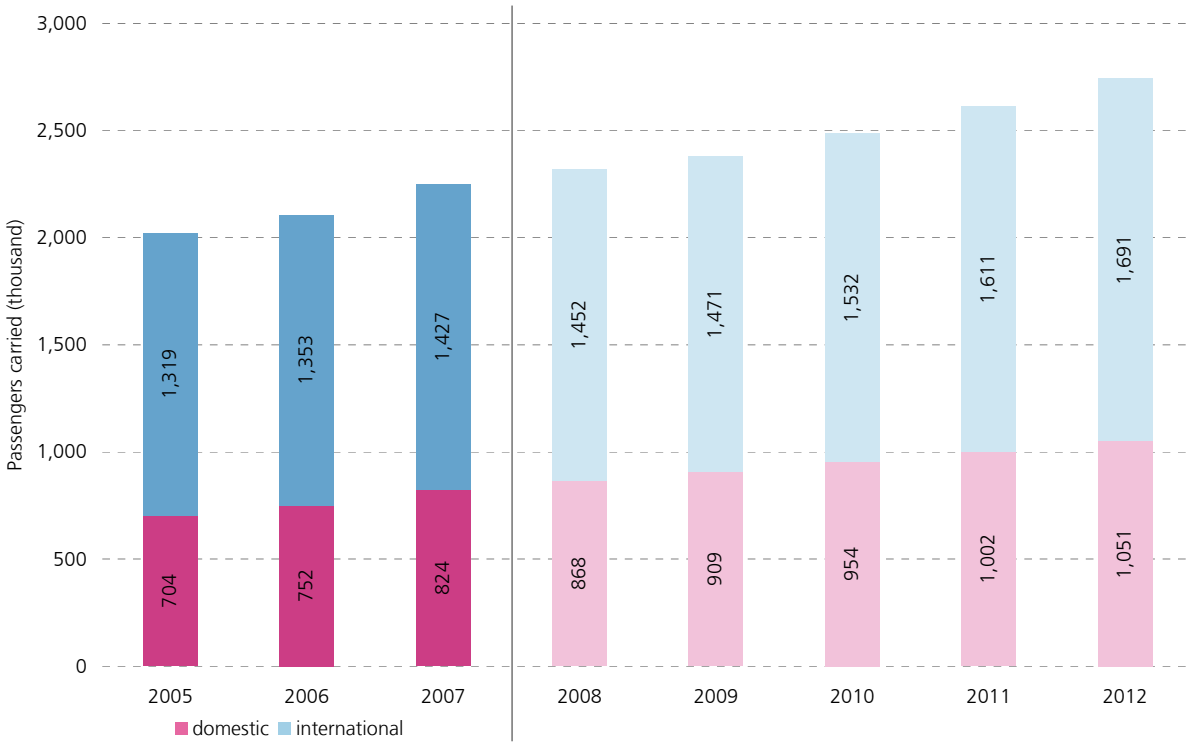
Statements on future development are required for various purposes in the air transport sector. For this reason, aircraft manufacturers regularly publish forecasts which provide the basis for estimation of aircraft or component requirements for the forthcoming 20 years. Studies on future development are also essential for strategic planning of air traffic infrastructure (airports and air traffic control) and also the quantification of air transport's potential environment impact. 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. Also, short, medium, and long-term prognoses of European air traffic are discussed. These forecasts are provided by the European organisation for the safety of air navigation, Eurocontrol.

4.1 Global forecasts

Besides Airbus' Global Market Forecast 2007 – 2026 already mentioned in last year's report, the American aircraft manufacturer Boeing published its Current Market Outlook 2008 – 2027 and the IATA its Passenger Forecast 2008 – 2012 in 2008. In the following, the current IATA mid-term forecast will be briefly introduced, and then the new Boeing forecast will be compared to the Airbus study.

Figure 4-1: IATA Passenger Forecast 2008 - 2012

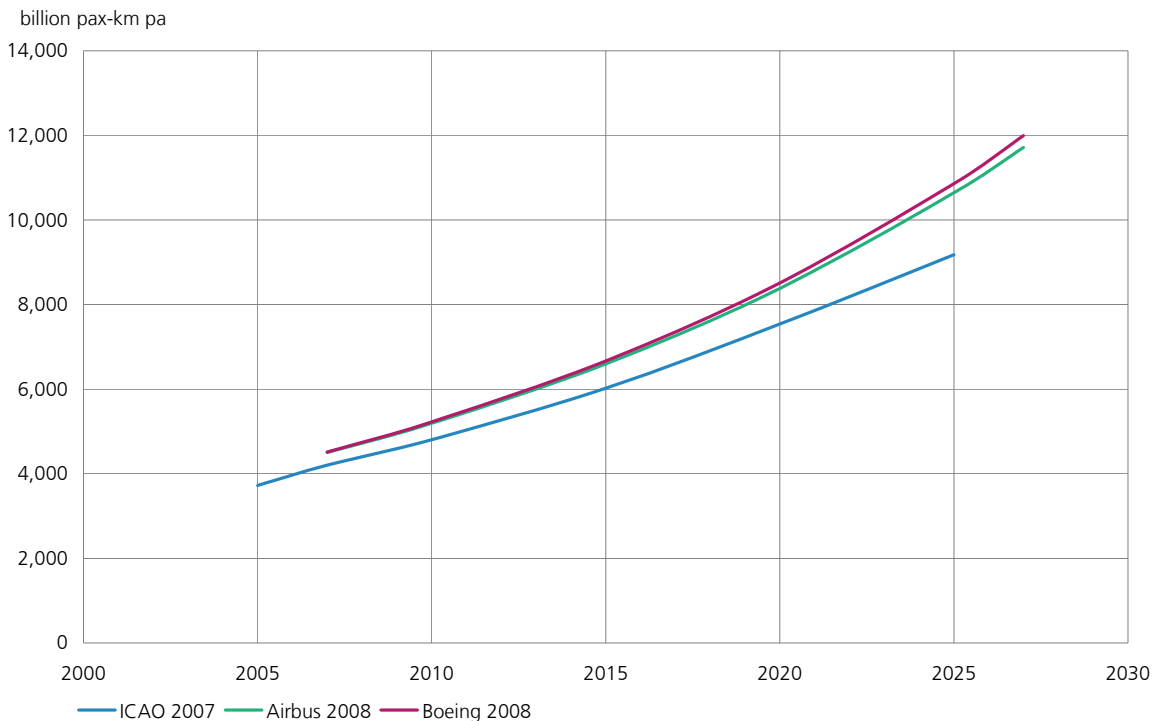
Source: IATA 2008



The IATA anticipates an average annual growth in passenger volume of 4% for the period 2008 to 2012. Here, the IATA expects higher growth in international traffic (4.9% on average) than in domestic traffic (3.4% on average). The total passenger figure of 2.2 million, given by the IATA for 2007, would climb to 2.7 million by 2012. This would be a growth of around 22%. On examination of the world regions, particularly China and India show far above-average growth rates in the IATA forecast. It is also expected that the regions Middle East / North Africa, Latin America and Sub-Saharan Africa grow by an above-average amount. The IATA expects below-average growth on the three high-volume markets in the USA, Japan and EU-27 through to 2012.

Figure 4-2: Comparison of current air transport forecasts on a global scale

Source: ICAO 2007, Boeing & Airbus 2008

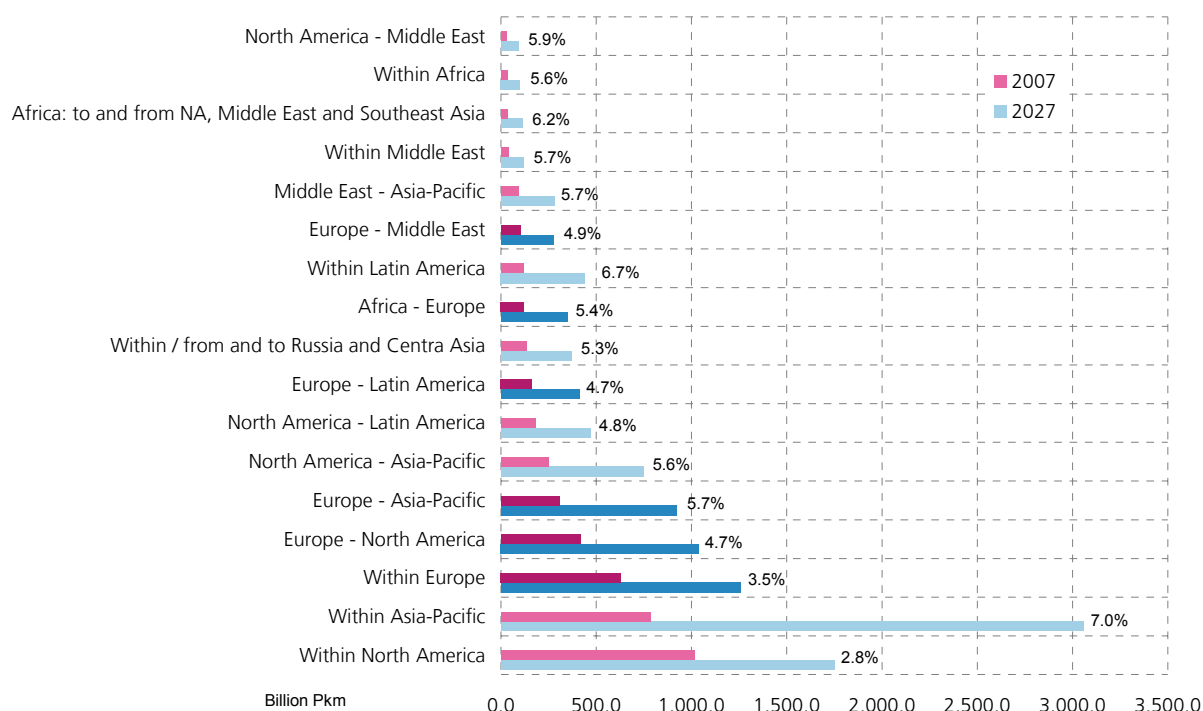


In the comparison of the three current forecasts from the ICAO (2007), Boeing (2008) and Airbus (2008), there is a noticeable similarity in the expected developments between Boeing and Airbus in the development of the absolute passenger kilometres (see Fig. 4-2). From a comparable basis of 4500 billion pkm in 2007, the average annual growth through to 2027 only varies by 0.1% between Boeing and Airbus. While Airbus anticipates an average annual growth of 4.9% over the mentioned time period, the forecast is 5% at Boeing. Both developments lead to almost 12 billion pkm worldwide in the target year (Airbus 11.8 and Boeing 11.9 billion pkm). In comparison to this, the forecast published by the ICAO in 2007 predicts a pkm volume of 9.2 billion for the year 2025. The ICAO forecast is, however, is calculated on a slightly lower basis number.

On examination of the world-regional growth rates published in the Boeing forecast for the period 2007 – 2027 (see Fig. 4-3), it is clear that Boeing sees high growth primarily in the Asia region for this period. In China alone, Boeing expects growth of 8.9% per year. In contrast, the markets which grew strongly in the past - North America and Europe - fall back considerably in their growth rates. While Boeing still considers an average annual growth of 3.5% to be possible in Europe, this figure is only 2.8% for North America. Annual growth in most other regional markets ranges around the global average of 5%.

Figure 4-3: Annual traffic growth on important world route groups (in billion Pkm and in %)

Source: Boeing 2008



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 forecast, published once per year, covers a time horizon of seven years. The long-term prognosis (published every 2 years) 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.

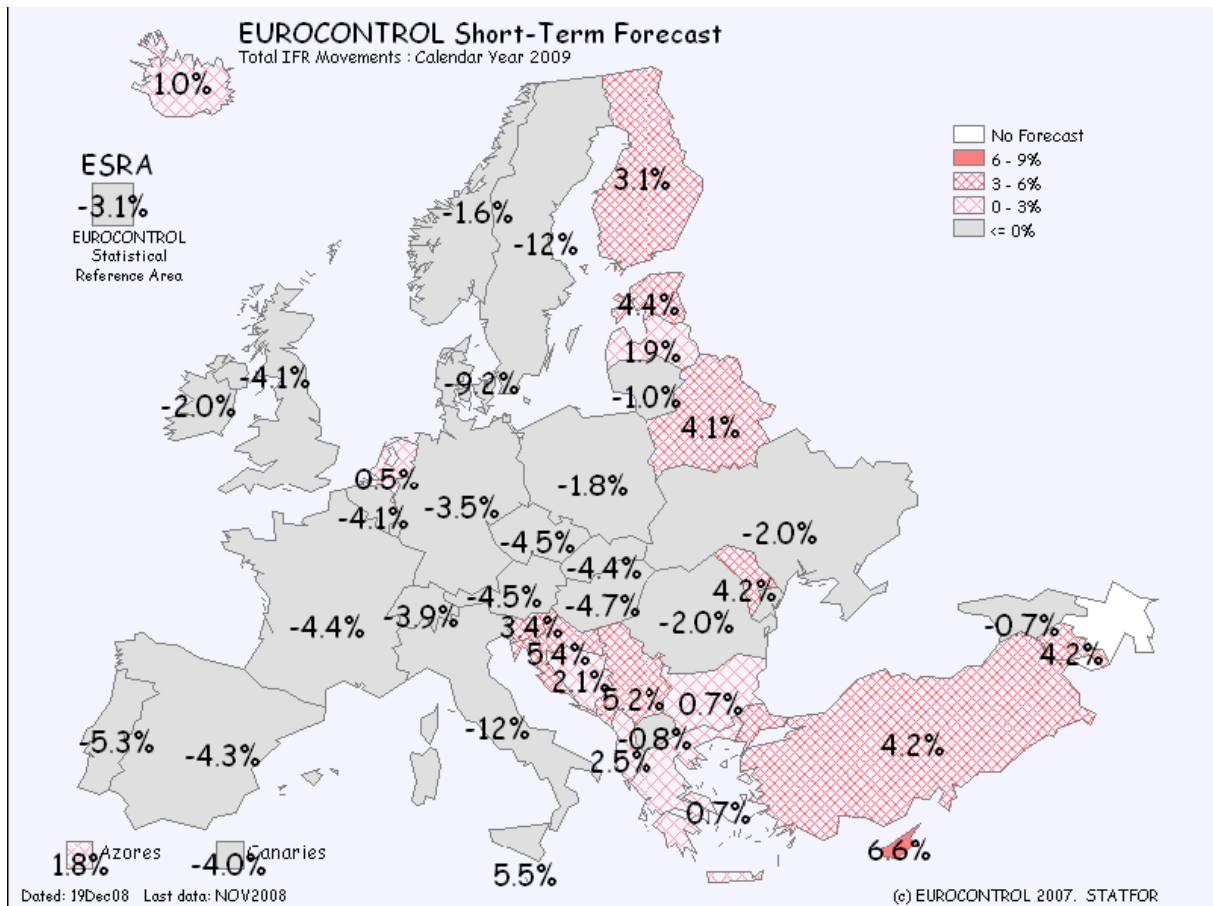
4.2.1 Eurocontrol short-term forecast

The short-term forecast, published in December 2008, gives an overview of the performed flight movements (according to IFR) in Europe (Eurocontrol ESRA) in 2008, and also of the potential ones in 2009. Accordingly, a growth between -4.8 and -1.3% with a most likely case of -3.1% in total was assumed for 2009. According to current data, 9.7 million flight movements were performed in 2008. This corresponds to a growth of 0.8% compared to the preceding year.

The expected growth differs considerably from region to region, as already experienced in the past. In most countries a decline in movement development is expected with a negative peak at about -12.4% in Italy and -11.5% in Sweden. Only in some Eastern European countries is a positive growth in air transport movements assumed, like in Finland (+3.1%), in Estonia (+4.4%) and in Turkey (+4.2%). The expected decline in air transport movements corresponds to the assumed results of the global finance and economic crisis.

Figure 4-1: Eurocontrol short-term -forecast - growth rates for 2009

Source: Eurocontrol 2008



4.2.2 Eurocontrol medium-term forecast 2008-2014

As part of medium-term forecast performed by Eurocontrol for the years 2008 to 2014, the development alternatives "high" and "low" are provided in addition to a baseline scenario. Eurocontrol assume an average yearly growth of 3.7% in the baseline scenario, 4.7% in the high scenario and 2.4% in the low scenario for the entire forecast period. In the forecast year 2014, these growth rates would lead to 11.7 million IFR movements in the low, 12.8 million in the baseline, and 13.7 million in the high scenario. In the decade 2004 to 2014, the total number of IFR movements would increase by approx. 34% in the low scenario, 46% in the baseline scenario and 57% in the high scenario.

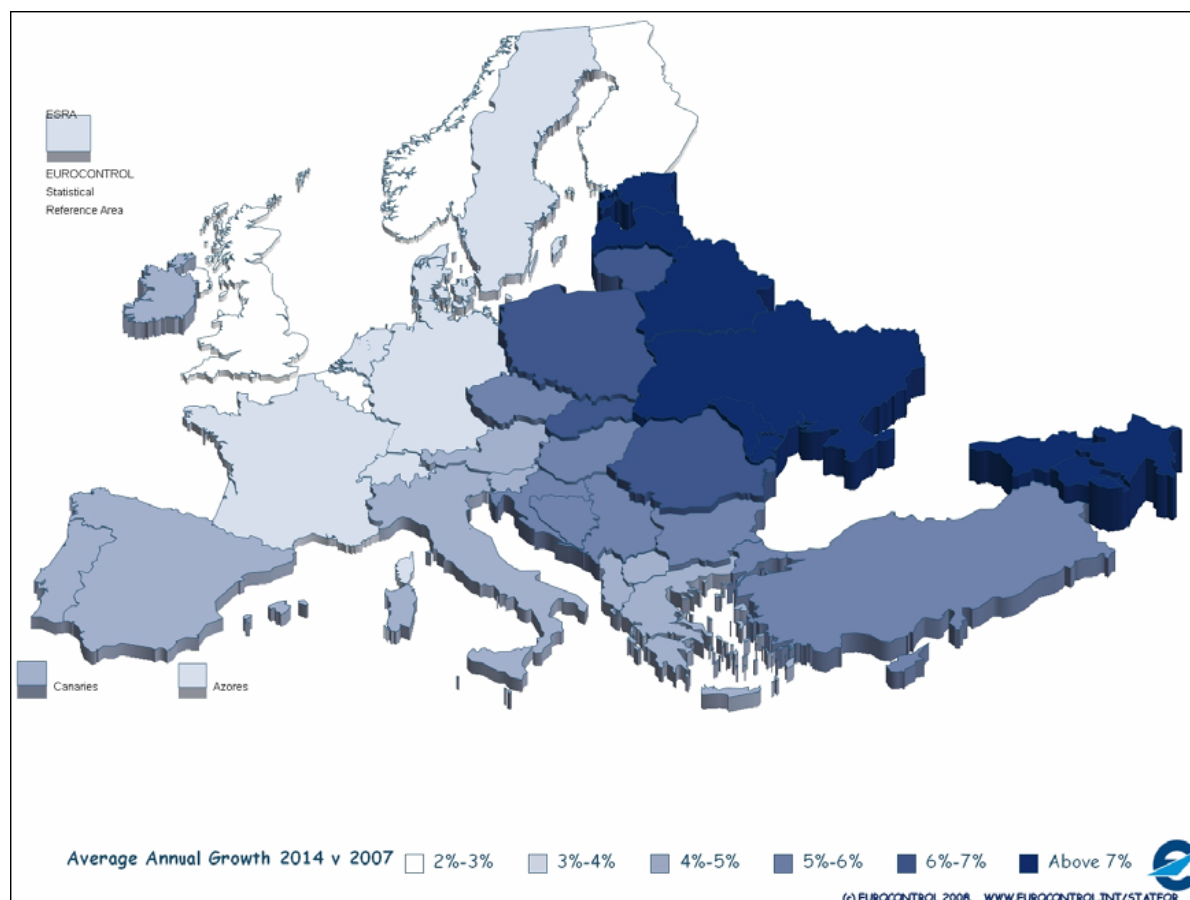
Table 4-1: Summary of the Eurocontrol medium-term forecast

Source: Eurocontrol 2008

IFR Movements (Thousands)											Average Annual Growth Rate 2007-2014
2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
High				10,574	11,117	11,640	12,127	12,711	13,201	13,718	4.7%
Baseline	8,746	9,088	9,439	9,916	10,308	10,699	11,105	11,506	11,977	12,372	3.7%
Low				10,088	10,324	10,587	10,868	11,175	11,410	11,688	2.4%

Figure 4-2: Eurocontrol medium-term forecast baseline scenario

Source: Eurocontrol 2008



When considering the individual countries, the assumption of relatively high yearly growth rates in Eastern Europe becomes obvious. This is probably due to the strongly growing economies of these countries and their adaptation to the Western European standard of living in terms of personal air travel. For the medium-term and beyond, Eurocontrol expect a moderate increase in flight movements (up to 4%) in the “old” EU Member States. UK and Norway participate to a low extent in the West European flight movement increase, while Spain, Portugal, Italy and Ireland, however, make an above-average contribution to the increase.

4.2.3 Eurocontrol long-term forecast 2008-2030

In order to identify long-term development potential for air transport flight movement, Eurocontrol biennially perform a scenario study which applies various expectations as to the development frame of aviation. Thus, a spectrum of possible development patterns in flight movements are indicated for the target year 2030. This development frame varies between 16.5 and 22.1 million flight movements in 2030, starting from about 10 million flight movements in 2007. This rate corresponds to an annual average growth of 2.2% or 3.5% respectively. Based on the absolute number of flights, this corresponds to a multiplier of 1.7 or 2.2 compared to the initial year. In Scenario C – Regulation & Growth an above average growth in Eastern Europe is assumed. One reason for this is increasing saturation in the West European countries (see Figure 4-5). Furthermore, the considerably dynamic growth seen in the Eastern European countries during the last years will slow down.

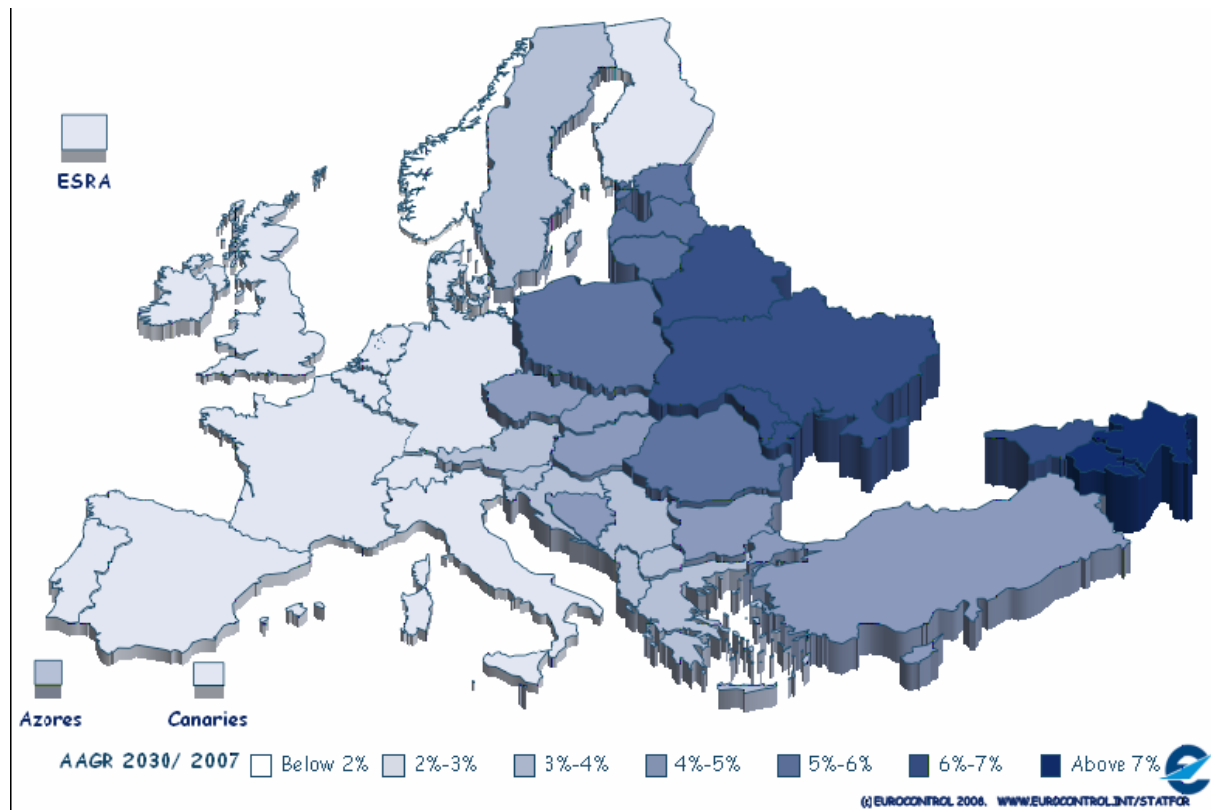
Table 4-2: Summary of the Eurocontrol long-term forecast 2008-2030

Source: Eurocontrol 2008

Scenarios	<i>IFR Movements (Thousands)</i>						Average Annual Growth Rate 2007-2030	Traffic Multiple 2007/2030
	2006	2007	2014	2020	2025	2030		
A: Global Growth			14,119	17,532	19,890	22,086	3.5%	2.2
B: Business as Usual			12,930	15,553	17,763	19,549	3.0%	2.0
C: Regulation & Growth	9,439	9,916	12,930	14,955	16,724	18,170	2.7%	1.8
D: Fragmenting World			11,773	13,460	15,062	16,507	2.2%	1.7

Figure 4-5: Average annual growth 2007-2030 for each state (Scenario C: Regulation & Growth)

Source: Eurocontrol 2008



5 Regulatory Developments

5.1 International Aviation

International air transport is governed by bilateral agreements between two countries. These air services agreements are negotiated by the governments and grant traffic rights as specific authorisations to use national air space, restricting the number of airlines on the routes concerned, the number of flights and the possible destinations. Traditionally these agreements were based on national ownership.

The so-called "open-skies" judgements of 5 November 2002 by the Court of Justice of the European Communities has clarified that some bilateral aviation agreements concluded with the United States were discriminatory and that the Community has certain exclusive responsibilities in external relations in the field of aviation. This case law marked the start of a Community external aviation policy.

In recent years, the EU has developed a new European external aviation policy which aims at restoring legal certainty with respect to the above-mentioned case. Furthermore, certain measures on EU level will create new economic opportunities by opening new markets for competition and will ensure a level playing field by promoting regulatory convergence in key areas.

The EU external aviation policy is built on three pillars:

- amending all bilateral air services agreements between EU Member States and third countries that are not in line with the freedom of establishment to ensure legal certainty. Agreements brought into compliance since 2003 are available on the Commission website²⁵.
- create a common aviation area with neighbouring countries as a single aviation market with all its potentials and advantages, e.g. more traffic, better prices, more choices and stricter rules for instance for safety.
- conclude global agreements with key partners in order to boost competitiveness and quality of air transport.

5.1.1 Horizontal Agreements

Horizontal agreements are designed to remove nationality restrictions in EU Member States' bilateral air services agreements with third countries and therefore to bring them in line with

²⁵ http://ec.europa.eu/transport/air/international_aviation/doc/status_table.pdf

Community law. Negotiated by the Commission on behalf of the Member States, these agreements replace nationality rules with the principle of EU airline designation.

Since 2004, nearly 800 bilateral air services agreements have already been modified by the joint efforts of the European Commission and Member States. 651 bilateral agreements have been brought into conformity with Community law by horizontal agreements negotiated with 38 countries worldwide.

In May 2008, the Commission reached a horizontal agreement with eight Member States of the Economic and Monetary Union of Western Africa (UEMOA: Benin, Burkina Faso, Guinea-Bissau, Ivory Coast, Mali, Niger, Senegal and Togo) as a first horizontal agreement with another regional organisation. It brings several provisions in the 47 bilateral air services agreements between EU and UEMOA Member States into conformity with EU law and constitutes an important step towards further strengthening EU-Africa aviation relations. It will foster cooperation in the aviation area between the EU and UEMOA on a number of important aspects, such as aviation safety and security.

5.1.2 Bilateral Agreements

Direct negotiations between each EU Member State concerned and its partner is another possibility to bring existing bilateral air services agreements into compliance with Community law. Since 2004, Community designation has been amended in more than 130 air services agreements separately by EU Member States.

5.1.3 Common Aviation Area with the EU's Neighbours

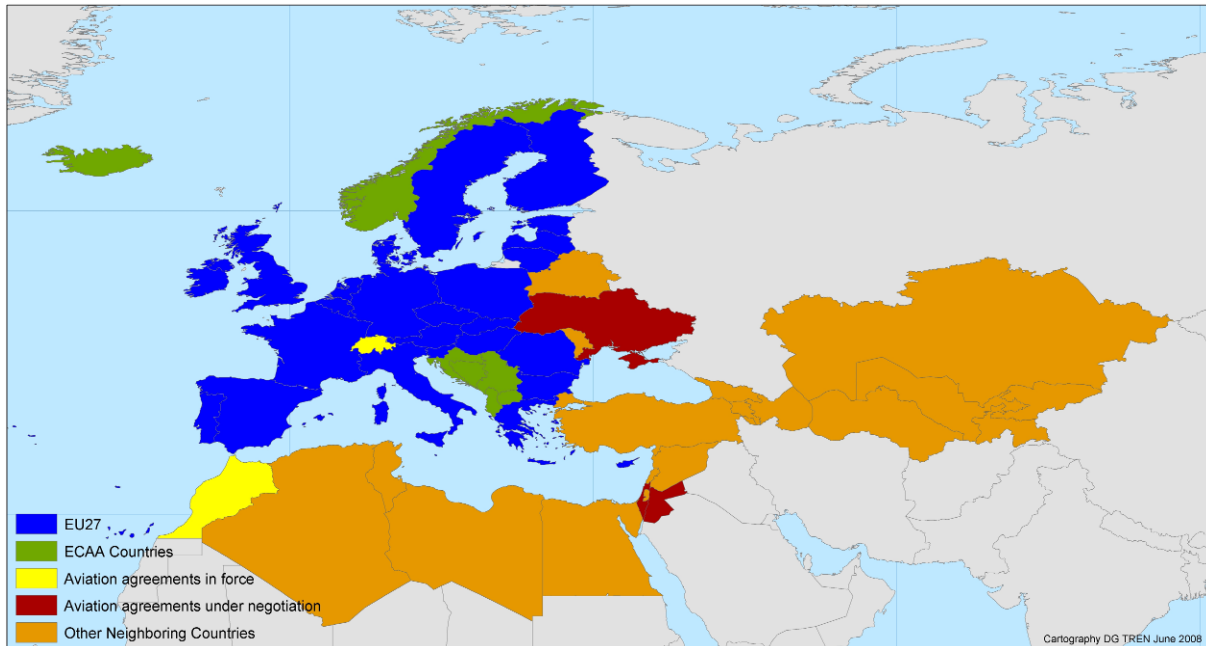
As a sectoral contribution to the EU's neighbourhood policy, the cooperation between the EU and its partners located along its borders will continue to open the respective markets and enhance regulatory cooperation and convergence to ensure high levels of safety and security as well as other common standards. Its ultimate objective should be the establishment of a single pan-European air transport market with neighbouring countries in the Mediterranean and in the East, based on a common set of rules and encompassing up to 60 countries with approximately one billion inhabitants.

In October 2008, the Commission published a Communication taking stock of the progress made in the development of a broader Common Aviation Area with the neighbouring countries by 2010²⁶.

²⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0596:FIN:EN:PDF>

Figure 5-1: Towards a Common Aviation Area with the EU's neighbours

Source: DG TREN



5.1.3.1 European Common Aviation Area (ECAA)

This concept has been used with the countries already engaged in the Pan-European aviation institutional framework, such as the Western Balkans, to provide for full integration of a partner country into the single aviation market. The eight South-East European partners agreed to the full application of the European Community's aviation law (Community acquis). Once ECAA partners fully implement the Community's aviation acquis, ECAA airlines will have open access to the enlarged European single market in aviation. At the same time, the agreement will lead to equally high standards in term of safety and security across Europe, through the uniform application of rules.

In December 2008, the third ECAA Joint Committee Meeting was held in Oslo to monitor the progress of implementation of the ECAA agreement. A number of Western Balkans partners should be able to complete the first transitional phase under their respective agreements in 2009. Furthermore, the ISIS Programme is providing support for the Western Balkans countries in implementing SES legislation under the ECAA agreement. An EASA – CARDS project, also implemented in 2008, established convergence plans for the implementation of EU safety legislation in the Western Balkans.

5.1.3.2 Euro-Mediterranean Aviation Agreements

An Euro-Mediterranean air transport agreement, providing for a high level of regulatory harmonisation, gradual market opening and increased investment possibilities, was concluded with Morocco and sets a benchmark for future aviation agreements with the EU partners in the

Mediterranean region. On the basis of this model, the Commission is pursuing comprehensive air transport negotiations with Israel and Jordan to gradually open up the air transport market and provide for regulatory co-operation in the fields of aviation safety, security, air traffic management, technology, research and industrial co-operation, consumer and environmental protection and competition. In October 2008, the Council of the European Union authorized the Commission to open negotiations with Lebanon, and in December 2008 to open negotiations with Algeria and Tunisia.

Furthermore, the Commission is supporting the development of the Common Aviation Area in the Mediterranean region through an ambitious "Euromed Aviation Project"²⁷. The project, with a budget of € 5 million, was launched to provide targeted technical assistance for the Mediterranean partners through to 2011.

5.1.3.3 Russia

Russia is a key neighbour of the enlarged EU and an important aviation market with a long tradition in aeronautics. This close relationship calls for the establishment of a proper framework for cooperation in aviation matters. However, a prerequisite for this must be the Russian Federation's implementation of the agreement on Siberian overflight payments, which Russia is charging contrary to normal international practice. This agreement was reached during the EU-Russia Summit in November 2006 and approved by the Russian government in November 2007 but has not yet been signed. Similarly, bilateral air transport agreements between the Russia and Member States need to be brought into line with Community law.

5.1.3.4 The Ukraine

On the basis of the single aviation market concept, the Commission has started comprehensive air transport negotiations with the Ukraine. Furthermore, the Commission is providing technical assistance to the Ukraine through a dedicated aviation safety twinning project.

5.1.3.5 Black Sea and Caspian Sea Region

Cooperation has focused on technical assistance and exchanges at expert level, familiarising the partner countries with EU aviation legislation and enhancing current levels of safety in the region. In 2009, the Commission will start providing additional targeted assistance to the countries in this region within the framework of the Civil Aviation Safety and Security project, with a budget of € 5 million.

²⁷ <http://www.euromedtransport.org/355.0.html>

5.1.4 Global Agreements

Comprehensive air services agreements with key partner countries in the most dynamic world markets aim at a reciprocal opening of market access within a framework that ensures fair competition and high standards of safety, security and environmental protection. These open aviation areas will bring economic benefits to the air transport industry and the travelling public both within the EU and the key partner countries. They help to reform international civil aviation by establishing a common skies framework.

5.1.4.1 United States of America

At the end of March 2008, a new era in transatlantic aviation began when the EU/US Air Transport Agreement took effect²⁸. The most ambitious air service agreement ever negotiated covers the largest international air transport market in the world (with some 50 million annual passengers between the EU and US). The main provisions are:

- The US recognises the "Community carrier" concept
- All carriers can now fly without restrictions from any point in the EU and US and continue flights beyond the EU and the US towards third countries. Furthermore, the right for EU carriers to operate flights between the US and a third country without a requirement that the service starts or ends in the EU is granted unlimited for all-cargo flights and for passenger flights to a number of non-EU European countries. However, the right for European carriers to operate flights within the US or for US carriers to operate domestic flights within an EU Member State (cabotage) remains excluded
- Limitation of foreign investment in US airlines to a maximum of 25% of voting capital still exists
- Certain participation of EU airlines in US-government-financed air transportation ("Fly America")
- Cooperation in regulatory aspects of aviation, e.g. Aviation security, and in international organisations

Together with all its historical achievements, this agreement is only an important first step towards the normalisation of the international aviation industry. The ultimate objective of the European Union is to create a transatlantic Open Aviation Area: a single air transport market between the EU and the US with free flows of investment and no restrictions on air services, including access to the domestic markets of both parties.

²⁸

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/474&format=HTML&aged=0&language=en&guiLanguage=en>

In accordance with Article 21 of the air transport agreement, second stage negotiations started in May 2008. This second stage agreement should expand the first agreement with particular regard to the foreign ownership rules for airlines and cabotage rights.

If no solution can be found, each party under the agreement has the right to suspend certain rights if the second stage negotiations result in an unsatisfactory outcome (Article 21 (3) of the EU/US Open Skies Agreement).

As a key instrument to manage transatlantic aviation relations, the EU-US Joint Committee monitors the implementation of the agreement to ensure regulatory cooperation. Meetings of the Joint Committee took place in April 2008 in Brussels and in September 2008 in Washington, D.C. For example, the EU-US Joint Committee dealt with un-level playing fields between the EU and US air taxi operators in the transatlantic market, the progress in cooperation in aviation security, rules on passengers with reduced mobility and the reciprocal recognition of airline licensing determinations.

During the year 2008, both sides of the Atlantic cooperated in different regulatory issues:

In March 2008, a working arrangement in the field of aviation security was reached between the European Commission and the U.S. Transportation Security Administration on reciprocal airport assessments to enhance the compatibility of security measures²⁹.

Also in March 2008, the Commission and U.S. Department of Transportation (DOT) launched joint research aimed at deepening their common understanding of transatlantic air services³⁰. The research will explore the robust growth of airline alliances, the effect of alliances on airline competition, and possible changes in the role of alliances following the EU-US Air Transport Agreement. A report summarising the main findings of the research will be published in mid-2009.

In June 2008, the European Community and the United States of America signed an agreement concerning mutual recognition of aviation safety certificates³¹. It is the first aviation safety agreement the European Community has concluded with a third country. This cooperation in the field of aviation safety will result in better harmonised safety systems on both sides of the Atlantic, as well as less cumbersome technical and administrative procedures for the recognition

²⁹

<http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/08/185&format=HTML&aged=1&language=EN&guiLanguage=en>

³⁰

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/459&format=HTML&aged=1&language=EN&guiLanguage=en>

of certificates. It is expected that this will entail further improvement in safety levels and reduce costs for European and US manufacturers alike.

Supporting the ongoing negotiations on a comprehensive second stage agreement and facilitating discussion between stakeholders and decision-makers, the Commission organised an EU-US Aviation Forum on liberalisation and labour in Washington in December 2008³². In addition to providing a common understanding of the labour laws and employee concerns, an outlook on labour issues associated with the proposed second stage of EU-US air transport agreement was discussed.

5.1.4.2 Canada

In December 2008 and after only one year of negotiations, the EU-Canada negotiations on a comprehensive aviation agreement were finalised³³. The agreement will be a major step in the opening of markets and investment opportunities and goes well beyond the EU-US first stage aviation agreement. It contains provisions for a phased market opening linked to the granting of greater investment freedoms by both sides. EU nationals will be able to establish operations in Canada and freely invest in Canadian airlines and vice versa. Finally, a full Open Aviation Area will be established between the EU and Canada. Furthermore, the agreement will help tackle common challenges, such as safety, security, environment and consumer interests.

As a new governance mechanism, the agreement will be monitored by an EU-Canada Joint Committee. It will oversee the implementation of the agreement, including the facilitation of close regulatory cooperation and confirm the move to a next phase of implementation.

The agreement will apply from the date of signature which is expected to take place in the first half of 2009.

5.1.4.3 Australia and New Zealand

In June 2008, European transport ministers authorised the European Commission to commence discussions with Australia and New Zealand on comprehensive air transport agreements. These agreements will aim at a reciprocal opening of market access within a framework that ensures fair competition and high standards of safety and security as well as consumer and environmental protection. Both countries have already signed horizontal agreements with the EU, while Australia signed an aviation agreement with the European Community in April 2008.

³¹

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1059&format=HTML&aged=0&language=EN&guiLanguage=en>

³² http://ec.europa.eu/transport/air/events/2008_12_03_int_us_en.htm

³³ <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1914>

In November 2008, negotiations with both countries were opened in Brussels. These negotiations could set benchmarks for air transport agreements worldwide, including close cooperation to address the environmental effects of air transport.

5.1.4.4 China

While China is gradually seeking to open both its domestic and international markets to more competition, the EU and China are developing comprehensive air services agreements. 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. A framework agreement on future technical co-operation in civil aviation, including matters such as safety, security, air traffic management as well as economic regulation and application of competition law, is also being prepared.

These two agreements will provide a strong basis for taking important steps towards more comprehensive co-operation and agreement in EU-China aviation relations.

5.1.4.5 India

In September 2008, the Commission signed a horizontal agreement with India removing nationality restrictions in the bilateral air services agreements with twenty-six EU Member States³⁴. The agreement is an important step towards further strengthening the EU-India aviation relations and will be the start of a new phase in EU-India cooperation in civil aviation.

The European Commission and India have also agreed on a Joint Action Plan setting out the priorities and modalities for future technical cooperation in a broad range of aviation areas including aviation safety, security, airports and air traffic management, environment and economic regulation.

5.1.5 International Civil Aviation Organisation (ICAO)

In April 2008, the Commission, in cooperation with ICAO, organized a Symposium on Regional Organizations at ICAO Headquarters, Montreal, Canada³⁵. The Symposium underlined the growing importance of Regional Organizations in solving many problems facing international aviation. The panel discussions examined regulatory cooperation at regional level, regional initiatives to remove economic barriers and studied the legal implications of regional governance.

³⁴

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1427&format=HTML&aged=0&language=en&guiLanguage=en>

³⁵ http://ec.europa.eu/transport/air/international_aviation/european_community_icao/ec-icao_symposium_en.htm

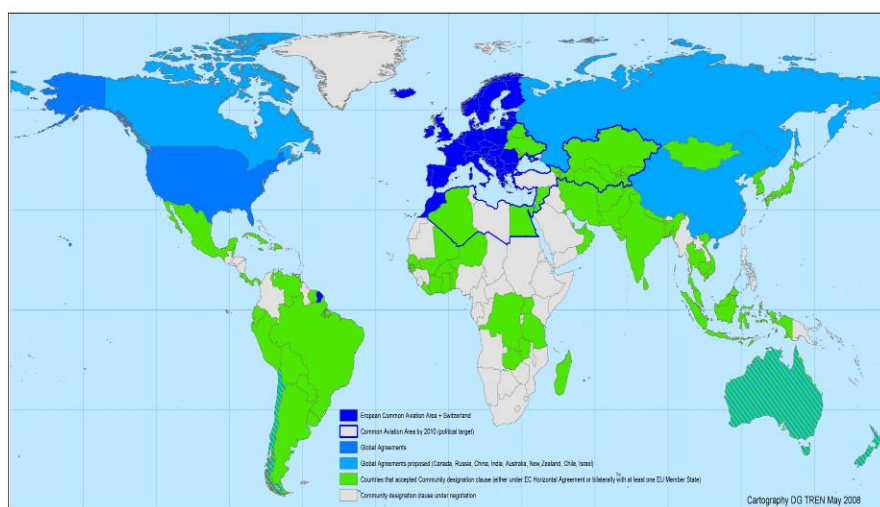
In September 2008, a Memorandum of Cooperation between the European Community and ICAO on security audits / inspections and related matters was signed in Montreal, Canada³⁶.

Since 2003, both the European Commission and ICAO have been performing aviation security audits and inspections in EU Member States, sharing the primary objectives of enhancing aviation security by evaluating the implementation of respective standards and identifying deficiencies, if any, and ensuring their rectification, where necessary. Since most ICAO Standards on aviation security are also covered by Community legislation, and since the European Commission has enforcement powers to ensure the implementation of Community legislation on aviation security in EU Member States, the European Community and ICAO explored the possibilities for cooperation in this field.

The Memorandum of Cooperation allows ICAO to verify compliance with relevant ICAO Standards by assessing the European Commission inspections of appropriate national authorities of EU Member States, rather than visiting every Member State directly. The Memorandum of Cooperation will thus ensure better use of limited resources and avoid duplication of work, both for EU Member States as well as for airports and airlines.

Figure 5-2: European Community Aviation Agreements

Source: DG TREN



5.2 Internal market

Air transport was traditionally a highly regulated industry, dominated by national flag carriers and state-owned airports. The creation of a single internal market for aviation in the 1990s, finalised through the so-called Third Package (Regulations (EC) No 2407/92, 2408/92 and 2409/92), has removed all commercial restrictions for airlines flying within the EU, such as

³⁶

http://ec.europa.eu/transport/air/international_aviation/european_community_icao/cooperation_security_inspections_en.htm

restrictions on the routes, the number of flights or the setting of fares. All EU airlines may operate air services on any route within the EU.

On 1st November 2008, Regulation (EC) No 1008/2008 on common rules for the operation of air services in the Community³⁷ entered into force. In order to consolidate this success, ensure the benefits of the internal market and both simplifying and update the text of the Third Package, this Regulation is a substantial improvement on the present legislation. This regulation now provides the new framework on the single market for air transport in the European Community setting out the rules on the following topics:

5.2.1 Licensing

The capacities of control by the national authorities which deliver the operating licence are strengthened. The licensing authority should continuously assess the financial condition of the air carrier. To this end, better financial information is to be provided to the competent licensing authorities of the Member State. Article 9 of the regulation obliges Member States to suspend or revoke the operating licence of an air carrier that no longer fulfils the requirements of the regulation or meets its obligations. This shall also avoid divergent strictness in the application of Community law with regard to operating licences.

Moreover, it will be the same Member State whose authorities grant the operating licence and the Air Operating Certificate (AOC), as a safety document. This conjunction empowers more the national authority to control fully the operations of the carriers it is responsible for.

5.2.2 Leasing

Concerning leasing of aircraft, Community air carriers can freely operate dry (leasing without crew) and wet-leased (leasing with crew) aircraft registered within the Community, except where this would endanger safety. To take account of safety and social considerations, clear and stringent rules on the leasing of aircraft registered in third countries are mentioned in Article 13 of the Regulation, especially in case of wet-leasing.

5.2.3 Provision of intra-Community air services

The remaining restrictions in bilateral air services agreements between Member States have been abolished with respect to intra-Community air services and code-sharing. According to Article 15 (1) of the above-mentioned regulation, Community air carriers shall be entitled to operate intra-Community air services.

³⁷ http://ec.europa.eu/transport/air_portal/internal_market/doc/reg_1008_2008.pdf

With regard to third countries, Community air carriers shall be permitted to combine air services and to enter into code-share arrangements with third country air carriers on air services to, from or via any airport in their territory from or to any point in the third country. In some cases, in particular if a third-country does not allow similar commercial opportunities to Community air carriers, a Member State concerned may impose restrictions on the code-share arrangements between Community air carriers and air carriers of the third-country concerned. Such potential restrictions cannot however restrict competition and must be non-discriminatory between Community air carriers.

5.2.4 Public service obligations (PSO)

In order to maintain appropriate scheduled air services, EU Member States may impose public service obligations (PSO) on routes which are vital for the economic development of a remote region or an island. If no air carrier is interested in operating the route on which the obligations have been imposed, the Member State concerned may restrict the access to the route to a single air carrier and compensate its operational losses resulting from the PSO. The selection of the operator must be made by public tender at Community level. All impositions, modifications and abolitions of PSOs as well as the corresponding calls for tenders must be announced in the Official Journal of the European Union.

In order to prevent abuse and to reduce red tape, the rules applicable to PSOs have been revised, clarified and shall allow a more efficient application.

Therefore, the maximum concession period when the route is being restricted to one single operator (after a call for tender) has been increased from three to four years (and even five years for ultra-peripheral regions). This will allow attracting more competitors to the calls for tenders given that depreciation costs of route-specific equipment will be reduced. At the same time, the longer concession periods reduce the administrative burden on the Member States.

As an emergency procedure, the regulation also foresees designating an alternative airline should the airline servicing the PSO route fail.

While recognizing the importance of PSOs, the regulation is also intended to avoid abuse of the PSO system. Therefore, it explicitly states the necessity of respecting the proportionality between the obligations imposed and the economic development goals pursued. Furthermore, the Commission may require a detailed economic report from the Member State concerned explaining the context of the PSO and analysing its adequacy.

Actually, public service obligations are imposed on 208 domestic and intra-European routes within the European Union. Furthermore, there are impositions on domestic routes in Norway (40) and Iceland (7) which apply Community law. Compared with the year-end's result of 2007, a total decline by 15 PSO routes was seen in 2008, mostly driven by the lifting of French

citypairs. Czech Republic announced their first three PSO routes in 2008 which all connect the Ostrava airport with major European cities, namely Brussels, Amsterdam and London.

Table 5-1: Inventory of public service obligations in respect of scheduled air services

Source: DG TREN

PSO inventory	2007	2008
EU	223	208
Czech Republic	0	3
Finland	4	4
France	73	57
Germany	3	3
Greece	25	25
Ireland	7	7
Italy	31	30
Portugal	27	26
Spain	16	16
Sweden	11	11
United Kingdom	26	26
Iceland	7	7
Norway	40	40

5.2.5 Traffic distribution between airports

Due to Article 19 of the regulation, traffic distribution between airports serving the same city or conurbation is simplified and more effective. Respecting the principles of proportionality and transparency, based on objective criteria and after stakeholders' consultations, Member States may regulate the distribution of air traffic between airports, without discrimination among destinations inside the Community or on grounds of nationality or identity of air carriers. The following conditions have to be satisfied:

- the airports serve the same city or conurbation
- the airports are served by adequate transport infrastructure providing, to the extent possible, a direct connection making it possible to arrive at the airport within 90 minutes including, where necessary, on a cross-border basis
- the airports are linked to one another and to the city or conurbation they serve by frequent, reliable and efficient public transport services and
- the airports offer necessary services to air carriers, and do not unduly prejudice their commercial opportunities.

Transparency concerning traffic distribution between airports is given by the Commission's involvement and the information and publication procedures laid down in Article 19 of the regulation.

5.2.6 Pricing

The new regulation provides for non-discriminatory and transparent pricing of air services and therefore improves consumer protection:

Price transparency is improved by clarifying that the final price must include all applicable fares, charges, taxes and fees which are foreseeable and unavoidable at the time of booking. It avoids airlines misleading consumers by advertising prices exclusive of taxes, charges and fees that are only added at the moment of booking. Precise information on and the breakdown of air fare or rate, the taxes, the airport charges and the other charges, surcharges or fees must also be given. Optional price supplements must be communicated in a clear, transparent and unambiguous way at the start of any booking process and their acceptance by the customer must be on an "opt-in" basis. This will enable passengers throughout the EU to be better informed about prices and to compare offers.

Concerning price discrimination, the regulation prohibits differentiating between passengers solely on the basis of the customer's nationality or place of residence or the place of establishment of the air carrier's agent or other ticket seller within the Community. This means that for the same product – i.e. the same seat on the same flight booked at the same moment – there should be no price differences based on the place of residence or the nationality of the passenger.

5.3 Competition

5.3.1 State Aid

In 2005, the Commission adopted a Communication concerning guidelines on financing airports and start-up aid for new routes from regional airports³⁸ to amend the application of Articles 87 and 88 of the EC Treaty. These rules ensure that a level playing field exists as between Community carriers in the liberalised air transport sector.

In application of these rules, the Directorate-General Energy and Transport prepared several Commission state aid decisions in 2008³⁹:

Pursuant to Article 88 (2) of the EC Treaty, the Commission has launched formal investigations into suspected state aid cases to airports: Munich (Germany) or to publicly owned airports and/or to airlines at Aarhus (Denmark), Bratislava (Slovakia) and Frankfurt Hahn (Germany). The Commission has therefore sent invitations to submit comments.

³⁸ <http://eur-lex.europa.eu/JOHtml.do?uri=OJ:C:2005:312:SOM:EN:HTML>

³⁹ http://ec.europa.eu/dgs/energy_transport/state_aid/decisions/decisions_dg_tren_en.htm

The Commission declared granted state aids as compatible with Community law concerning airports in Poland (Lublin, Gdansk, Lodz), Germany (Leipzig) and Italy (Grosseto).

The "air route development support scheme 2008-2012" in Cyprus was authorised by the Commission, just as the "Aid of a Social Character for Air Services in the Highlands and Islands of Scotland" in the United Kingdom and state aid for the region of Guadeloupe in France.

On the other hand, Ryanair has lodged a number of proceedings against the Commission for alleged failure to act by not defining its position with regard to Ryanair's complaints against alleged illegal state aid granted to its competitors in Germany, Italy and France.

Concerning airlines in Italy, the Commission authorised rescue aid granted for Alpi Eagles SpA, a regional air carrier based in the Veneto region. Furthermore, the Commission concluded that the sale of Alitalia's assets does not constitute state aid provided that the Italian authorities fully comply with the assurances they have given. The decision follows the Commission's earlier decision to close the official state aid investigation procedure it started in June 2008 to look into a €300 million loan from Italy to Alitalia. The Commission's conclusion was that the loan was unlawful aid and incompatible with the common market.

In July 2008, the Commission decided that guarantees worth up to €500 million for express cargo provider DHL, in case Leipzig Airport cannot meet the conditions of a Framework Agreement related to DHL establishing its European hub there, are incompatible with the Single Market and therefore illegal. Earlier in the month, the Commission endorsed €1.6 million of training aid at DHL's Leipzig-Halle site but rejected a further €6.1 of aid which would have acted as illegal operating aid.

At the end of 2008, the Commission investigated the ongoing privatisation process of Austrian Airlines.

For years, the Commission has been investigating state aid granted by Greece to Olympic Airlines and Olympic Airways. The Commission ordered Greece to recover granted state aid from the beneficiaries. Following Greece's failure to implement a decision from December 2002, the European Court of Justice upheld the Commission's stance regarding Greece's non-compliance with this decision. In September 2008, the Commission found that a plan submitted by the Greek authorities by which certain assets of Olympic Airlines and Olympic Airways Services would be privatised in bundled form does not involve any state aid provided that the assurances given by the Greek authorities are fully complied with.

On December 17th 2008, the Court of First Instance (CFI) of the European Communities annulled a Decision of the Commission concerning advantages granted by the Walloon Region and Brussels South Charleroi Airport (BSCA) to Ryanair⁴⁰. Regarding its establishment at Charleroi,

⁴⁰ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:032:0025:0025:EN:PDF>

Ryanair received a reduction in the level of airport charges and an assurance for compensation. The Commission argued that these financial incentives were state aid of the Walloon Region as a public body and incompatible with the common market. Thus, Belgium had to call for the recovery of aid granted to Ryanair. The Irish carrier, in contrary, pleaded that the advantages granted to the airline were justified by clear, objective economic considerations and the result of a commercial negotiation also available to other airlines. Therefore, the Walloon Region carried out economic activities and was able to adopt schemes that could also have been put in place by private operators.

In its judgement, CFI concluded that the Commission's refusal to examine together the advantages granted by the Walloon Region and by BSCA and to apply the private investor principle to the measures adopted by the Walloon Region in spite of the economic links binding those two entities is vitiated by an error of law. The contested Commission Decision 2004/393/EC⁴¹ of February 12th 2004 was therefore annulled.

5.3.2 Infringements

Under the Treaties, the Commission is responsible for ensuring that Community law is correctly applied. As the Guardian of the Treaties, the Commission has the option of commencing infringement proceedings whenever it considers that a Member State has breached Community law.

Concerning air transport in 2008, the Commission took actions against Greece in the field of aviation security⁴². Therefore, a reasoned opinion was sent for failure to adequately apply EU Regulations on civil aviation security. Objections particular concern the requirements for national compliance monitoring activities for airports and operators. Greece is requested to take the necessary measures to fully implement these requirements within the established timeframe in order to avoid the matter being referred to the Court of Justice.

A table of on-going infringement procedures for non-communication national transposition measures is available at the Commission's website⁴³.

5.3.3 Merger

According to Article 4 of the EU Merger Regulation⁴⁴, the Commission received notifications of a proposed concentration due to the merger of Iberia/Vueling/Clickair and Lufthansa/SN Holding (Brussels Airlines).

⁴¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:137:0001:0062:EN:PDF>

⁴² http://ec.europa.eu/transport/infringements/proceedings/air_en.htm

⁴³ http://ec.europa.eu/transport/infringements/directives/doc/infringements_transport.pdf

⁴⁴ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:024:0001:0022:EN:PDF>

Having announced their intention to merge, the transaction between Delta Airlines and Northwest Airlines was notified to the Commission. In August 2008, the Commission decided not to oppose the concentration and to declare it compatible with the common market.

In December 2008, after an in-depth investigation because of concerns regarding the potential impact of the proposed transaction on passenger transport in particular between Amsterdam and Curacao and Aruba (in the Dutch Antilles), the Commission approved the proposed acquisition of Martinair by KLM. The in-depth investigation showed that the transaction would have only a limited market impact.

As analysed in the last Annual Report, the Commission prohibited the acquisition of Aer Lingus by Ryanair. In 2008, the Court of First Instance rejected a request from Aer Lingus for interim measures prohibiting Ryanair from exercising the voting rights attached to its shares.

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 on flights and their availability, to compare prices and to make immediate confirmed reservations on behalf of the consumer.

As these distribution channels might influence the consumer choice, a Code of Conduct for computerized reservation systems (Council Regulation (EEC) No 2299/89)⁴⁵ was put into force in 1989. At that time, the vast majority of airline bookings were made through CRS and most of the CRS were owned and controlled by airlines. The regulation ensured that air services by all airlines are displayed in a non-discriminatory way on the travel agencies' computer screens.

Given the significant market developments, such as the rise of alternative booking channels via airlines' websites or their call centres, the Code of Conduct needed to be adapted to the current market conditions.

The new legislation, proposed by the Commission in 2007, aims to simplify the existing Code of Conduct and to strengthen competition between the CRS providers while maintaining basic safeguards against potential competitive abuses and ensuring the provision of neutral information to customers at fair distribution costs. The Regulation also ensures that rail services which are integrated into an air transport computerised reservation system are given non-discriminatory treatment in that system.

⁴⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31989R2299:EN:HTML>

During the co-decision procedure, main amendments concerned definitions of parent carriers (i.e. airlines which are shareholders of a CRS and control it or have a decisive influence in running the business), independent audited reports detailing the ownership structure of CRS, equivalent treatment of Community air carriers in third countries, data protection and additional rules concerning displayed prices, alternative train services and CO₂ emissions.

At the end of 2008, the Council and the European Parliament adopted Regulation (EC) No 80/2009⁴⁶, introducing a code of conduct for computerised reservation systems and repealing Council Regulation (EEC) No 2299/89 and which will enter into force on March 29th 2009. An explanatory note with regard to the definition of a “parent carrier” has been published in March 2009⁴⁷.

5.5 Air Traffic Management

In addition to airports, Air traffic management (ATM) is part of the infrastructure of civil aviation. The development of the air traffic system requires a solid infrastructure to ensure the safe and smooth organisation of air traffic in Europe.

But the current ATM system in Europe is operating close to its limits: There are inefficiencies in cost and capacity and ATM does not restrict the environmental impact of aviation. Sub-optimal routing (flight inefficiency) not only translates into loss of time and money, but also to unnecessary fuel burn and emissions. ATM does not cover all flight phases, the airspace is still fragmented along national borders, lacks good network coordination, and efficient use of airspace. While competition in aviation has reduced costs and led to more affordable ticket prices, the relative cost of ATM as a natural monopoly has been growing.

Continuous growth of air traffic in Europe, induced capacity limitations, congestions of air space and of aerodromes, as well as the progressive use of new technologies all call for a common European approach for a harmonised and safety organisation of the air traffic system. Efficiency of this trans-European network requires Community intervention. In an international context, the European ATM is not performing as well as some of its counterparts elsewhere in the world. The current excellent safety levels need to be maintained and even improved despite growing traffic and congestion.

5.5.1 Single European Sky (SES)

Thus, the EU's Single European Sky (SES) legislation has taken jurisdiction over air traffic management matters to Community level in order to coordinate the critically needed upgrade of European ATM systems. An original Single European Sky package (SES I) came into force in

⁴⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:035:0047:0055:EN:PDF>

⁴⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:053:0004:0006:EN:PDF>

2004. In order to organise airspace and air navigation at a European rather than at a local level, the main focus of this package was congestion in the air and subsequent delays, together with safety. The four SES I-regulations need to be amended to introduce a performance framework with quantified target setting.

Following the recommendations of two major preparatory reports⁴⁸, the Commission published a Communication concerning "Single European Sky II: towards more sustainable and better performing aviation"⁴⁹. This package of proposals is based on four pillars:

- Updates to the existing Single European Sky Regulations of 2004 (see below),
- As the 'technological pillar' the SESAR programme will speed up technological innovation (see below),
- An extension of the competence of European Aviation Safety Authority (EASA) to cover all links in the aviation safety chain including ATM and airports in order to ensure a single approach to safety as the 'safety pillar' (see chapter 10 "EASA"),
- Development of the airport system as set out in the Airport Action Plan and including an Airport Observatory (see below 5.6 "Airports").

This second stage of the Single European Sky describes the principles and actions required to make the European sky safer and more sustainable. It forms a set of measures adopted with the aim to strengthen the network approach and introduce environmental performance as a new area. The proposals considered for SES II do not introduce new legislation as such, but rather consolidate and amend the original four SES regulations adopted in 2004.

5.5.1.1 SES II

Building upon SES I, the Commission adopted the second package of legislation for a Single European Sky (SES II) in June 2008⁵⁰ accompanied by a Commission staff working document⁵¹. It aims to further improve safety, cut costs and reduce delays which will in turn mean lower fuel consumption and therefore environmental benefits⁵². These goals improve the performance of the European aviation system and shall be reached by an increased integration of the European ATM network and improvements to the provision of air navigation services.

The first measure introduces a system of binding performance targets for air navigation services as abovementioned natural monopolies. The current system of non-binding performance

⁴⁸ The High Level Group report on the future regulatory framework for aviation of July 2007 and the Eurocontrol's Performance Review Commission report on the 'Evaluation of the impact of the Single European Sky initiative on ATM performance' of December 2006

⁴⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0389:FIN:EN:PDF>

⁵⁰ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0388:FIN:EN:PDF>

⁵¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2008:2093:FIN:EN:PDF>

⁵² <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1002>

benchmarking is transformed into a framework to drive performance concerning safety, cost efficiency, environment and capacity. This performance regulation requires an intense process of evaluation of the performance of the ATM industry carried out by the Performance Review Body, setting performance targets at Community level, endorsement of these general targets, process of translating these network wide targets into local targets including consultation of airspace users and the adoption of local targets consistent with the network-wide targets by the Commission.

Secondly, the Commission's proposal aims at strengthening the European network management function by ensuring convergence between national networks. This intension will directly contribute to improving the overall performance of the network. A number of network functions exist in air traffic management, which can be optimally executed on a European level. These require extensive cross-border co-ordination and need to be performed impartially and free of local and national interests: for example, design of routes on European level, co-ordination and allocation of scarce resources at European level (radar responder codes, radio frequency spectrum), synchronisation of deployment of new technology (surveillance, communication and navigation systems). The modalities for executing these functions will be developed in implementing rules, guaranteeing public interest impartiality and ensuring appropriate industry involvement. Network management should also provide for global interoperability and cooperation with neighbouring countries.

The third measure accelerates initiatives to integrate service provision within functional airspace blocks. The concept of the Functional Airspace blocks (FABs) was developed in the 1st legislative package of the European Single Sky. The overarching aim was initially to redesign the upper airspace in order to maximise capacity and efficiency of the air traffic management network in Europe. But hardly any progress is evident in the overall efficiency of the design and use of the European air network. The process of integration within functional airspace blocks, regardless of national borders, has encountered numerous hurdles, in particular political and economic obstacles.

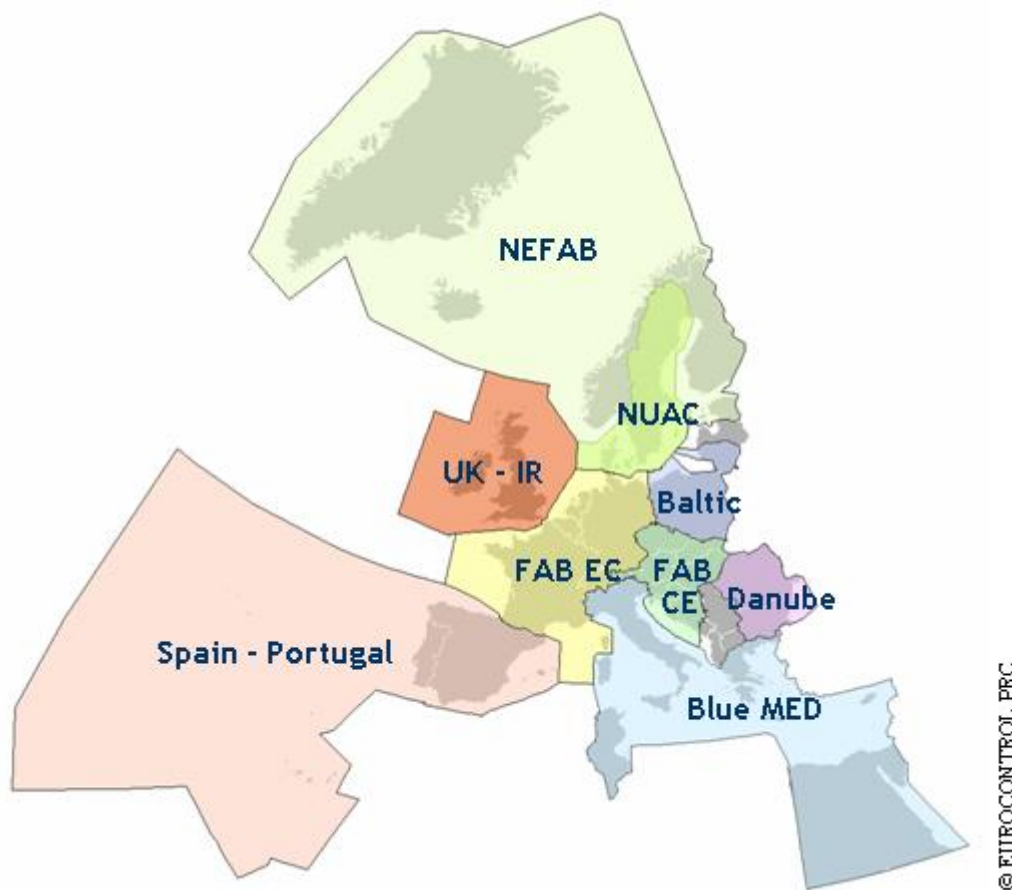
Functional Airspace Blocks (FABs) mean organising, integrating and managing the traffic in accordance with the actual needs of the aviation community, enabling optimum use of airspace. Member States will look beyond national borders when assessing the creation of a FAB justified by their overall added value based on a cost-benefit analysis. The creation of FABs is one of the cornerstones of the Single European Sky. FABs are a major tool to reduce airspace fragmentation so as to enhance current safety standards and overall efficiency, to satisfy the steadily growing capacity requirements of all airspace users and to minimise delays by managing the traffic more dynamically. These objectives can best be achieved through an increase of the scale of operations, regardless of national borders. This also implies civil-military coordination in airspace and air traffic management.

With the SES II second package, it is proposed to expand FAB requirements to lower airspace making them more dynamic. FABs will focus on all aspects of service provision, instead of purely airspace issues. They will allow for flexible forms of co-operation between the service providers thus providing a valuable tool for reaching the binding performance targets, which are proposed in SES II. FABs will only be established following proper consultation with all interested parties (i.e. airspace users, social partners and operators), including other Member States and the Commission.

The challenge is to turn the wide range of current initiatives for FABs into genuine instruments of regional integration to achieve performance targets. The Commission will support current initiatives to set up functional airspace blocks by setting firm deadlines for implementation (at latest by end 2012).

Figure 5-3: Map of FAB initiatives

Source: Eurocontrol



In December 2008, the Council reached agreement on the technical provisions of the proposal⁵³. The Commission welcomed the wide agreement of its proposal on the second Single European Sky package⁵⁴. Due to the co-decision procedure, the European Parliament's first reading is expected in March 2009.

5.5.1.2 Implementing rules / Single Sky Committee

As mentioned above, the general framework of the Single European Sky needs to be completed by more specific and detailed implementing rules. In order to support the European Commission in the implementation of the SES, the current legislation established the Single European Sky committee (SSC) representing both civil and military interests of the Member States, observers from third countries and EUROCONTROL. This committee gives its agreement on the draft implementing rules or community specifications that have been drafted by the mandated organisations before the Commission adopts these and is therefore involved in the regulatory procedure. In 2008, the Commission has adopted the following implementing rules with the assistance and positive opinion of the Single Sky Committee (SSC)⁵⁵:

Commission Regulation (EC) No 482/2008 of 30 May 2008 establishing a software safety assurance system to be implemented by air navigation service providers and amending Annex II to Regulation (EC) No 2096/2005⁵⁶

Commission Regulation (EC) No 668/2008 of 15 July 2008 amending Annexes II to V of Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation services, as regards working methods and operating procedures⁵⁷.

5.5.1.3 International dimension of SES

The international dimension is another essential part of the SES legislation. Neighbouring areas of the EU shall be associated to SES in order to ensure interoperability between the future European ATM systems, equipment and procedures and those of the EU neighbouring countries. The adoption of the same or similar rules ensures an expedient, reliable and smooth transfer of air traffic between the EU and these neighbouring regions. To reach these goals, the EU has concluded multilateral agreements in the context of the European Common Aviation Area (ECAA) and bilateral agreements have been signed with Switzerland and Morocco.

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<http://europa.eu/rapid/pressReleasesAction.do?reference=PRES/08/362&format=HTML&aged=0&lg=en&guiLanguage=en>

⁵⁴

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1961&format=HTML&aged=0&language=EN&guiLanguage=en>

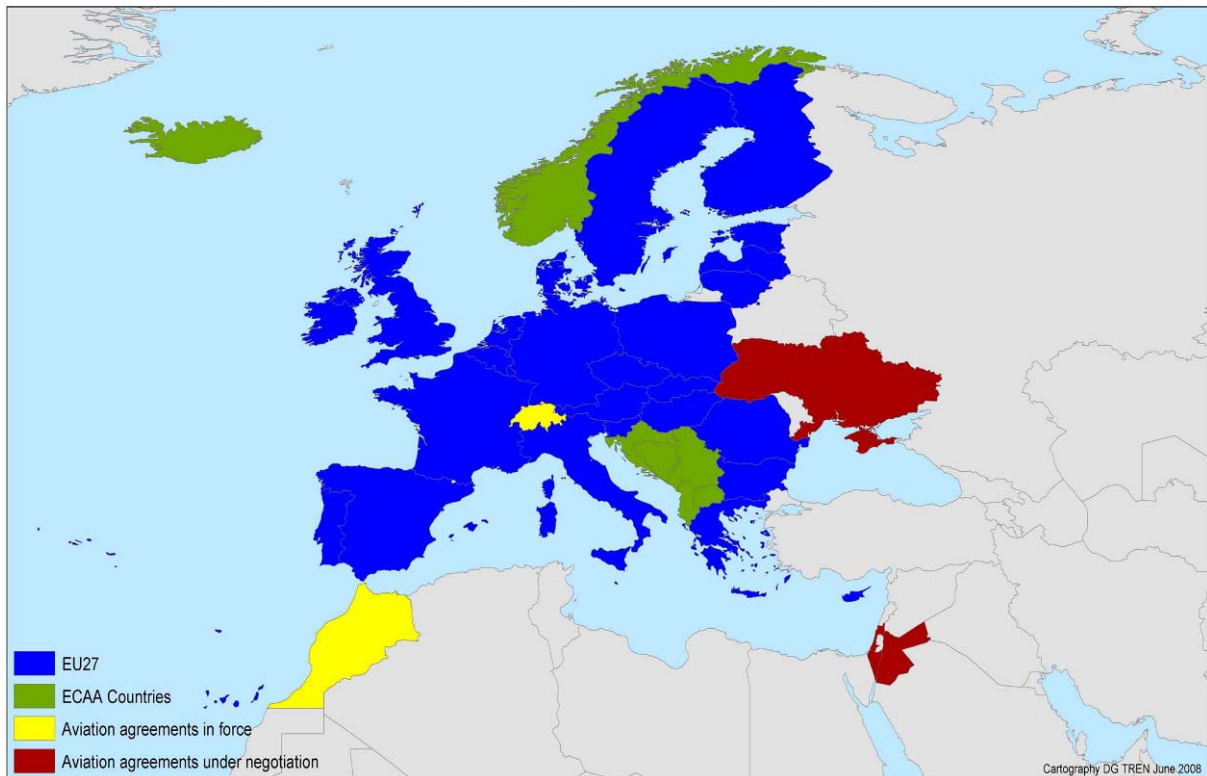
⁵⁵ http://ec.europa.eu/transport/air/single_european_sky/comity_en.htm

⁵⁶ http://ec.europa.eu/transport/air_portal/traffic_management/ses/doc/2008_05_30_regul_482_en.pdf

⁵⁷ http://ec.europa.eu/transport/air_portal/traffic_management/ses/doc/2008_07_15_regul_668_en.pdf



Single European Sky Pan-European Dimension



In January 2008, the Commission organised the conference “Towards a more performing European Aviation System” in Brussels.⁵⁸

5.5.2 SESAR

The SESAR (Single European Sky ATM Research) project is the European air traffic control infrastructure modernisation programme and constitutes the technological pillar of the Single European Sky policy. It will renew the current decades old technology in order to cope with the anticipated traffic growth in a safe and environmentally sustainable manner. The SESAR programme brings together all aviation stakeholders to commonly agree and develop better technology, as well as to operate the new generation air traffic management system.

SESAR was launched in 2004 as a three phase project with the aim to define, develop and deploy a fully harmonised ATM system in Europe. At first, in the Definition Phase (2004-2008), SESAR produced a series of deliverables setting the basis for developing and implementing the new ATM concept. In January 2008, Deliverable 4 Report (D4)⁵⁹ describes and demonstrates the feasibility of the deployment sequence to realise the ATM Target Concept. In April 2008, the

⁵⁸ http://ec.europa.eu/transport/air/events/2008_01_22_ses_en.htm

⁵⁹ <http://sesar-consortium.aero/deliv4.php>

SESAR Master Plan is published as Deliverable 5 Report (D5)⁶⁰ to coordinate the ATM future of Europe. Also in April 2008, Deliverable 6 Report (D6)⁶¹ defines the collection of all required project items in the 2008-2013 timeframe necessary to support the implementation of the ATM Target Concept by the execution of the SESAR Master Plan.

As the cornerstone of the Definition Phase, the delivery of the abovementioned SESAR Master Plan and Council Resolution of October 2008⁶² marked transition to the SESAR's Development Phase (2008-2013). At the highest level, the SESAR Master Plan defines a detailed roadmap for the research, development and implementation of new generation ATM system in Europe which is required to significantly contribute to the overall Single European Sky policy objectives. The programme will produce the required new generation of technological systems as defined in the definition phase. It is composed of three Implementation Packages made of two Service Levels each. For this phase, the SESAR Joint Undertaking coordinates and structures development, overcoming fragmentation in research efforts and will therefore guarantee a single management structure for the project, as well as a governance model associating all public and private actors involved.

In June 2008, the Commission published a staff working document with the purpose to provide the Commission' initial view on the SESAR Master Plan⁶³. The Commission considers that it provides a sound basis for the following phases of the SESAR programme and should be viewed as an initial version of the European ATM Master Plan referred to in Council Regulation 219/2007.

According to the Council's request, the Commission published a detailed assessment of the SESAR Master Plan in November 2008⁶⁴. In the light of this assessment and according to the procedures of Council Regulation (EC) No 219/2007, the Commission proposed the Council to endorse the SESAR Master Plan as the ATM Master Plan. If endorsed by the Council, this proposal of an European ATM Master plan will then be transmitted for adoption to the SESAR Joint Undertaking and shall serve as basis for its work programme. Furthermore, the Commission presented the process for updating the ATM Master Plan as an evolving document in the future. The procedure contains the validation of new technologies to improve performances and services. It confirms the pivotal role of the SESAR Joint Undertaking and its Administrative board in managing the ATM Master Plan while ensuring that any significant change follows a formal process through which the Member States will continue to exercise their control.

⁶⁰ <http://sesar-consortium.aero/deliv5.php>

⁶¹ <http://sesar-consortium.aero/deliv6.php>

⁶² http://ec.europa.eu/transport/air_portal/sesame/doc/2008_10_09_development_phase_en.pdf

⁶³ <http://register.consilium.europa.eu/pdf/en/08/st11/st11347.en08.pdf>

⁶⁴ http://ec.europa.eu/transport/air_portal/sesame/doc/com_2008_0750_en.pdf

Completing the SESAR programme, the following Deployment Phase (2014-2020) will seek to build the new infrastructure in a wide scale under the responsibility of the industry. The deployment process will require solid governance structures. The real added value of SESAR will come with implementation, when SESAR products are deployed in a coordinated and synchronised way through the Community legal framework. This will overcome fragmentation in equipment for both air navigation service providers and airspace users and speed up the pace of technological progress.

As mentioned above, the SESAR Joint Undertaking aims to develop a modernised air traffic management system for Europe in order to avert the crippling congestion of the European sky and reduce the environmental impact of air transport. To ensure these goals, the SESAR Joint Undertaking will coordinate and concentrate all relevant research and development efforts of the SESAR programme, in accordance with the ATM Master Plan.

In December 2008, the SESAR Joint Undertaking, a unique public-private partnership in air traffic management research, was inaugurated in Brussels⁶⁵. Founded by the European Community and EUROCONTROL, the SESAR Joint Undertaking also benefits from the support of fifteen public and private enterprises which plan to become members of the SESAR Joint Undertaking. Following the selection process of the members of the SESAR Joint Undertaking in 2007, in a second phase discussions were held with these candidate members in order to fine-tune the description of work to achieve the ATM Master Plan objectives. At the end of 2008, SESAR Joint Undertaking closed the discussions by requesting the candidate members their best and final binding offer of contribution to the SESAR Programme⁶⁶.

Also in December 2008, Council Regulation (EC) No 1361/2008⁶⁷ amended Regulation (EC) No 219/2007⁶⁸ on the establishment of a joint undertaking to develop the new generation European air traffic management system (SESAR). With this amendment, the SESAR Joint Undertaking is formally recognised as a Community body aligning its legal status with other similar joint undertakings. The SESAR Joint Undertaking has a legal personality and shall cease to exist 8 years after an endorsement by the Council of the European Air Traffic Management Master Plan.

⁶⁵

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1906&format=HTML&aged=0&language=EN&guiLanguage=en>

⁶⁶ http://ec.europa.eu/transport/air/sesar/doc/2008_sju_membership_accession_process_notice.pdf

⁶⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:352:0012:0017:EN:PDF>

⁶⁸ http://ec.europa.eu/transport/air/sesar/doc/reg_219-2007_v_consolidated.pdf

5.6 Airports

5.6.1 An action plan for airport capacity, efficiency and safety in Europe / Community Observatory on Airport Capacity

As the fourth pillar of the SES II-package, the development of the airport system is fully integrated to the new ATM concept.

To avoid possible future lacks of airport capacity generated by the continuous growth of air traffic, the Commission adopted an action plan for airport capacity, efficiency and safety in Europe⁶⁹ with a view to maximise the effectiveness of the existing infrastructures and to optimizing the planning of new invested infrastructures, while raising safety standards and the environmental compatibility of airports at highest levels. The initiative seeks to co-ordinate better airport slots issued to aircraft operators with air traffic management measures. These co-ordinations at Community level could really improve capacity at European airports.

The implementation of the Commission's action plan shall be guaranteed by the Community Observatory on Airport Capacity which was inaugurated in November 2008⁷⁰. It will advise the Commission on developing measures to ameliorate the capacity of the European airport network. As a pan-European observation centre, the Observatory will serve as an appropriate forum for the exchange, monitoring and assessment of data and information on airport capacity. Non-binding opinions, either at the Commission's request or on its own initiative, which will serve as a basis for producing guidelines or regulatory instruments, will be issued. The Commission will therefore be able to seek its opinion on methods for assessing airport capacity, infrastructure planning procedures, train/plane intermodality and airport accessibility.

The composition of the Observatory will ensure that all stakeholders are represented and that it operates in an effective manner. Under the chairmanship of Zoltan Kazatsay (Deputy Director-General DG TREN), all Member States, Eurocontrol, the SESAR Joint Undertaking, academia and the Commission will be represented, as well as airports, airlines, the local authorities concerned, airport coordinators, environmental groups and people living or working near airports⁷¹.

The Observatory set up three working groups which prepare the discussions of the plenary sessions taking place twice a year. It has been established for a period of five years, at the end of

⁶⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0819:FIN:EN:PDF> - The Commission's action plan has been endorsed by the European Parliament and by the Council in October 2007.

⁷⁰

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1629&format=HTML&aged=0&language=en&guiLanguage=en>, minutes of the inaugural meeting and the terms of reference are available at the Commission's website:

http://ec.europa.eu/transport/air/airports/doc/observatory_2008_11_04_minutes.pdf and

http://ec.europa.eu/transport/air/airports/doc/observatory_terms_of_reference.pdf

⁷¹ http://ec.europa.eu/transport/air/airports/doc/observatory_members.pdf

which its provisional work programme⁷² should have been completed. That is also the time at which SESAR should be entering its operational phase, deploying new technologies to improve the operational capacity of airports.

5.6.2 Airport charges

In January 2007, the Commission published a proposal for a Directive on airport charges as a key part of the so called "Airport package"⁷³. It was necessary to establish a common framework regulating the essential features of airport charges and the way they are set, as in the absence of such framework, basic requirements in the relation between airport managing bodies and airport users may not be respected and may hinder the existence of a true level playing field for airports and air carriers alike.

The objective of the proposed Directive is to set common principles and basic rules on the procedures for the levying of airport charges at Community airports. It provides to facilitate the discussions and re-define the relationship between airport operators and airport users by requiring total transparency, user consultation and the application of the principle of non-discrimination when calculating charges levied on users. Moreover, it aims to create strong, independent authorities in the Member States to arbitrate and settle disputes in order to achieve their resolution.

The first principle aims at ensuring regular consultations between airport managing body and the air carriers serving the airport, or their representative organisations on charges in which both parties can explain and develop their views. The objective is to ensure that airports have consulted and informed airlines on the charging system applicable at an airport not only when such system is modified but also when the levels of the respective charges are being established.

The second principle concerns transparency on the elements that form the basis of airport charges. The proposed Directive does not contain provisions on calculation methods for charges that should be applied in each Member State. The Commission acknowledges the large diversity of airport regulation existing in the various Member States but a reasonable amount of information must be provided by the operator to the air carriers so as to make the consultation process between airports and air carriers meaningful. To this end the Directive establishes which information should be provided on a regular basis by the airport managing body. Air carriers should, in turn, give information as to their traffic forecasts, their intended fleet use and their present and future specific requirements at the airport so as to allow the airport managing body to employ their capital and dedicate their capacity in an optimal way.

Prohibition of discrimination between airlines is the third principle. Differences in treatment should be related to the actual cost of the facilities and services provided. At an airport, one

⁷² http://ec.europa.eu/transport/air/airports/doc/observatory_work_programme_2008_2013.pdf

⁷³ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0820:FIN:EN:PDF>

terminal may differ from another and as a result the level and quality of service in the various terminals may not be the same: the difference in quality may be a point of distinction between the various levels of charge to be paid by the airport users at one airport. It is necessary to ensure that in principle all air carriers wishing to have access to the terminal or services at reduced costs and quality will have such access on a non-discriminatory basis.

The proposal also suggests the establishment of an independent regulatory authority in each Member State. This authority shall oversee the levying of charges and ensure that the relevant provisions of the directive are complied with. The authority will consequently act upon complaints on airport charges from the parties.

In line with the co-decision procedure, the Council adopted a common position in June 2008. The European Parliament adopted a legislative resolution amending the Council's common position in October 2008. The 2nd reading by Council is awaited.

Discussions concerning the scope of the Directive and its implementation are still continuing.

5.6.3 Airport slots

Because of growing air traffic demand during the last decades and lacking airport capacities, there are many congested airports which can not offer enough slots, defined as landing and take-off possibilities ("Capacity Crunch"). Despite Regulation (EEC) 95/93, amended by Regulation (EC) No 894/2002 and Regulation (EC) No 793/2004, has brought about a significant number of improvements in the functioning of the market, some parts of the Regulation are still not fully or correctly implemented.

Following a hearing of stakeholders and Member States on the application of slot allocation in January 2008⁷⁴, the Commission concluded that there is a need to ensure better implementation in a number of areas with which stakeholders have experienced particular difficulties because of different interpretations among Member States.

In April 2008, the Commission issued a Communication on the application of Regulation (EEC) 95/93 on common rules for the allocation of slots at Community airports, as amended⁷⁵. This Regulation clarifies a number of issues with a view to stimulating the better use of scarce capacity at congested Community airports:

- Exchange of slots

As a main change in policy, "secondary trading", meaning the exchange of one slot for another slot with monetary and other consideration between air carriers, is accepted by the Commission. While the text of the current Regulation contains no clear and explicit prohibition of such exchanges, the Commission does not intend to pursue infringement proceedings against

⁷⁴ http://ec.europa.eu/transport/air/airports/slots_en.htm

Member States where such exchanges take place in a transparent manner, respecting all the other administrative requirements for the allocation of slots set out in the applicable legislation. For the first time the Commission explicitly recognizes the advantages of secondary slot trading at congested airports and gives legal certainty to the operation of secondary slot trading in Europe. This measure should add some flexibility to the system of slot allocation in order to use scarce capacity, encourage slot mobility and increase competition to the ultimate benefit to the customer.

If it becomes apparent that for competition or other reasons revision of the existing legislation is required, the Commission will make an appropriate proposal.

- Independence of the slot coordinator

The Commission considers that a functional and financial independent position of the coordinator is essential to guarantee the coordinator's functioning in a neutral, non-discriminatory and transparent way. These obligations still appear to be cases of insufficient application in some Member States.

- New entry

The obligation to allocate 50% of the slots to new airlines enabling them to gain entry to the liberalised market has to be applied permanently and continuously, throughout the scheduling seasons. The Communication clarified that the Regulation contains the allocation of slots during the initial allocation from the pool about four months before the start of the relevant summer and winter scheduling seasons, as well as during the scheduling season.

- Local guidelines

Local guidelines can stimulate a more efficient use of slots at congested airports. The Commission states that any restrictions by local guidelines have to be non-discriminatory on grounds of nationality or identity of the air carrier and not unduly distort competition between carriers.

- Transparency of scheduling data

In order to ensure the objectivity and transparency of the slot allocation procedure concerning all allocated, requested, historical and available slots, the Commission recalls that European coordinators have jointly developed a combined database that contains the data of all slots they have allocated. The remaining problems in some Member States could hinder a more efficient use of slots and distort competition as not all interested parties may have the same degree of access to this schedule data. The Commission emphasises the need for better cooperation between European coordinators.

⁷⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0227:FIN:EN:PDF>

- Consistency between slots and flight plans

The Commission is expected to adopt a mechanism aimed at increasing the consistency between slots and flight plans. In particular, general and business aviation flights which by definition operate unscheduled flights may interfere with the proper operation of coordinated airports, where slots tend to reflect flight plans and where air carriers are required to operate in accordance with the slots allocated to them.

The Commission will continue to monitor the functioning of the Regulation and will concentrate on ensuring proper implementation of the Regulation by Member States. In the light of this monitoring, the Commission will consider whether it is necessary to make a proposal to amend the Regulation.

5.7 Insurance

Following the terrorist attacks in the United States on 9/11, 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, to ensure the transparent, non-discriminatory and harmonised application of minimum insurance requirements and therefore avoid distortion of competition between air carriers, Regulation (EC) No 785/2004 on insurance requirements for air carriers and aircraft operators⁷⁶ entered into force on 30 April 2005. This Regulation ensures a proper minimum level of insurance to cover aviation-specific liability of air carriers and non-commercial aircraft operators with respect to passengers, baggage, cargo and third parties; the insured risks include war and terrorism-related risks.

After an open consultation in 2007, the Commission received 68 contributions and discussed the responses further in a meeting of the ad-hoc insurance group held in February 2008.

In April 2008, the Commission published a communication⁷⁷ concerning insurance requirements for aircraft operators in the EU as a report on the operation of Regulation (EC) No 785/2004 and in accordance with Article 10 (1) of the abovementioned Regulation.

In the three years since it entered into force, the Regulation has been effective in ensuring insurance coverage of all aircraft operators flying within, to or from the Community. There have been very few cases of aircraft operators not complying with the insurance requirements. If third-country air carriers and aircraft operators do not provide evidence of insurance, Member States refuse them the right to land. This sanction has proved itself to be very effective and dissuasive, and has deterred some third-country carriers without proper insurance coverage from flying into the Community. As far as Community air carriers and aircraft operators are concerned, there have been extremely few cases where Member States have needed to apply

⁷⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:138:0001:0006:EN:PDF>

sanctions. This is an indication that the minimum insurance requirements as established by the Regulation are clear and proportionate to achieving the objective.

Although certain categories of aircraft operators have faced a substantial increase in insurance costs since the entry into force of the Regulation, the Commission concludes that there is no evidence of a general problem with the Regulation. Such harmonisation, by its very nature, affects operators in some Member States more than others. However, in the majority of Member States the minimum requirements of the Regulation have not caused any substantial problems and the insurance requirements established by the Regulation cannot be considered as inappropriately high. Thus, there is currently no evidence that changes to the Regulation would be necessary.

5.8 Studies carried out in 2008

5.8.1 Evaluation of Functional Airspace Block (FAB) initiatives and their contribution to performance improvement

The study "Evaluation of Functional Airspace Block (FAB) initiatives and their contribution to performance improvement"⁷⁸ has been published in October 2008. It has been produced by the independent Performance Review Commission (PRC) of Eurocontrol upon the request of the European Commission.

It provides a factual and independent assessment makes a comparative analysis of the nine Functional Airspace Blocks (FAB) initiatives as of 1st July 2008. It identifies a number of key factual assessments and reviews cost-benefit analyses developed by the FAB initiatives and their approaches to safety cases. The report proposes twenty-two recommendations to Member States, the European Commission and ATM stakeholders to foster the creation of FABs with a view to improving ATM performance in Europe.

It arrives at the conclusion that progress has been made in some but not all FAB initiatives in the first half of 2008, while the UK-Ireland FAB was the first and only FAB that had been notified to the European Commission and officially launched in July 2008. Due to the different stages of implementation, these FAB initiatives and their characteristics vary significantly. There are differences in the actions that are proposed, the progress that the FAB initiatives have made, the timescale over which implementation is expected, and the arrangements adopted for implementation. It is therefore clear that a flexibility of approach needs to be maintained, as long as performance improvements are delivered.

⁷⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0216:FIN:EN:PDF>

⁷⁸ http://ec.europa.eu/transport/air/studies/doc/traffic_management/evaluation_of_fabs_final_report.pdf

A number of key impediments to progress in the implementation of FABs have been reported by FAB representatives and stakeholders throughout the study, which have to do with operational, legal, financial and organisational matters. Besides, the report makes suggestions for alleviating these problems. For example, greater guidance and coordination for the establishment of FABs would help avoid misunderstandings and duplication of work.

5.8.2 Social developments in the EU air transport sector

In January 2008, the report "Social developments in the EU air transport sector" has been published⁷⁹. It reviews the development of direct employment (on board staff, jobs in the airport, air traffic controllers, air transport companies) and the working and wage conditions in the EU air transport labour market since the full liberalisation of the market in 1997. The study also evaluates the principal tendencies in comparison to major events, for example effects of competition, external events, and perspectives related to the agreements with third countries.

In general, it is concluded that the developments are related to and the economic trends that the sector has experienced in the past ten years and that they are direct consequences of improved competitiveness. It is plausible for example that the financial crisis that the sector experienced between 1999 and 2004 through the efforts to increase productivity, has had an impact on employment, wages and working conditions such as operational pressure. Also it is very plausible that the increase in employment in the past ten years is strongly related to the increase in air traffic in the EU provided by the liberalisation and deregulation. New routes, new carriers, development of low-cost sector and more productivity: all these elements have contributed to the important changes and the growth of air transport in the EU.

It appears that in the EU the impact of liberalisation on direct employment was good, with an increase in most sectors and an overall stability in the airports and air traffic control. Moving from a monopoly or duopoly market towards more competition, the position of employees in the ground handling market is changing rapidly. Overall there is a trend in the sector towards more flexibility in contracts, most visible for ground handling staff, while wage increases have occurred during the period studied. Development of working conditions concerning health and safety, increase of operational pressure, training and rest time has been reviewed in different positions by employers and trade unions.

As a recent development in the EU air transport market, the study marks the introduction of multibased airlines. This means that an airline that originates from one of the EU Member States opens up bases in one or more other EU Member States. The establishment of multiple bases across Europe by a single airline raises important questions regarding the labour laws which are applicable to staff operating from these bases. Also it has important implications for collective bargaining within the EU air transport sector.

⁷⁹ http://ec.europa.eu/transport/air/studies/doc/internal_market/2008_01_social_study_summary.pdf

5.8.3 Public consultations

The impact of the use of body scanners in the field of aviation security on human rights, privacy, personal dignity, health and data protection is analysed throughout a consultation by the Commission. This consultation is carried out in the light of a Resolution adopted by the European Parliament in October 2008. The Commission is asked to carry out an impact assessment relating to fundamental rights, a scientific and medical assessment of the possible health impact of such technologies, an economic, commercial and cost-benefit impact assessment and to consult the European Data Protection Supervisor (EDPS), the Article 29 Working Party and the Fundamental Rights Agency (FRA).

In addition to a questionnaire⁸⁰, the Commission is organising a 'public-private dialogue' that will take the form of a Body Scanners Task Force.

On the basis of these consultations, the Commission will make a report on body scanners and their impact. The report will form the basis of whether or not the Commission will bring forward legislation to allow body scanners as a method of screening at airports and/or under what conditions they could be allowed.

In summer 2008, the Commission organised a public consultation concerning "Development of Integrated Ticketing for Air and Rail Transport". The objective of the consultation is to verify the degree of interest and preparedness of the transport/travel industry to take the necessary measures needed to propose and sell integrated air-rail tickets. Contributions to the consultation and consultation results are available at the website⁸¹.

Concerning the legislative process for the first extension of the EASA Basic Regulation, EASA organised a public consultation at the end of 2007. The objective of this consultation was to seek the opinion of all parties on ways and means, so that the Agency could make its decision in full knowledge of the situation and guided the debates of the Community legislator. The Notice of proposed amendment (NPA) No 2007-16 by the European Aviation Safety Agency on the extension of the EASA system to the regulation of Air Traffic Management and Air Navigation Services (ATM/ANS)⁸² provided the Commission with an opinion in order to issue a legislative proposal.

⁸⁰ http://ec.europa.eu/transport/air/consultations/doc/2009_02_19_body_scanners_questionnaire.pdf

⁸¹ http://ec.europa.eu/transport/air/consultations/2008_09_30_ticketing_en.htm

⁸² <http://www.easa.europa.eu/doc/Rulemaking/NPA/NPA%202007-16.pdf>

6 Environmental development

6.1 The Year in Brief

In January 2008, emission-related landing charges for the reduction of local emissions in the vicinity of airports were introduced for the first time at selected German airports. Aviation is one source of nitrogen oxide (NO_x) and hydrocarbon (HC) emissions in the vicinity of airports. NO_x and HC are the main contributors to combustion-related local air pollution and precursors of ground level ozone. On January 1st 2008, emission charges were introduced at Frankfurt Airport and Munich Airport, Cologne Bonn Airport followed in April 2008. A Europe-wide harmonized approach was chosen for the design and the calculation of this emission charge by applying the so-called ERLIG-formula. ERLIG is a formula developed by an ECAC (European Civil Aviation Conference) working group in 2003. It recommends a methodology on how to classify and calculate NO_x and HC emissions deriving from aircraft engines. The charge aims at setting economic incentives to accelerate introduction and to foster the use of very environmentally friendly engine technology. At the same time the charge is designed to be revenue neutral in the sense that this regulatory instrument does not increase the airports over-all revenues from air traffic. Emission related landing charges following these guidelines were introduced in Sweden and at London Heathrow Airport in 2004, London Gatwick Airport followed in 2005. Switzerland is planning to modify its current system of emission related landing charges towards the Europe-wide harmonized approach soon.

In February 2008, the ICAO GIACC (Group on International Aviation and Climate Change of the International Civil Aviation Organisation) held its first meeting at Montreal. The formation of the GIACC was one important outcome of the 36th ICAO Assembly which took place in September 2007. GIACC is tasked with developing a framework of measures to address international aviation's emissions. The membership was by 'ad personam' invitation of the ICAO Council president and comprised senior officials from 15 States, with European representation being from France, Germany and Switzerland. The proposed schedule of activity provided for 4 meetings (2 each in 2008 and 2009). The GIACC will then report its findings to a high-level ICAO meeting, possibly to be held in autumn 2009.

In July 2008, the European Commission's proposal for a directive for the inclusion of aviation into the existing EU emissions trading system was agreed by both the European Council and the European Parliament and adopted by the European Council in October. According to this directive, aircraft operators will be obliged to surrender allowances for virtually all commercial flights landing at and departing from any airport in the EU from 2012 onwards. This way, the European emissions trading scheme for the limitation of CO₂ emissions will not only affect European airlines, but also airlines from third-countries. The main elements of this directive are described and discussed below.

On 28th-29th October 2008, a high-level ECAC (European Civil Aviation Conference)/EU Conference on the environmental challenges for aviation took place at Geneva. At this conference, which was hosted by Switzerland, the European comprehensive approach to meeting the environmental challenge was explained and discussed, particularly with respect to climate change, and the contribution that can be made by the various members of the aviation community. The conference examined the different elements of the comprehensive approach, including technology research, operational and ATM improvements and market-based measures.

In November 2008, a study by consultants CE Delft on behalf of the European Commission on political measures for the reduction of NO_x emissions borne by aviation was finalised. In parallel with the consultant's analysis, the European Commission conducted an impact assessment of selected measures. On this basis, the European Commission will draft a proposal for political measures for the reduction of these aviation related emissions. The publication of this draft proposal is expected for 2009.

In mid December 2008, the EU Parliament, the EU Commission and the EU Council agreed on a directive for the improvement and the extension of the greenhouse gas trading system of the European Community for the years 2013 until 2020. This directive will come into force in mid 2009. The aviation-specific regulations of this directive are described below.

6.2 Noise Operation Restrictions at EU Airports

In February 2008 the EU Commission has issued a Report on the application of Directive 2002/30/EC about Noise Operation Restrictions at EU Airports. This Directive allowed the Member States to introduce at individual airports new operating restrictions, in particular on aircraft that are marginally compliant with Chapter 3 in ICAO Annex 16, Volume 1. There was a requirement set by the Commission to report no later than 5 years after implementation about its application. The majority of 52 investigated airport operators indicated that the Directive had not directly influenced the noise management around their airport, because the number of relevant aircraft decreased over this time period remarkably. However the Directive has served as a useful checklist to highlight potential measures and it helped to establish a climate of trust among stakeholders.

6.3 The European Commission's directive for the inclusion of aviation activities in the EU Emissions Trading Scheme in the year 2012

The European Commission's directive, as it was agreed by the European Council and the European Parliament in July 2008 (Council of the European Union 2008b) and formerly adopted by the EU Council in October 2008, contains the following provisions for the inclusion of aviation into the existing emission trading scheme:

- The emission trading scheme will cover all flights departing from or arriving at EU airports from 2012 onwards with exemptions listed in Annex I of the Directive. Domestic flights will be subject to the same rules as international air traffic. This way, both European airlines and airlines from third-countries operating in the European market will participate in the European emissions trading scheme without discriminations. This approach was chosen to avoid a distortion of competition in the international airline industry to the most possible extent and in order to improve the environmental effectiveness of the scheme. If any non-EU country introduced alternative measures with similar climate protecting effects, the geographical scope of the emission trading scheme could be modified to ensure an optimum interaction between those measures.
- Aircraft operators will be obliged to hold and surrender allowances for CO₂ 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 and rescue flights (amongst a number of other exemptions) are excluded from the scheme.
- Exemptions from the EU-ETS will also be granted for flights performed in the framework of public service obligations on routes within outermost regions or on routes where the capacity offered does not exceed 30,000 seats per year. Also excluded from the EU-ETS will be flights performed by a commercial air transport operator operating either fewer than 243 flights per four-month period for three consecutive four-month periods or flights with total annual CO₂ emissions lower than 10,000 tonnes per year (so-called 'de minimis' clause). The 'de minimis' clause was mainly added in order to exclude aircraft operators from developing countries with a low number of flights to and from Europe.
- Regulations for emission monitoring and reporting will take effect in 2009 while the first emission trading year for aircraft operators will be in 2012.

Further rules in the directive include the following issues:

- In the first year of the inclusion of aviation into the EU-ETS, the total quantity of allowances to be allocated to aircraft operators shall be equivalent to 97% of the historical aviation emissions (so-called overall "cap"). The historical aviation emissions will be calculated on the basis of the average total emissions of the years 2004-2006 borne by all aircraft operators taking part in the scheme.
- Allowances will be allocated to aircraft operators mostly free of charge, initially. Between 2012 and 2020, 85% of the allowances shall be allocated for free. The method of allocating allowances to aircraft operators will be harmonized within the European Union.
- The total number of allowances allocated to each aircraft operator will be determined by a benchmark which is calculated in three consecutive steps: First, the share of auctioned allowances is subtracted from the overall "cap". Second, the remaining amount of CO₂

emissions is divided by the sum of verified tonne-kilometre data for flights falling under the geographical scope of the ETS in the monitoring year 2010, as reported by all participating aircraft operators. Third, the specific amount of allowances each operator receives is calculated by multiplying the respective individual tonne-kilometre value of the monitoring year with the benchmark. Each operator's revenue tonne-kilometres 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).

- In the year 2012, allowances allocated to aircraft operators will be valid within the aviation sector only. However, it will be possible to purchase additional permits from other sectors or from the project based Kyoto instruments "Joint Implementation" and "Clean Development Mechanism". In the year 2012, aircraft operators may use emission permits from "Joint Implementation" and "Clean Development Mechanism" up to 15 % of the number of allowances they are required to surrender for this year. Allowances not used in 2012 can be 'banked' to the third trading period of the EU ETS. This means unused allowances issued in 2012 can be carried over for use up to the year 2020.

The use to be made of revenues generated from the auctioning of allowances shall be determined by the Member States. But the revenues should be used to tackle climate change in the EU and third countries, inter alia, to reduce greenhouse gas emissions, to adapt to the impacts of climate change, to fund research and development in this field, e.g.

6.4 The European Commission's directive for the improvement and extension of the EU Emissions Trading Scheme in the years 2013 until 2020

The European Commission's directive for the period 2013-2020 (Council of the European Union 2008a), as it was agreed in December 2008, aims for improving and extending the greenhouse gas emission allowance trading system of the Community. Due to its broader nature, it adopts regulations for all sectors included in the system and very few aviation-specific rules. It is understood that most of the regulations for the first year of the inclusion of aviation into the EU ETS which are described above will be further applied in the years 2013 until 2020. Among other issues, these regulations refer to the geographical coverage of the scheme, exemptions from the scheme, the rules for emission monitoring and reporting, the method of calculating the sector-specific benchmark and the criteria for the use to be made of the revenues from auctioning allowances. In contrast to this, modifications are introduced for the following aviation-specific regulations for the period 2013-2020:

- The total quantity of allowances to be allocated to aircraft operators shall be equivalent to 95 % of the historical aviation emissions multiplied by the number of years in the (eight-year) period. This way, the so-called 'cap' for the participants in the scheme will be lowered by another 2%. A further modification of the overall "cap" for aviation will be possible after a general review of the directive, which is scheduled for the year 2014.
- From the year 2013 onwards, the use of the project based Kyoto instruments "Joint Implementation" and "Clean Development Mechanism" will be lowered for aircraft operators significantly. In the period 2013 until 2020, the percentage of "Joint Implementation" and "Clean Development Mechanism" credits used by aircraft operators to cover their emissions will be calculated on the basis of the reductions achieved in the sectors but shall not fall below 1.5 % of the amount of allowances they are required to surrender per year.

Finally, the European Commission emphasizes the need for a global agreement on measures to reduce greenhouse gas emissions from aviation.

References:

Council of the European Union 2008a: Proposal for a Directive of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading system of the Community, 5862/08, Brussels, 29 January 2008

Council of the European Union 2008b: 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 – Outcome of the Parliament's second reading (Strasbourg, 7 to 9 July 2008), 11498/08, Brussels, 10 July 2008

7 Consumer issues

7.1 Punctuality

The quality characteristic 'punctuality' (or 'unpunctuality') is, besides the amount of traffic, a further indicator for describing traffic performance in aviation. 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.

Unpunctuality, defined as the deviation from the flight schedule by more than 15 minutes, always threatens to occur in operations when infrastructure capacities are used inefficiently (e.g. through deviations from plan) or when allocated capacities are reduced (e.g. due to unfavourable weather conditions). Rising demand for traffic in areas where capacity is limited always negatively affects the achievable punctuality, as was recognisable from the increase in delays in the five years before 2008. Where less than 17% of all commercial flights were delayed on arrival by more than 15 minutes in 2003, this share increased to 22% with the growth in traffic in 2007 and then stagnated at a comparable 21% in 2008 (according to information from Eurocontrol for the ECAC region). Although the usual growth trend in European air traffic continued in the first half of 2008, this growth weakened from late summer and from October 2008 it even dropped significantly below the monthly values from the previous year. This resulted in a general relief of the heavy utilisation of airspace and at airports, which is signified by a temporarily increased punctuality.

Eurocontrol identified the local ground handling processes as a particularly strong cause of delays in air traffic. The varying times required for these processes are said to be responsible for up to around three quarters of the delays. The differing levels of punctuality in relation to the length of flight are illustrated by the AEA data. During the summer period from April to September 2008, inner-European flights ("IEDO" for intra-European and domestic) of the

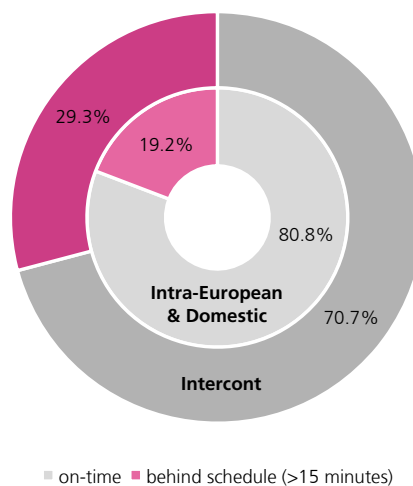
airlines belonging to the AEA showed a significantly higher punctuality on arrival (81%) than intercontinental flights ("IC" for "intercont", 71%). The same link exists for the departure delays. The punctuality here shows almost the same values - 81% (short and medium haul) and 72% (long haul) - in contradiction to the trend so far. The generally lower punctuality of long haul flights can also be explained by the fact that these flights are normally involved in a so-called hub-and-spoke network to be able to offer many interconnected origin-destination connections at the best possible profit. The consequence of this is that the arrival of the passengers of a long haul flight at the departure airport - and consequently then at the arrival airport too - depends on the punctuality of the individual feeder flights. The risk of being affected by a delay thus increases with the number of feeder flights. Additionally, the hub airports frequented by long haul flights often run at full capacity and therefore there are increased risks of operational delays.

7.1.1 Actual punctuality

Overall European air traffic punctuality in 2008 corresponded to the level in the previous year of around 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. Unfortunately, AEA stopped in 2008 the publication of service quality data. This is the reason why annual data is not available.

Figure 7-1: 71% of intercontinental and 81% of domestic flights arrived on-time in 2008's summer period

Source: AEA

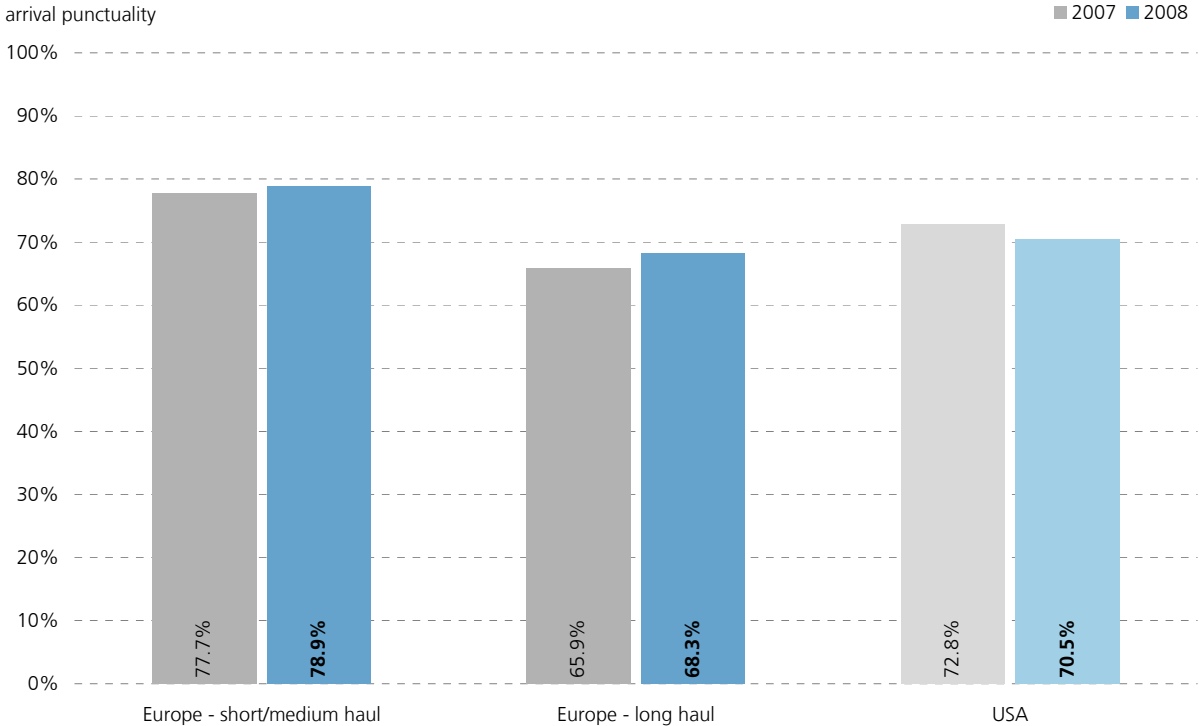


In comparison to the data from the USA, it can repeatedly be seen that the level of punctuality of the AEA airlines is higher in total. While the AEA provides its punctuality data separately for short/medium haul and long haul due to the structural differences, only aggregated data is available for the USA. Also, for reasons of comparability with the AEA data, only those American airports were considered which the American FAA declares as "major airports". Since the USA is also the world's largest domestic aviation market and national connections dominate there, the direct comparison with the AEA's short/medium haul flights seems appropriate.



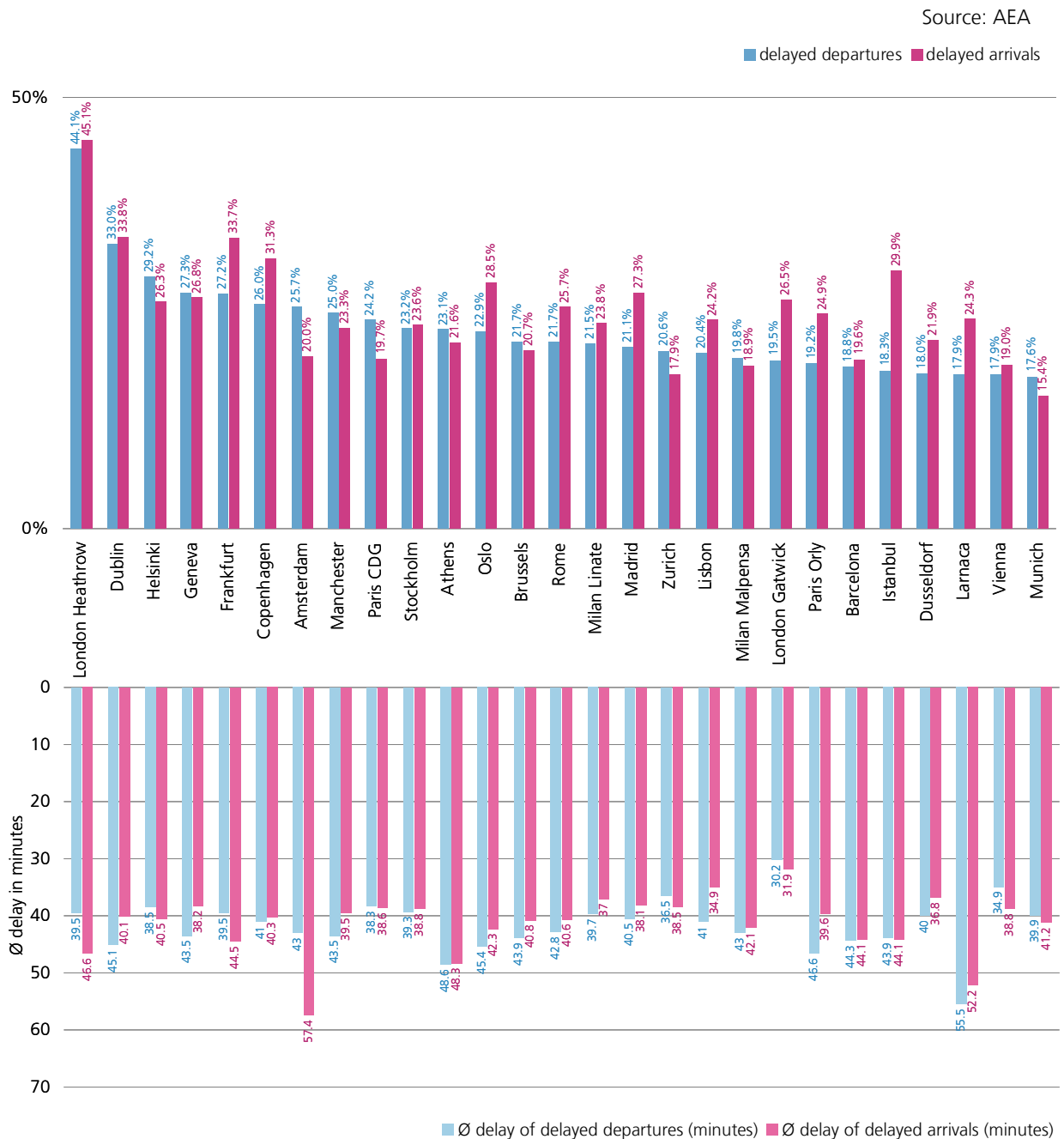
Figure 7-2: Punctuality in the first quarter: US vs. Europe

Source: AEA, FAA



Punctuality is driven by various external circumstances but may indicate tops and flops in service quality for the network’s nodes, the airports. Selected airports in Europe that saw most frequent flights by AEA airlines in 2008 are taken into consideration. The data presented relates to the punctuality achieved by short/medium haul 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. As outlined by the AEA, no background information for specific conditions at individual airports is available and because of this no quality assessment should be performed without additional information. 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 or the trend of how occurred delays are locally handled during turnaround procedures.

Figure 7-3: Proportion of delayed intra-European flights and average delay per delayed flight at selected airports in Q1-2008



From this selection of European airports, it can be seen that between 18% and 44% of all departing flights in Q1 2008 left more than 15 minutes late. Here, Munich and Vienna were among the best performing airports, both with over 82% of departures being punctual and an average of less than 40 minutes delay for the rest. This contrasts with London Heathrow, where statistically every punctual flight is followed by one unpunctual one, which then also has to wait for an average of almost 40 minutes delay for the rest. A significantly less strained picture can be seen just a few kilometres away at Gatwick Airport, which made 8th place in the ranking with 19.5%

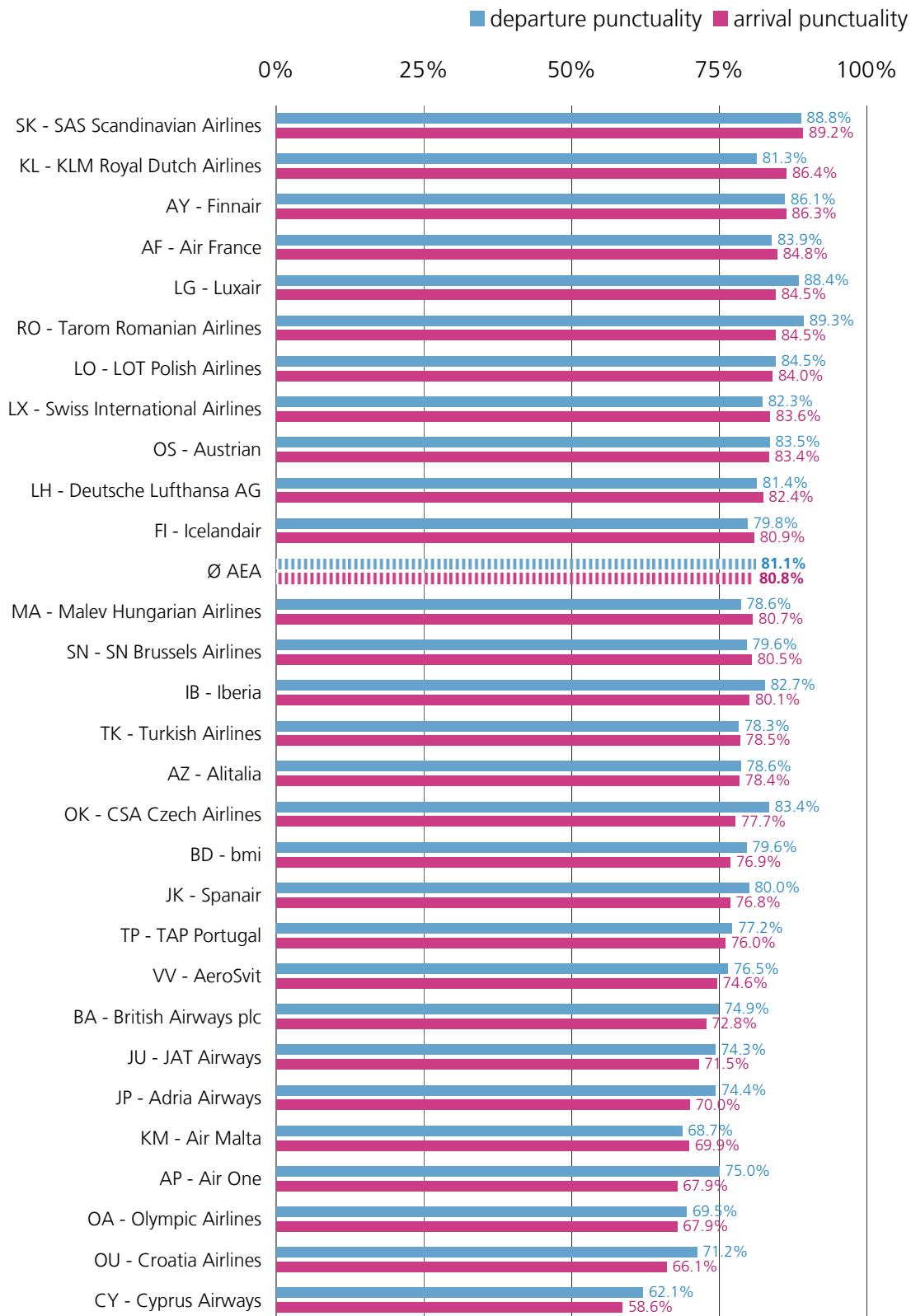
unpunctual departures – and that is combined with the lowest documented average waiting time of half an hour.

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 short/medium haul flights are compared. SAS Scandinavian Airlines improved its performance and became the most punctual AEA airline with an arrival punctuality of 89.2% in the 2008 summer season. The least punctual airlines on the other hand only managed to obtain arrival punctuality below 70%. All in all, 11 AEA airlines reached an above-average punctuality level but 18 were performing lower than average.

The European Regions Airline Association (ERA) reports an overall departure punctuality for the year 2008 of 85% (2007: 84%), based on data from nearly 1.8 million flights by its 30 member airlines during this period.

Figure 7-4: AEA airline punctuality performances in summer 2008

Source: AEA



7.1.2 Delays due to air traffic flow management

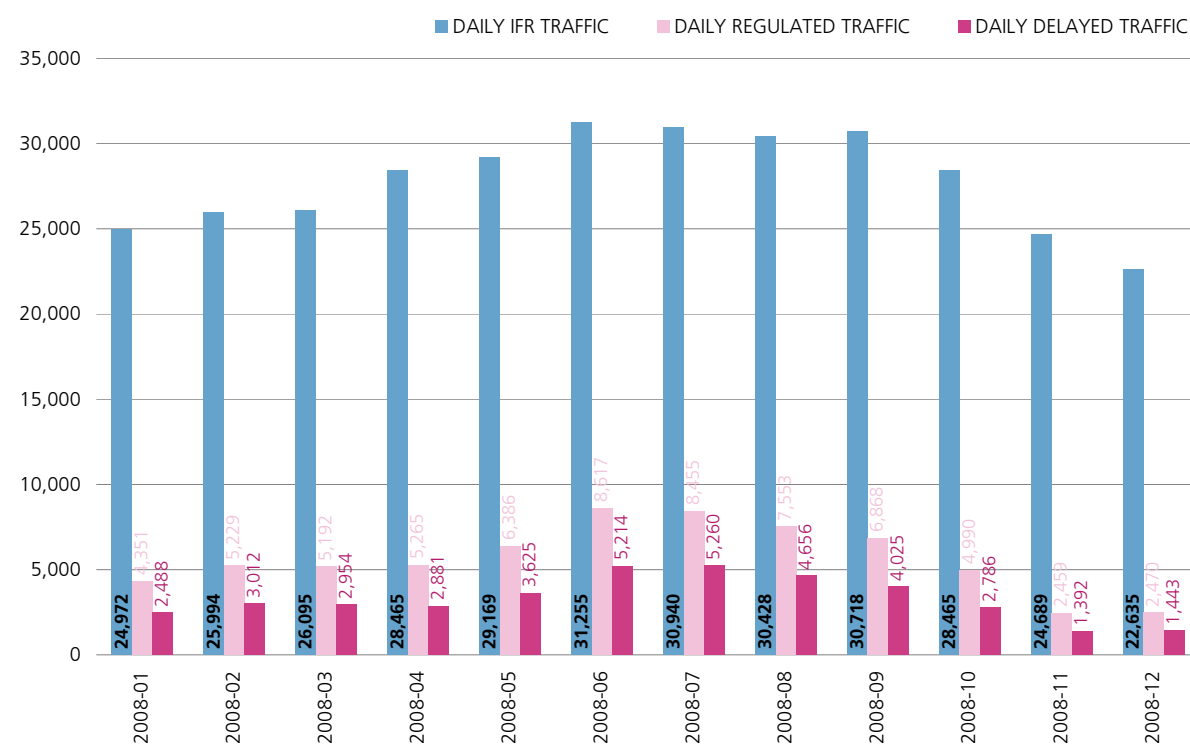
Airspace and airports - infrastructure with a limited capacity - are made available to the users such that they match the users' needs as well as possible. In order to reconcile fluctuations in capacity and the demand at different times and in different places, harmonisation intervention is often necessary. In this way, overloads are avoided and, at the same time, the use of the resource capacity available is maximised for economical reasons. The mechanism of this harmonisation is better known as "Air Traffic Flow and Capacity Management". The Flow Management part of this is handled by the Central Flow Management Unit (CFMU) in Europe, or the ECAC region. This unit is operated by Eurocontrol in Brussels.

The CFMU regulates the air traffic in the case of a threat of scarce resources at destination airports or in the airspace leading there primarily by imposing take-off delays for aircraft still on the ground. This avoids aircraft having to wait in the air for reasons of capacity. Waiting due to such delays at the departure airport has both economical and ecological advantages. These departure delays are better known to the customer as 'airway slot'.

During the summer (here: time between May and October) of 2008, the average ATFM delay for IFR movements was 2.8 minutes per flight, of which 2 minutes were attributed to the en-route segments, well above the Provisional Council target of one minute en-route delay per flight. Compared to last year's summer, daily en-route delays increased by 26% while airport delays slumped by 21%.

Figure 7-5: Number of daily regulated and delayed flights per month in 2008

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



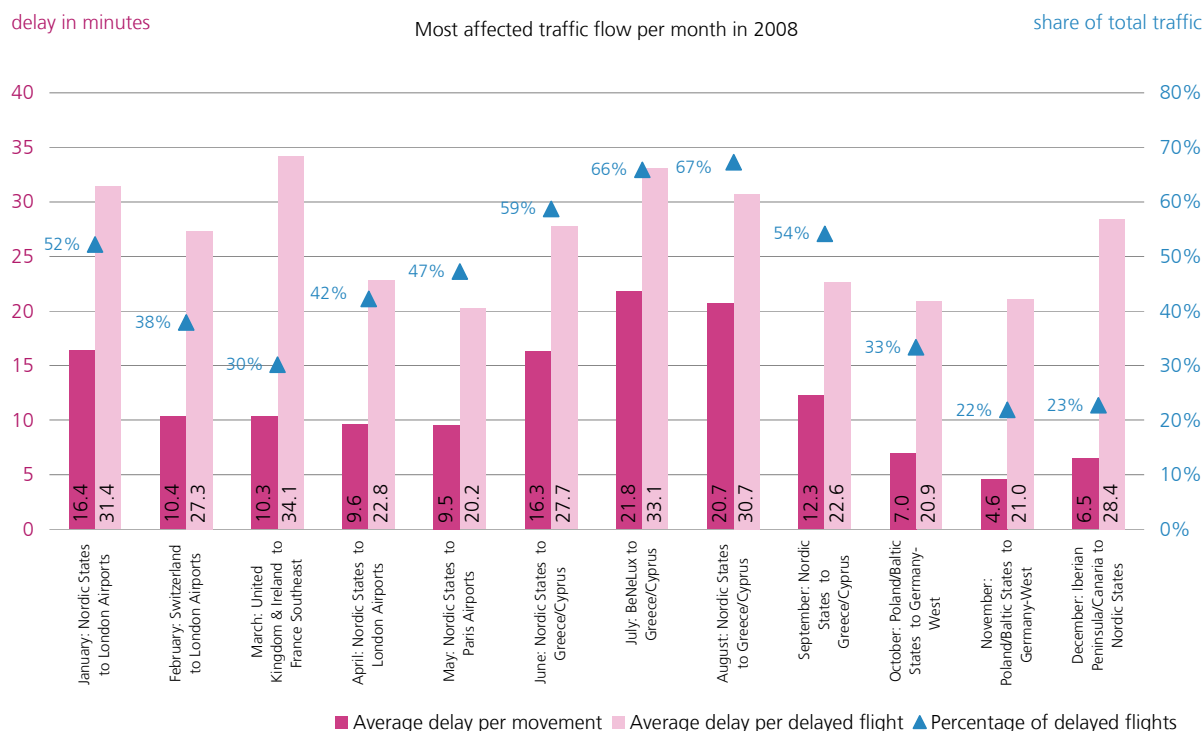
After the strong growth in IFR traffic between the summer periods 2007 and 2006 of over 5%, the number increased by just 1% in 2008, which indicates the beginning slowdown in the industry's results and which mirrors the retarded increase in ATFM-caused delays. In 2008, Eurocontrol registered a moderate increase in total ATFM regulation-caused delays of 8.8% (+22.2% in 2007 vs. 2006) with the average daily ATFM delays rising from 76,511 minutes in 2007 to 83,260 minutes in 2008. The month with the highest ATFM delayed traffic proportion was July with 5,260 flights per day. Front-runner was the 26th of July 2008 with an average delay of 7 minutes for 27,557 flights due to ATC capacity, weather and staffing issues, as the CFMU reported in its summer review. The next day went down in history as the peak day in terms of traffic handled with 34,476 flights and an average of 5 minutes of delay for all flights.

Most affected traffic flows

Eurocontrol's effect on the traffic flow control cannot be directly measured due to the mode of action. With its intervention, Eurocontrol optimises the use of resources by avoiding conflicts in the airspace or at the destination airport at an early stage. This benefits the entire network performance. However, this positive effect cannot be measured in comparison to a non-regulated case. But waiting times imposed on individual traffic participants for regulating the traffic as a whole are measurable. Since the imposing of waiting times on the ground ("ground delays") is a last resort and is only used when alternative traffic flow regulation measures (such as altering the route around congested regions or assigning different flight altitudes than otherwise desired) would not be effective, a high frequency of these indicates the most heavily overloaded areas of air traffic control. Figure 7-6 shows the monthly leaders in imposed traffic flow regulation. The list reveals the generally increased probability of flights coming from northern Europe being affected by delays. The flows from Benelux and Scandinavia to Greece/Cyprus turn out to be the most affected in the summer time – which is no surprise because those flights have to pass the busy middle of Europe in order to be able to land at the heavily demanded airports in the warm water destination regions. The result was that more than half of the flights on these flows between June and August 2008 were delayed by the CFMU and the average delay was beyond 15 minutes for all flights on these relations, which represents the limit defining unpunctuality.

Figure 7-6: Monthly most affected traffic flows 2008

Source: Eurocontrol/CODA: Delays to Air Transport in Europe –Dezember 2008. Brussels, Belgium. 2008



7.1.3 Baggage punctuality

The Association of European Airlines (AEA) reports regularly on the number of delayed baggage items. Twenty-nine airlines provided related data for the summer period 2008, including the time between April to October. During this period, 238,424,049 passengers were enplaned by these airlines, but 3.3 million pieces of baggage were delayed in reaching their owners. According to the AEA, 85% of delayed bags are delivered to the customer within 48 hours. This figure is based on all baggage for which a report was made. Information about subsequent delivery and/or compensation is not available from the association. The following diagram illustrates the change on 2007 for the relative frequency of such reports lodged with the participating AEA airlines. Whereas the first quarter's level of baggage delay shows no significant changes in 2008, AEA reported an increase in service quality for the summer period 2008. The number of temporary missing bags, i.e. not available for collection on arrival, decreased to 13.8 per 1,000 passengers, compared to 17.0 for the previous summer. As with airline punctuality, it is to be expected that the most contributing effect for this recovery is based on the reduced capacities as reaction to the slowing increase in passenger demand starting in summer 2008 and the sharp downturn later on. With these capacity and demand reductions there is temporarily less pressure on the baggage delivery systems resulting in better performance parameters.

Figure 7-7: Baggage delay remains at last year's level with AEA airlines

Source: AEA



Among the participating AEA airlines in summer 2008, late arrival of baggage is particularly frequent with bmi (24.5 delayed bags per 1,000 passengers) and Air France-owned KLM (20.1 delayed bags per 1,000 passengers). Best performance regarding baggage delivery showed Ukraine-based AeroSvit and Air Malta with a ratio of 3.6 and 4.3 late bags per 1,000 passengers.

According to SITA, one of the world's leading air transport communication and IT solution service providers, and the WorldTracer system, a fully automated system for tracing lost and mishandled baggage which is in operation for more than 400 leading airlines worldwide, around 98% of all 2.25 billion pieces of checked baggage reach their owners at the arrival airport without any problems. Only 0.57 bags per thousand passengers, or three per cent of 42 million mishandled bags in 2007, form the total loss of baggage. The most critical process is transfer baggage handling, which causes nearly half of all reasons for complaint. Because of the total loss to the industry of 3.8 billion US\$ in 2007 for tracing and reimbursements, SITA expects that all baggage handlers will improve their operations, for instance with the help of the IATA's Baggage Improvement Programme (IATA-BIP), which addresses the following key performance drivers: integration of baggage control and departure control systems, staff training, information sharing, improved read-rates through better bar-coded baggage labels and increased passenger awareness of the surplus resulting from early check-in. IATA targeted a halving of complaints due to late baggage at the 200 most affected airports of the world. Furthermore, SITA reported in its Baggage Report 2008 on likely future baggage trends, such as the adoption of radio frequency identification (RFID) tags for bags, which will both improve the bag tag read rates and reduce read errors; the intensified incentives from the airlines to travel with less baggage to improve delivery with simultaneous savings in fuel and thus environmental impact; and the expansion of so-called off-airport check-in facilities, for instance at intra-urban train stations or as courier services from door-to-door.

Table 7-1: Worldwide baggage mishandling overview

Source: IATA, SITA

Number of mishandlings	
Delayed bag files per 1,000 passengers enplaned	11.9
Damaged /pilfered files per 1,000 passengers enplaned	1.6
Lost/stolen/not located files per 1,000 passengers enplaned	0.57
Total costs to the industry for mishandled baggage	US\$ 3.8bn
Average cost per mishandling (in US\$)	
Actual Out of Pocket Costs / Reimbursement paid	
Delayed	88
Damage/Pilferage	104.5
Lost/stolen/unable to be located	198.5
Average delay (in days)	
Average time delayed baggage file is open (time between the creation and the closure of the file)	1.64
Breakdown of the irregularity coding for delayed baggage (Reasons for Loss coding as by SITA)	
Tagging error	3.0%
Failed to load	16.0%
Loading/offloading error	5.0%
Arrival station mishandling	8.0%
Transfer baggage mishandling	49.0%
Airport/customs/weather/space-weight restriction	5.0%
Ticketing error/bag switch/security/other	14.0%
Average number of bags per delayed baggage file	1.45

7.2 Consumer protection

7.2.1 Passenger rights in the European Union

In November 2008, European Commissioner responsible for transport Mr. Antonio Tajani activated an email address (passengersrights@ec.europa.eu) where passengers can obtain information on how to exercise their rights⁸³. Furthermore, a complaint form is available on the website for air passengers lodging a complaint with an airline and/or a national enforcement body⁸⁴.

7.2.1.1 Passenger rights according to Regulation (EC) No 261/2004

Regulation (EC) No 261/2004 of the European Parliament and of the Council of 11 February 2004 established common rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights and repealed Regulation (EEC) No 295/91.

⁸³ http://ec.europa.eu/europedirect/write_to_us/mailbox/index_en.htm

On the Commission's initiative, a meeting on the rights of passengers travelling by air was held in December 2008⁸⁵. The event, which brought together the trade and national administrations, reviewed the application of European regulations. The Commission announced its intention to adopt the corrective measures required early in 2009.

In 2008, the European Court of Justice was enabled to interpret several concepts of the abovementioned Regulation.

Regulation (EC) No 261/2004 provides for compensation to be paid to air passengers in the event of a flight cancellation. However, it does not apply to passengers departing from a third country to a Member State on a non-Community carrier. In its first judgements on air passenger rights, the Court had to decide whether a return flight from a third country to a Member State should be regarded as part of a flight departing from that Member State, at least where the outward and return flights were booked at the same time⁸⁶. Article 3 (1) (a) of Regulation (EC) No 216/2004 must be interpreted as not applying to the case of an outward and return journey in which passengers who have originally departed from an airport located in the territory of a Member State to which the EC Treaty applies travel back to that airport on a flight from an airport located in a non-member country. Thus, the Court underlines the independent nature of the two flights. The fact that the outward and return flights are the subject of a single booking has no effect on the interpretation of that provision.

In its decision concerning technical problems⁸⁷, the Court had to interpret whether the technical problems which led to the cancellation of the flight were covered by 'extraordinary circumstances' which exempt from the obligation to pay compensation. In its judgement the Court finds that a technical problem in an aircraft which leads to the cancellation of a flight is not covered by the concept of 'extraordinary circumstances', unless that problem stems from events which, by their nature or origin, are not inherent in the normal exercise of the activity of the air carrier concerned and are beyond its actual control and which would have to be proven by the Carrier. Consequently, technical problems which come to light during maintenance of aircraft or on account of failure to carry out such maintenance do not constitute, in themselves, 'extraordinary circumstances'. An 'exceptional circumstance' would be the case, for example, in the situation where it was revealed by the manufacturer of the aircraft comprising the fleet of the air carrier concerned, or by a competent authority, that those aircraft, although already in service, are affected by a hidden manufacturing defect which impinges on flight safety. The same would hold for damage to aircraft caused by acts of sabotage or terrorism.

⁸⁴ http://ec.europa.eu/transport/passengers/air/doc/complain_form/complaints_form_en.pdf

⁸⁵

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1880&format=HTML&aged=0&language=EN&guiLanguage=en>

⁸⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62007J0173:EN:HTML>

⁸⁷ <http://curia.europa.eu/en/actu/communiqués/cp08/aff/cp080100en.pdf>

Various National Courts have requested that the European Court of Justice make a ruling in the distinction between delays and cancellations. These references made by the National Courts are still pending with the European Court of Justice.

Regulation (EC) No 261/2004 obliges Member States to nominate or create "National Enforcement Bodies", whose role is to monitor and verify that transport operators treat all passengers in accordance with their rights. They are also authorised to impose penalties on airlines violating the Regulation as a future deterrent. Passengers who believe they have not been treated correctly should contact the body in the country where the incident took place. However these bodies are not directly responsible for enforcement of claims 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 7-2: National Enforcement Bodies

Source: DG TREN

Member States	Organisation and 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	[Enforcement] Direction generale Transport aerien Directoraat-generaal Luchtvaart CCN - 2eme etage -2de verdieping Rue du progres 80 Bte 5 Vooruitgangstraat 80 Bus 5 BE - 1030 BRUXELLES passenger.rights@mobilite.fgov.be	[Passenger Complaints] SPF Mobilite et Transports Denied Boarding Authority Cellule de Communication Externe City Atrium . Rue du Progres 56 BE - 1210 BRUXELLES Fax : + 32 2 277 40 73 passenger.rights@mobilite.fgov.be www.mobilite.fgov.be/fr/air/passag.htm
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 27 Pindarou Street ALPHA Business Centre CY - 1429 NICOSIA	Tel. : +357 22 404150 Fax : +357 22 766552 director@dca.mcw.gov.cy
Czech Republic	Civil Aviation Authority Airport Ruzyn. CZ - 160 08 PRAHA 6	Tel.: +420 225 422 267 Fax: +420 225 421 990 caa@caa.cz
Denmark	Statens Luftfartsvesen (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	Tel. : +358 9 77261 Fax : +358 9 7726 7557 posti@kuluttajavirasto.fi www.kuluttajavirasto.fi Tel. : +358 10 36 65200 krill@oikeus.fi www.kuluttajariita.fi Tel.: +358 9 4250 11 Fax : +358 9 4250

	P.O.Box 186 FI - 01531 VANTAA	2898 www.ilmailuhallinto.fi www.civilaviationauthority.fi
France	DGAC-Direction generale de l'aviation civile Direction du transport aerien Mission du droit de passagers Bureau des passagers aeriens 50, rue Henry Farman FR - 75720 PARIS CEDEX 15	Tel. : +33 1 58.09.39.79 Fax : +33 1 58.09.38.45 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
Greece	Hellenic Civil Aviation Authority Air Transport and International Affairs Div Air Transport Economics Section D1/D P.O.B. 73751 EL - 16604 HELLINIKO	Tel. : +30 210 891.6150 Fax : +30 210 891.6193 +30 210 894 7132 d1d@hcaa.gr
Hungary	[Enforcement] Nemzeti Kozlekedesi Hatosag Legikozlekedesi Igazgatosag /CAA Budapest Ferihegy I. HU -1675 BUDAPEST, PF 41 Tel.: +36 1 296 9502 Fax.: +36 1 296 8808 ugyfelszolgalat.li@nkh.gov.hu	[Passenger Complaints] Nemzeti Fogyasztovedelmi Hatosag Hungarian Authority for Consumer Protection Jozsef krt.6. HU - 1088 BUDAPEST 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 (CRPC) 157 K. Valdemara street LV - 1013 RIGA	Tel. : +371 67388624 Fax : +371 67388634 ptac@ptac.gov.lv
Lithuania	Civil Aviation Administration Rod.n.s kelias 2 LT - 02188 VILNIUS	Tel. : +370 5 2739038 Fax : +370 5 2739237
Luxembourg	Direction de la Consommation du Ministere de l'Economie et du Commerce exterieur 19 - 21, boulevard Royal L - 2449 LUXEMBOURG	Tel. : +352 2478 4135 Fax : +352 22 16 07 passagersaeriens@eco.etat.lu 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 www.ulc.gov.pl/ kancelaria@ulc.gov.pl
Portugal	Instituto Nacional de Aviacao Civil (INAC) Rua B, Edificios 4, 5 e 6 Aeroporto da Portela PT - 1749-034 LISBOA	Tel. : +351(21)842-3500 Fax : +351(21)847-3585

Romania	National Authority for Consumer Protection 72, Aviatorilor Blvd RO - 011865, Sector 1, BUCHAREST	Tel. : +4021 312 1275 Fax : +4021 314 3462
Slovakia	Slovenska obchodna in.pekcia (Slovak Trade Inspectorate) ustredny in.pektorat (Central Inspectorate) Prievozska 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 www.mzp.gov.si
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 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 HOOFFDORP loket@ivw.nl	P.O.BOX 90653 NL - 2509LR DEN HAAG Tel. : +31 884 890 000 Fax : +31 704 562 424 denied-boarding@ivw.nl
United Kingdom	[Enforcement] Civil Aviation Authority CAA House 45-59 Kingsway UK - LONDON WC2B 6TE Tel. : +44 20 7379 7311 Fax : +44 20 7944 2190	[Passenger Complaints] Air Transport Users Council CAA House 45-59 Kingsway UK - LONDON WC2B 6TE Tel. : +44 20 7240 6061 Fax : +44 20 7240 7071 http://www.auc.org.uk/

7.2.1.2 Passenger rights according to Regulation (EC) No 1107/2006

Since 26 July 2008, the provisions 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 air⁸⁸ have been fully applicable to offer persons with reduced mobility non-discriminating access to air transport. In general, this Regulation gives persons with reduced

⁸⁸ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:204:0001:0009:EN:PDF>

mobility four basic rights when they use air transport: accessibility, non-discrimination, assistance and information.

As part of the successive implementation of the Regulation, all airports within the European Union have to provide a specific set of free services for persons with a disability or reduced mobility adapted to their needs. On flights from EU airports and on flights departing from an airport situated in a third country to an airport situated in the territory of a Member State operated by a Community air carrier, airlines are obliged to provide certain services, such as the carrying of wheelchairs or guide dogs, free of charge.

In the run-up to the phasing in of the Regulation, a conference and a workshop was held in Brussels bringing together all stakeholders concerned⁸⁹.

To enforce these provisions, passengers have the possibility to bring the matter to the attention of the airport manager or the air carrier. Also, a complaint can be lodged with the enforcement body in the Member State. A current list of the different National Enforcement Bodies overseeing the application of the common rules is updated by the Commission⁹⁰.

In August 2008, the Commission published a Communication on the liability of air carriers and airports in the event of destroyed, damaged or lost mobility equipment belonging to passengers with reduced mobility when travelling by air⁹¹. The purpose of this Communication is to report on the outcome of a study analysing the scope of Article 12 of the abovementioned Regulation concerning compensation and the possibility to enhance existing rights under Community, national or international law.

The fact that the applicable legal framework differs between airports and airlines results in two big differences in the nature of their respective liability: first of all, as a rule, airport liability is based on a proven fault by the airport managing body while air carriers are responsible. Secondly, airport liability is not limited, but airline liability is. Thus, the Commission encourages airlines to voluntarily waive their current liability limits in order to bring the amount of compensation closer to the actual value of the mobility equipment. Furthermore, the Commission will monitor the compliance with Community law, assess the actual developments and put forward appropriate proposals for harmonisation on the international and European levels.

⁸⁹ Minutes of plenary European conference and the workshop are available at the portal <http://www.apr.europa.eu>

⁹⁰ http://ec.europa.eu/transport/air/index_en.htm

⁹¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0510:FIN:EN:PDF>

7.2.2 Misleading airline ticket websites

Following an EU-wide internet sweep against misleading advertising and unfair practices on airline ticket selling websites in 2007, a mid-term report concerning enforcement authorities' investigations and their compliance-check with existing consumer legislation was published in April 2008⁹². Seven months after intensive investigative and enforcement work undertaken by the national authorities, the available data indicates that over 50% of the sites have been corrected although many websites seem to have multiple problems and breaches of the law on several fronts (misleading indication of price, lack of information on availability of offers, irregularities related to contract terms etc.). However, enforcement is taking longer than originally foreseen in cross-border cases.

Enforcement work will be intensified by the Commission together with National Authorities, with a view to a further reporting back after 1st May 2009⁹³. Most companies agreed to rapidly change their websites, when informed about the misleading parts they contained, which shows that a majority of companies are willing to cooperate to improve consumer rights. Companies not complying with the law are being pursued by enforcement authorities either in administrative or legal proceedings.

In December 2008, the Commission published a 30-point checklist of consumer rights for the airline representatives which all websites selling air tickets must respect⁹⁴. Following industry feedback, the checklist has been simplified and consolidated to include around 14 core questions. The Commission has been monitoring developments in the airline sector and will produce an assessment of the need for any further action at that time including infringement procedures if necessary.

7.2.3 Price transparency for consumer protection

As already mentioned earlier - in the point 5.2 (Internal Market) of the section "Regulatory Development" - the Regulation (EC) No 1008/2008 on common rules for the operation of air services in the Community⁹⁵ entered into force on 1st November 2008.

Now full information about the final price to be paid must be provided to customers. Airlines have to give details on the exact fare plus the taxes, airport charges and other charges, surcharges and fees. Final prices include all applicable fares, taxes or other fees that cannot be

⁹² http://ec.europa.eu/consumers/enforcement/sweep/sweep_report2008.pdf. Part II of the report contains the different national reports received from participating and non-participating national authorities in the form of individual country fiches.

⁹³ <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/722>

⁹⁴

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1857&format=HTML&aged=0&language=EN>

⁹⁵ http://ec.europa.eu/transport/air_portal/internal_market/doc/reg_1008_2008.pdf

avoided, and are foreseeable at the time of the publication of the price. Moreover, the Regulation foresees that optional price supplements shall be communicated in a clear, transparent and unambiguous way at the start of any booking process and their acceptance by the customer should be on an "opt-in" basis.

These rules apply to all flights within the EU and to flights with all companies departing from an EU airport.

8 Aircraft and Engine Manufacturers

8.1 The Year in Brief

Boeing strike

Aircraft manufacturer Boeing was seriously impacted by a strike of more than 26,000 of its employees for about eight weeks between September and November. The strike occurred after negotiations concerning job security and wages failed on 6th September. An agreement between the machinist's unions and Boeing was reached on 1st November, with full production back on 10th November. Analysts estimated that the strike cost Boeing US-\$ 2 billion in profits for the year 2008 and the delayed deliveries of aircraft had repercussions on European airlines and consumers as well. For instance, Ryanair, as a major Boeing customer, had to delay the start of several routes, as aircraft did not arrive in the fleet as originally planned.

Insolvencies in the market for general aviation aircraft and engines

The difficult economic situation in 2008 also left its marks in the aviation industry. Four manufacturers engaged in the production of airframes and engines declared insolvency in 2008.

Adam Aircraft, based in Colorado and Utah, went into Chapter 7 liquidation in February after it failed to secure capital to develop and certify its A700 very light jet and continue production of its A500 piston aircraft. At the time of bankruptcy, the company is reported to have secured 322 orders, options and letters of intent for its very light jet.

Grob Aerospace from Mattsies, Germany filed for insolvency in August 2008. The manufacturer is engaged in the area of trainer aircraft, the development of Bombardier's Learjet 85 and has developed the light business jet G180 SPn manufactured from carbon-composite materials, also capable of landing on unpaved runways. Due to a crash of a prototype SPn jet in 2006, the certification process took longer than expected with additional cash requirements, which finally could not be fulfilled by the manufacturer. While most employees have been released in the meantime, the insolvency administrator is confident that new investors can be found in 2009 and part of the company can be restructured.

Eclipse Aviation, a manufacturer of very light business jets based in Albuquerque, New Mexico, filed for Chapter 11 bankruptcy protection on 25th November 2008 after liabilities had increased to around US-\$ 1 billion. Although more than 250 very light jets were delivered, the company did not generate positive cash-flows and could not secure financing for further operations. Shortly before, Eclipse was troubled after its main customer DayJet declared insolvency in September 2008. The aircraft manufacturer was sold in January 2009 and is expected to continue operations.

Finally, Thielert, a German manufacturer of diesel/jet fuel powered piston engines for general aviation aircraft, declared insolvency on 24th April after potentially upcoming illiquidity threatened its business operations. Media reported that the liquidity crisis emerged from a delay in delivery of engines and negotiations with creditors were undertaken in early April. German newspaper "Handelsblatt" also reported potential problems with external accounting for the years 2003 to 2005, where reportedly "aggressive accounting" was applied in order to increase revenues. Rumours about alleged manipulations of accounts apparently discouraged investors and finally led to insolvency. However, as the company offers innovative products highly demanded on the world market, the prospects for the company continue to be positive. By June, full production of engines had resumed and on 24th July potential investors declared their interest in acquiring the company. For the full year 2008, the insolvency liquidator announced a positive financial result and that all jobs in production and development had been secured through the process.

Boeing 777 Freighter First Flight

On 14th July 2008, Boeing chief pilot Suzanna Darcy-Henneman took the Boeing 777 freighter into the air for the first time. This derivative of the widely successful twin-engine, long-range jetliner is expected to provide cargo operators throughout the world increased fuel economy in the category of 100t-max. payload freighters and should also provide at least some relief to airport neighbours due to its quieter engines, if airlines decide to use this aircraft as a replacement for ageing DC-10/MD-11 freighters. The first aircraft is expected to be delivered to Air France in February 2009. At the end of 2008, Boeing had 100 orders, options and letters of intent for this aircraft type in the books. Airbus' slightly smaller A330-200 freighter with a maximum payload of about 70t is expected to enter service in 2010 and has so far secured 77 orders, options and letters of intent.

Sukhoi Superjet First Flight

After the rollout in 2007, the Sukhoi Superjet, a regional jetliner seating 75 to 95 passengers made its first flight on 19th June 2008. The aircraft will compete with Embraer's E-Jets, Bombardier's CRJ and CSeries as well as the Mitsubishi RJ and the Chinese Flying Phoenix on the market for regional jets. At the end of 2008 a total of 262 orders, options and letters of intent for the Sukhoi Superjet were reported.

ARJ21 First Flight

Also the Chinese Regional Jet ARJ21 "Xiangfeng" ("Flying Phoenix") made its first flight. On 28th November, the aircraft took off from Shanghai. For this aircraft, the manufacturing consortium ACAC has received a total of 209 orders, options and letters of intent, mainly from Chinese airlines.

Official Launch of Bombardier's CSeries

On 13th July, Bombardier announced the official launch of its CSeries regional jet program. Although in discussion for almost a decade, the whole project was delayed due to an apparent lack of interest by potential customers. After receiving a letter of interest from Lufthansa for 60 aircraft, the project was formally launched. The jet should enter service in 2013 and compete with Embraer's E-Jets with 100-120 seats and has the potential to extend up into the range of 149-seater aircraft. It is expected that the CSeries jet will be among the first featuring a geared turbofan engine, which should reduce noise emissions and fuel consumption considerably. Besides Lufthansa, the Mongolian Eznis Airways has also signed a letter of intent for 7 aircraft.

Airbus: A380 deliveries on schedule

After the much discussed delivery delay of the Airbus A380, Airbus managed to reach its initial target of 12 deliveries in 2008. By the end of 2008, 17 aircraft had been produced, with six in service with Singapore Airlines, four with Emirates and three with Qantas, while another four are currently being retained by Airbus for testing and development. By the end of 2008, Airbus had 245 remaining orders, options and letters of intent from 18 customers.

8.2 Aircraft market overview – orders

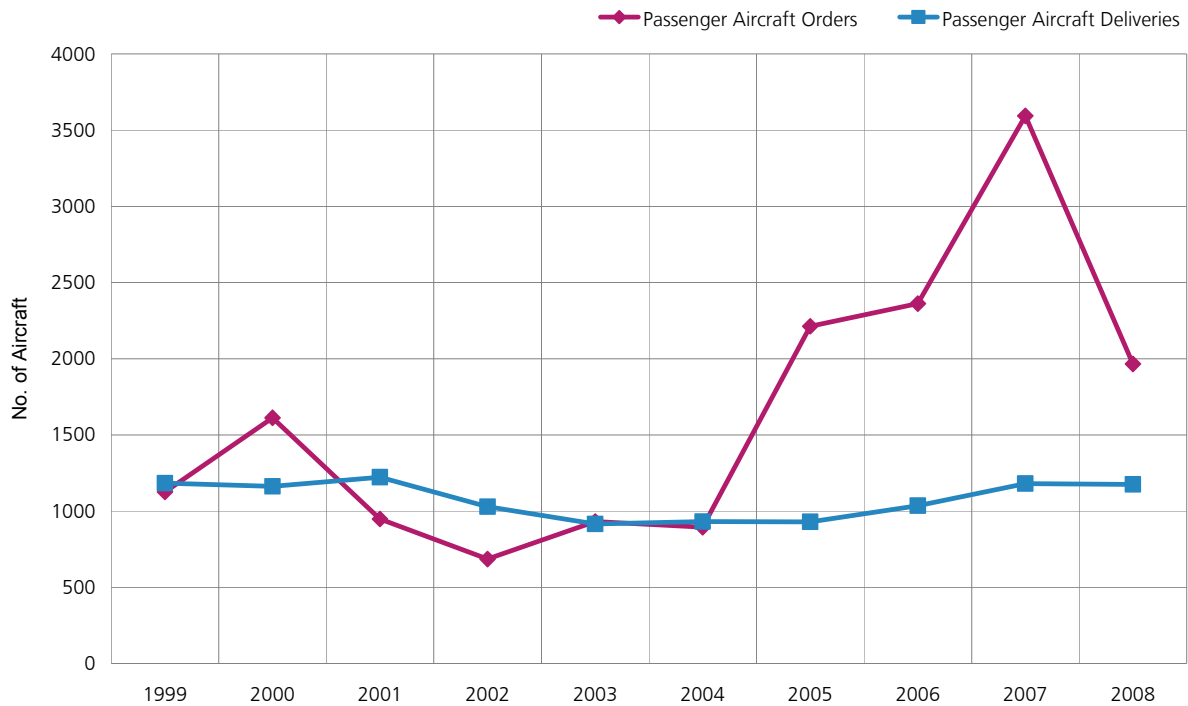
The market for civil aircraft in 2008 showed a dichotomous nature. While in the first half of the year, extremely high oil prices drove airlines to modernise their fleet to operate more economically, the second half the financial crisis created an extremely difficult situation for airlines in terms of revenues. A serious drop in several segments of passenger and cargo demand led airlines to cautious planning and more reserved spending. In total, orders for passenger aircraft dropped by more than 45% from 3593 in 2007 to 1965 in 2008.

The demand for new cargo aircraft has declined by more than 90% - in 2008, only 13 new cargo aircraft were ordered, compared to 184 in 2007. The new orders placed in 2008 mark the lowest value since 1994, when only 10 cargo aircraft orders were placed.

The ten-year time series in Figure 8-1 shows the phenomenon of cyclical aircraft orders that have already been visible for a long time in this industry. During economically difficult times for airlines, new orders drop enormously, as for instance can be seen in 2002. On the other hand, during extremely positive business years, new orders skyrocket, as for instance in 2007. Back in 2007, being on a peak of air transport demand, the demand for new aircraft also reached a peak. With a difficult economic situation, rather pessimistic expectations for the future and a limited liquidity available for new investments, many airlines act very cautiously, as was the case in 2008.

Figure 8-1: Passenger aircraft orders and deliveries from 1999 to 2008

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



Deliveries, in contrast, remain fairly stable compared to orders, as manufactures cannot easily adapt production capacity. On the other hand, it often happens that aircraft ordered during peak years will be delivered in times of recession.

Table 8-1: Geographical breakdown origin of commercial passenger and cargo aircraft orders in 2008 by operator area

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

Operator Area	Aircraft Orders	Percentage Share
North America	224	11.3%
Asia	531	26.8%
Europe	390	19.7%
Thereof:		
- EU-27	302	15.3%
- Non-EU-Europe	88	4.4%
Middle East	407	20.6%
Latin America and Caribbean	143	7.2%
Oceania	7	0.4%
Africa	59	3.0%
Subtotal	1761	89.0%
Unknown Area	217	11.0%
Total	1978	100.0%

In 2008, Asia was the most important market for commercial passenger and cargo aircraft, directly followed by the Middle East. In the Arabian Gulf area, despite the globally difficult economic situation, several carriers continue aggressive expansion strategies. The demand for new aircraft in North America plunged from 873 in 2007 to 224 in 2008, a drop of almost three quarters. It seems as if the rather cyclical behaviour of aircraft orders is continuing. Operators from EU-27 Member States almost halved their new orders in 2008 compared to 2007, when 577 orders were recorded by the manufacturers.

8.2.1 Aircraft orders by market segments, manufacturers and types

Overall, the number of new orders received and the value of newly ordered aircraft nearly halved. However, among market segments and manufacturers the results differ. Among the four major manufacturers Airbus, Boeing, Embraer and Bombardier, the North American manufacturers suffered the sharpest decline with more than 50% reduction in new order uptake and order value. Airbus, in comparison, performed better than the overall market with a little more than 40% fewer orders compared to 2007 and about 39% less order value. Embraer from Brazil performed best among the top four manufacturers, with only a 19% decline in order numbers and a 13% decline in order value. The reason for this is the strong market position of the South American manufacturer in the segment for 80-120 seater aircraft with its series of "E-Jets" (Embraer 170/175 and 190/195). While the comparable types from Boeing (737-600) and Airbus (A318) are deemed as less economical and other competitors like Bombardier with its CSeries, Sukhoi with its Superjet and Mitsubishi with the Mitsubishi Regional Jet are not yet on the market, Embraer enjoys a virtual monopoly for an aircraft family in this size category.

After a very good year with 105 orders, the French-Italian manufacturer of turboprop aircraft ATR faced a severe decline with only 23 new orders in 2008.

Among the smaller manufacturers, RUAG from Switzerland is worth mentioning. RUAG acquired parts of the US/German aircraft manufacturer Fairchild Dornier after it went bankrupt in 2002. Among the projects followed by the new owners is the revival of the production of the DO228, a small turboprop aircraft used for regional passenger transport and special military missions. In 2008, RUAG received the first seven civil orders for the aircraft. The aircraft will be assembled at Oberpfaffenhofen, Germany, with parts produced at Hindustan Aeronautics in India.

Table 8-2: Cargo and passenger gross aircraft orders by manufacturer

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

Manufacturer	No of Aircraft Ordered in 2008	No of Aircraft Ordered in 2007	Absolute Change Year-over-Year	Relative Change Year-over-Year	Value of 2008 Orders in Million US-\$ (in 2008 list prices)	Value of 2007 Orders in Million US-\$ (in 2007 list prices)	Absolute Change Year-over-Year	Relative Change Year-over-Year
Airbus	913	1555	-642	-41.3%	110,403	180,723	-70,320	-38.9%
Boeing	653	1398	-745	-53.3%	71,821	168,549	-96,728	-57.4%
Embraer	145	179	-34	-19.0%	5,701	6,586	-885	-13.4%
Bombardier	109	250	-141	-56.4%	3,418	7,567	-4,149	-54.8%
Antonov	44	18	26	144.4%	660	244	416	170.5%
Sukhoi	25	12	13	108.3%	695	300	395	131.7%
ATR	23	105	-82	-78.1%	429	1,845	-1,416	-76.8%
Harbin	20	3	17	566.7%	80	12	68	566.7%
Tupolev	16	19	-3	-15.8%	704	836	-132	-15.8%
Xian	10	22	-12	-54.5%	60	132	-72	-54.5%
RUAG	7	0	7	-	29	0	29	-
CAIC	5	100	-95	-95.0%	100	3,000	-2,900	-96.7%
Ilyushin	3	43	-40	-93.0%	24	793	-769	-97.0%
Viking Air	3	26	-23	-88.5%	10	83	-73	-88.4%
Aircraft Industries - Let	1	3	-2	-66.7%	1	3	-2	-66.7%
Indonesian Aerospace	1	0	1	-	5	0	5	-
Utility Aerospace Industries	0	10	-10	-100.0%	0	68	-68	-100.0%
Total	1978	3743	-1765	-47.2%	194,139	370,741	-176,602	-47.6%

While in 2007 the highly acclaimed race for new orders between Airbus and Boeing was only decided very closely in the last quarter, in 2008 Airbus' new orders outnumbered Boeing's clearly by a margin of 260 aircraft. This is the second year in a row that Airbus received more orders than Boeing.

But as in the aircraft manufacturing industry as a whole, also Airbus had to face a drastic decline in new orders with a reduction around 40% for both the number of aircraft ordered and the list price order value. However, as can be seen in the following table, the decline in new orders differs among the types Airbus has in its product portfolio. The demand for the twin-aisle long-range A330 declined by less than 15%, as this aircraft is perceived to be very fuel-efficient and could therefore help airlines to save operating costs. On the other hand, the demand for A340 aircraft almost completely came to an end, as airlines prefer to opt for more economical twin-engine jets. Only two orders for the ultra-long-haul variant A340-500, from Nigerian carrier Arik Airlines, were received. Also, demand for the new types A330-200F and A350XWB declined strongly in 2008. The reason for this may be that all interested airlines had already secured delivery slots in 2006 and 2007, when these aircraft were offered for the first time. Additionally, only nine new Airbus A380s were sold in 2008. Apparently, airlines were rather reluctant to risk an investment of US-\$ 316 million a piece at list price under the currently difficult economic environment.

Table 8-3: 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	2008	2007	Percentage Change
A318/319/320/321	597	1017	-41.3%
A330-200/-300	95	136	-30.1%
A330-200F	11	66	-83.3%
A340-300/-500/-600	2	14	-85.7%
A350XWB	178	290	-38.6%
A380	9	32	-71.9%
Total	892	1555	-42.6%

Taking a look at the sales at Boeing, similarities to Airbus can be identified. For both manufacturers, the market for narrowbody short and medium-haul airlines declined by the same magnitude (-41.3% for Airbus' A320 family, compared to -42.7% for Boeing's 737NG).

Several new sales for the 767 were recorded, partly by those carriers hit by the delay in the 787 project, such as LAN Airlines and All Nippon Airways. There was not a single sale of a 747 in 2008, neither in the classic -400 version nor in the new -8 version. Airlines seem to be continuously reluctant to buy the new four-engine aircraft type.

Table 8-4: 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	2008	2007	Percentage Change
B737NG (-600/-700/-800/-900/-900ER)	477	832	-42.7%
B747-400F/ERF	0	0	-
B747-8	0	0	-
B747-8F	0	24	-100.0%
B767-300ER	29	3	866.7%
B767-300ERF	0	33	-100.0%
B777-200/-200ER/-200LR/-300/-300ER	53	115	-53.9%
B777-200LRF	1	28	-96.4%
B787	93	363	-74.4%
Total	653	1398	-53.3%

Cancellations

When looking at aircraft orders made in 2008, it is also important to mention the cancellations of firm orders that occurred. Airbus had to cope with 116 cancellations from commercial customers in 2008 – one cancellation more than in 2007. 80 cancellations were attributable to the A320 family, 65 of those ordered by the US-based airline Skybus, which declared bankruptcy in April 2008 and was subsequently liquidated. In comparison, Boeing had to accept only five cancellations.

Deferrals

During economically troublesome times, airlines often try to negotiate deferrals with the manufacturers. This helps them to conserve cash and to defer delivery of aircraft from times of low demand to better times.

In 2008, Airbus had to cope with the deferral of 101 aircraft, Boeing with 103 aircraft. This marks a sharp increase from 2007, when airlines deferred only 24 deliveries with Airbus and 7 with Boeing. On average, delivery dates are postponed between three and four years. However, in the case of Boeing it has to be noted that the deferrals were partially caused by the strike of more than 26,000 aircraft workers between September and November 2008.

Table 8-5: Order backlog (commercial customers) at 31st December 2008 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 2008 list prices)
Boeing	3655	454979
Airbus	3627	408111
Embraer	427	16228
Bombardier	263	8926
Tupolev	84	3659
Sukhoi	123	2874
CAIC	140	2800
ATR	150	2773
Antonov	148	2150
Viking Air	29	800
Ilyushin	24	576
Xian	52	312
Harbin	27	108
RUAG	7	29
Indonesian Aerospace	1	5
Aircraft Industries - Let	1	1
Total	8758	904332

The order backlog of Boeing and Airbus is about the same size when measured by the number of aircraft. However, Boeing's backlog at list prices is more than 10 per cent higher than Airbus', as Boeing received more orders for larger aircraft types. While both Boeing's and Airbus' order backlog grew in 2008, despite the financial crisis, the order books at Embraer and Bombardier shrank slightly compared to the end of 2007. ATR, the French-Italian manufacturer of regional turboprop aircraft, now has 150 orders left. At the end of 2007 the order book stood at 178.

Table 8-5 shows major new aircraft orders by airlines globally. The largest order by the number of aircraft came from China Aviation Supplies, which ordered 110 Airbus A320 aircraft. China Aviation Supplies is China's state-owned aircraft import corporation, which distributes aircraft among Chinese carriers. The second largest customer globally in 2008 was DAE Capital, the aircraft leasing division of Dubai Aerospace Enterprise, with an order of 100 aircraft in total, thereof 70 Airbus A320 and 30 Airbus A350XWB. The third largest order came from Etihad

Airways of Abu Dhabi, which ordered a total of 96 aircraft. The geographical composition of the largest customers of new civil aircraft in 2008 is another good indicator for expected future growth of civil aviation. The emerging markets of China, Arabia and Indonesia are prominently represented in this list.

Table 8-6: Major new aircraft orders globally 2008

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

Customer	Total no. of aircraft ordered in 2008	Type split
China Aviation Supplies	110	110x Airbus A320-200
DAE Capital	100	70x Airbus A320-200 30x Airbus A350-900XWB
Etihad Airways	96	35x Boeing 787-9 25x Airbus A350-1000XWB 20x Airbus A320-200 10x Boeing 777-300ER 6x Airbus A380-800
AWAS	75	75x Airbus A320-200
Lion Air	66	56x Boeing 737-900ER 10x ATR72-500
Aviation Capital Group	55	32x Boeing 737-700 23x Airbus A320-500
Air China	51	30x Boeing 737-800 20x Airbus A330-200 1x Airbus A321-200
Gulf Air	51	20x Airbus A330-300 16x Boeing 787-8 15x Airbus A320-200

Among the airlines from EU-27, the Italian carrier Air One ordered the largest number of new aircraft in 2007, with 34. The majority of these orders are for 22 Airbus A320-200 and the others for the brand new A350XWB, which will be delivered in the next decade.

Overall, the activity for new aircraft orders from airlines from the EU-27 Member States declined strongly in 2008 compared to 2007, when the four airline groups Lufthansa, British Airways, Wizz Air and Air France-KLM ordered 237 alone and all EU-27 carriers together ordered 577 aircraft. In 2008, the four carriers with most orders came to 113 orders altogether. All EU-27 carriers combined had 303 orders.

Table 8-7: 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 in 2008	Type split
Air One	34	22x Airbus A320-200 12x Airbus A350-800XWB
SAS	29	2x Boeing 737-800 13x Bombardier CRJ900ER NG 14x Bombardier Dash 8-400 NG
Air France	25	7x Boeing 777-300ER 11x Airbus A320-200 7x Airbus A321-200 (Type Swap)
easyJet	25	25x Airbus A320-200 (Type Swap)
Ryanair	17	17x Boeing 737-800
British Airways	17	2x Boeing 777-300ER 2x Airbus A318-100 (Type Swap) 2x Airbus A320-200 5x Embraer 190 6x Embraer 170ST
Aer Lingus	16	6x Airbus A330-300 6x Airbus A350-900XWB 4x Airbus A320-200
Lufthansa	14	2x Airbus A330-300 12x Embraer 195LR (Type Swap)

Orders for general aviation aircraft

In contrast to 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 can seat more than 500 passengers in a commercial airline configuration. The business jet market was hit by the financial crisis harder than the market for commercial jetliners. The number of orders for this market segment as a whole declined by more than half, 2007 market leader Cessna even suffered a three-quarter drop in orders from 2007 to 2008. Two business jet manufacturers had to declare bankruptcy in 2008: Adam Aircraft Industries, formerly based in Colorado, ceased operations in February and was subsequently liquidated. The company had manufactured the A500 twin piston engine aircraft and the A700 very light jet. The company was purchased by Russian investor AAI; however it is unclear whether the certification and development process of the A700 VLJ will be continued. Grob Aerospace from Germany declared insolvency in August 2008. After the crash of the second prototype VLJ SPn in 2006, the project was considerably delayed and the manufacturer ran out of cash. At the beginning of 2009, at least two potential investors are interested in taking over assets from the bankrupt company and develop the SPn project further.

Table 8-8: Orders for Business Jets 2007/2008

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

Manufacturer	No. of Business Jets ordered in 2008	No. of Business Jets ordered in 2007	Percentage Change
Hawker Beechcraft	105	136	-22.8%
Bombardier	104	57	82.5%
Cessna	94	370	-74.6%
Embraer	54	170	-68.2%
Gulfstream Aerospace	51	15	240.0%
Diamond Aircraft Industries	29	1	-
Dassault Aviation	26	22	18.2%
Eclipse Aviation	21	179	-88.3%
Airbus ¹	0	33	-100.0%
Boeing ²	0	24	-100.0%
Honda	12	1	-
Israel Aerospace Industries	3	2	50.0%
Adam Aircraft Industries †	0	50	-100.0%
Grob Aerospace † †	0	35	-100.0%
Total	499	1095	-54.4%

† Adam Aircraft Industries declared bankruptcy in February 2008 and was subsequently liquidated

† † Grob Aerospace filed for insolvency in August 2008

¹ The 2008 figure for Airbus includes one A340-500 and one A350-900XWB to be configured as business jets

² The 2008 figure for Boeing includes three 747-8 and one 787 to be configured as business jets

8.2.2 Aircraft deliveries by market segments, manufacturers and types

The sharp decline in the number of new aircraft orders is not yet reflected in deliveries. In 2008, 1176 passenger aircraft were delivered, only 5 aircraft short of the figure in the previous year. If it had not been for the strike at Boeing, the record number of 1222 passenger aircraft deliveries in 2001 could even have been achieved. The number of new cargo aircraft delivered in 2008 even hit the lowest mark since 1973. Also due to the strike at Boeing, only 16 new cargo aircraft were delivered globally in 2008, compared to 28 in 2007.

Airbus was clearly the largest manufacturer of commercial jets going by the number of deliveries. Airbus was clearly helped by the strike at Boeing from September to November, during which the US manufacturer delivered only 21 aircraft. This resulted in a total of 362 for Boeing vs. 462 for Airbus. Taken into account are only deliveries of passenger and cargo aircraft delivered to commercial operators. The strike at Boeing resulted in a drop in deliveries of almost 17%, while Airbus increased deliveries by almost 4%. Interestingly, Embraer of Brazil delivered 25% more aircraft in 2008 than in 2007. This owes to the strong position of its series of "E-Jets", which are used by an increasing number of carriers. This type is also popular with European network carriers, as British Airways, KLM and Lufthansa will introduce it into their fleets in future.

Table 8-9: Passenger and cargo aircraft deliveries to commercial operators by manufacturer 2007/2008

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

Manufacturer	No. of Aircraft Delivered			Value of Aircraft Delivered at average list prices, in million US-\$		
	2008	2007	Percentage Change	2008	2007	Percentage Change
Airbus	462	445	3.8%	47735	40765	17.1%
Boeing	362	435	-16.8%	43347	48608	-10.8%
Embraer	155	124	25.0%	5954	3767	58.1%
Bombardier	113	112	0.9%	3491	3478	0.4%
ATR	47	42	11.9%	876	716	22.4%
Xian	8	4	100.0%	48	36	33.3%
Tupolev	7	6	16.7%	308	227	35.7%
Harbin Embraer	6	7	-14.3%	146	88	65.7%
Ilyushin	2	4	-50.0%	42	105	-60.4%
Harbin	2	0	-	8	0	-
Aircraft Industries - Let	2	4	-50.0%	2	4	-50.0%
Antonov	0	1	-100.0%	0	9	-100.0%
Total	1166	1184	-1.5%	101958	97803	4.2%

While the number of aircraft delivered by Airbus increased by only 3.8%, the value of these deliveries, measured by 2008 average list prices, increased by 17.1%. This is because more wide-

body aircraft were delivered, among them 12 A380, with a list price of 316 million US-\$ each. Embraer, as the third largest aircraft manufacturer, increased its revenues from delivered aircraft to about 6 billion US-\$, an increase of 58.1%. Also, Embraer is selling an increasing number of larger aircraft. It delivered 155 jets from the E-Jet family, with list prices between 36 and 40 million US-\$.

The Russian aircraft industry has somewhat recovered, as Tupolev delivered 7 Tu-204/Tu-214/Tu-234 aircraft, up from five aircraft of this type a year earlier.

Table 8-10: Deliveries of Airbus aircraft to commercial operators, breakdown by type

Aircraft Type	2008	2007	Percentage Change
A318/319/320/321	371	361	2.8%
A330-200/-300	69	66	4.5%
A340-300/-500/-600	10	11	-9.1%
A380	12	1	-
Total	462	439	5.2%

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

Table 8-11: Deliveries of Boeing aircraft to commercial operators, breakdown by type

Aircraft Type	2008	2007	Percentage Change
737NG (-600/-700/-800/-900/-900ER)	281	325	-13.5%
747-400F/ERF	14	16	-12.5%
767-300ER	7	8	-12.5%
767-300ERF	0	3	-100.0%
777-200/200ER/-200LR/-300/-300ER	60	83	-27.7%
Total	362	435	-16.8%

The ongoing growth of the emerging markets in Asia is also reflected in the number of deliveries. A total of 73 Airbus aircraft were delivered to China in 2008, 27 went to India and 16 to Malaysia. China was also the overall strongest geographical market, followed by operators from Germany with 37 and the United Kingdom with 34 deliveries. The most aircraft delivered to a single operator were 22 for easyJet, followed by 17 to China Eastern and 16 to the Air Asia Group.

Boeing's strongest market for deliveries in 2008 was its home country with 93 aircraft, 44 went to China and 27 each to operators in Japan and Ireland. The largest customers by deliveries were

Continental Airlines, which took over 29 Boeing 737s, Ryanair with 27 and Southwest Airlines with 26 new jets delivered from Seattle.

Biggest customers for the third largest aircraft manufacturer Embraer were Compass Airlines from the US with 27 deliveries, followed by Virgin Blue Airlines from Australia with 15 and US Airways with 14 deliveries.

The number of deliveries in the freighter market declined for both Airbus and Boeing. While Airbus after the closure of the A300 production does not currently have any new freighter aircraft to deliver until the A330-200F enters service in 2010, Boeing did not deliver a single Boeing 767 freighter (down from 3 in 2007) and 14 747s (down from 16 in 2007).

An important element in the freighter market is also conversions from passenger variants. In 2008, a total of 83 passenger aircraft were converted into freighters. This value is down from 130 one year earlier. The decreased number of conversions is another indicator for the weakened demand in the air cargo market. On average, converted aircraft had an age of 18.3 years. A total of 17 Boeing 747-400 were converted into freighters. While this aircraft is favoured by cargo airlines for the transport of bigger cargo loads, it is in many cases not economical to operate for passenger services any more. In total, 220 passenger jumbo jets have been converted into freighters in the past.

Table 8-12: Conversions of passenger aircraft into freighters 2008

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

Aircraft Type	No. of Conversions in 2008
Airbus A300	8
Airbus A310	4
ATR 72	1
BAe 146	1
BAe ATP	4
Boeing 737	13
Boeing 747	17
Boeing 757	8
Boeing 767	7
Boeing (McDonnell-Douglas) MD-11	9
Bombardier CRJ100	2
Fokker 50	2
Saab 340	7
Total	83

Deliveries of business jets

The market for business jets is very heterogeneous and the range of aircraft in this market segment stretches out from very light jets with a maximum takeoff weight of barely 2000 kg up to special 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. In 2008, a total of 1271 business jets were produced. This is an increase of 15% compared to 2007. The market leader in the segment of small to medium sized business jets is the Cessna Aircraft Company, based in Wichita, Kansas. Cessna delivered 450 business jets in 2008, an increase of almost 18% compared to the year before. Eclipse Aviation, engaged in the market for very light jets, increased its number of deliveries by more than 63% up to 160 aircraft, before declaring insolvency in November 2008.

Table 8-13: Business jet deliveries

Source: ASCEND Online Fleets

Manufacturer	No. of Aircraft Delivered		
	2008	2007	Percentage Change
Cessna	450	382	17.8%
Bombardier	232	210	10.5%
Eclipse Aviation	160	98	63.3%
Hawker Beechcraft	159	158	0.6%
Gulfstream Aerospace	85	78	9.0%
Dassault Aviation	67	67	0.0%
Israel Aerospace Industries	67	55	21.8%
Embraer	36	37	-2.7%
Airbus	9	13	-30.8%
Boeing	6	5	20.0%
Emivest Aerospace	0	2	-100.0%
Total	1271	1105	15.0%

8.3 Engine market overview

The drop in new orders for aircraft is also reflected in the statistics for engine manufacturers. The demand for new engines dropped by about 47%, considering only the engines to be installed on newly ordered aircraft, without consideration of spare engines. As the delivery dates for several orders for new aircraft lie rather far ahead in the future, airlines very often do not decide for a certain engine type at the time they order the airframe. In 2008, the number of

engines to be installed on new aircraft where the engine manufacturer is either not yet publicly known or not yet decided increased by more than 13% to 1176 engines.

Table 8-14: Engine and market share breakdown on aircraft ordered in 2007/2008 (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. Engines on ordered Aircraft	
	2008	2007	Percentage Change	2008	2007
CFM International	1234	2350	-47.5%	44.0%	36.4%
General Electric	550	1558	-64.7%	19.6%	24.1%
Rolls Royce	438	950	-53.9%	15.6%	14.7%
Pratt & Whitney	252	540	-53.3%	9.0%	8.4%
International Aero Engines	128	632	-79.7%	4.6%	9.8%
Ivchenko	88	0	-	3.1%	0.0%
PowerJet	50	24	108.3%	1.8%	0.4%
Aviadvigatel	32	132	-75.8%	1.1%	2.0%
Honeywell	16	0	-	0.6%	0.0%
Engine Alliance	12	68	-82.4%	0.4%	1.1%
Walter	2	6	-66.7%	0.1%	0.1%
Klimov	0	196	-100.0%	0.0%	3.0%
Subtotal Announced Engine Orders	2802	6456	-56.6%	100.0%	100.0%
Unannounced	1176	1038	13.3%		
Total No. of Engines on ordered Aircraft	3978	7494	-46.9%		

The highest number of engines to be installed on newly ordered aircraft in 2008 comes from CFM with 1234, which represents 44% of all engines to be installed on new aircraft. CFM was able to defend its strong position, as it is the sole supplier of engines for the Boeing 737NG and has a strong position for engines to be installed on the Airbus A320 family aircraft, where it competes with the International Aero Engines consortium.

Particularly hard hit by the drop in demand were both General Electric and International Aero Engines. These two manufacturers had to accept almost 65% and almost 80% fewer orders than the year before.

Table 8-15: Engine and market share breakdown on aircraft delivered in 2007/08 (without spare engines)

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

Engine Manufacturer	Engines delivered			Engine Manufacturer Share of total no. Engines on delivered Aircraft	
	2008	2007	Percentage Change	2008	2007
CFM International	982	1092	-10.1%	40.8%	44.9%
General Electric	646	646	0.0%	26.8%	26.6%
International Aero Engines	310	278	11.5%	12.9%	11.4%
Pratt & Whitney	280	250	12.0%	11.6%	10.3%
Rolls Royce	152	128	18.8%	6.3%	5.3%
Engine Alliance	16	0	-	0.7%	0.0%
Aviadvigatel	16	29	-44.8%	0.7%	1.2%
Walter	4	8	-50.0%	0.2%	0.3%
Total No. of Engines on delivered Aircraft	2406	2431	-1.0%	100.0%	100.0%

Not only with aircraft engine orders, but also for aircraft engines delivered, the CFM International consortium holds the first place with 982 installed engines on aircraft delivered in 2008. This, however, marks a decline of about 10 % compared to 2007.

The list contains a new supplier of aircraft engines - the Engine Alliance consortium. Engine Alliance is a joint venture between General Electric and Pratt & Whitney and builds the GP7200 engine, which is currently available for the Airbus A380. Air France, Emirates and Korean Air have so far chosen this engine for their A380s.

9 Employment in European Air Transport

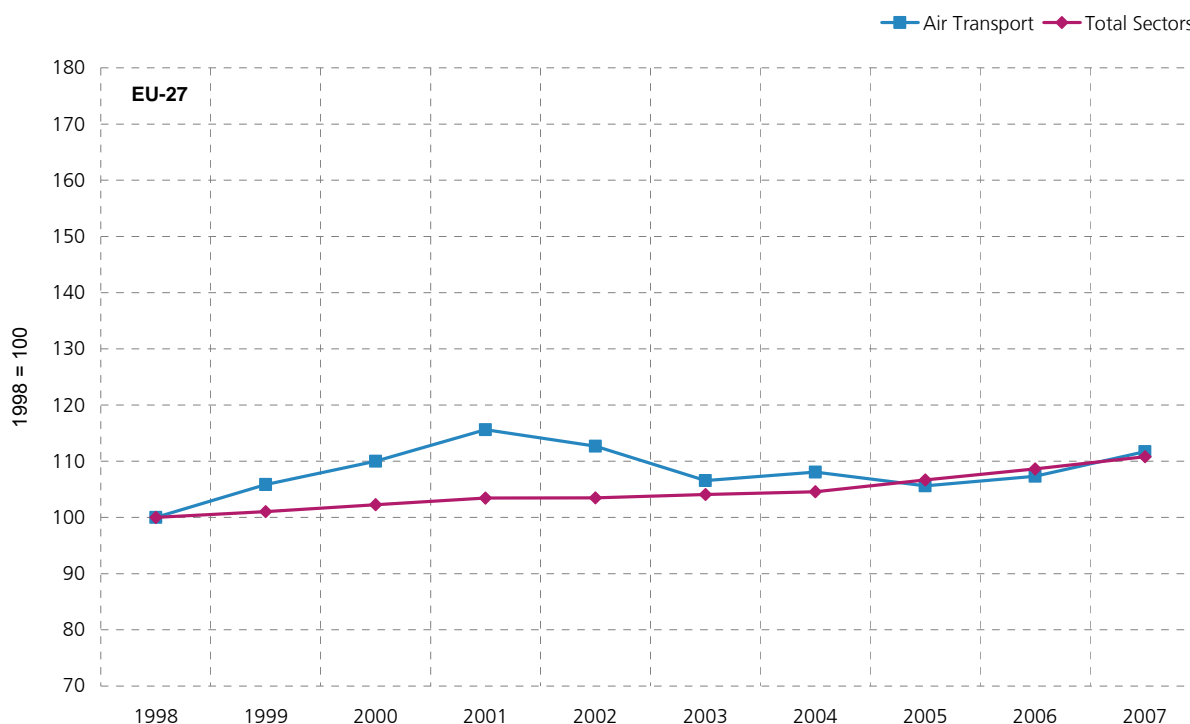
The following analysis of employment trends with respect to the European air transport sector is based on the European Union Labour Force Survey (LFS). Data on employment trends in the economic sector, air transport and the entire national economy have been provided by the Statistical Office of the European Communities (Eurostat) in cooperation with the German Federal Statistical Office. The basic concepts and definitions of the EU Labour Force Survey are described in the last year's report as well as the definition of air transport in the scope of National Accounts.

9.1 Employment Trends in European Air Transport

In 2007 the number of employees in the Air Transportation sector continued to recover from the decrease between the years 2001 and 2005. The absolute number of employees rose by 4% from 440,000 in 2006 to 458,000, but the maximum level of 474,000 employees seen in 2001 has not been achieved. Over the last decade, the development of the total number of employees is characterized by a steady increase, resulting in a total gain of 10.7% of jobs since 1998. The air transportation sector was significantly more volatile, but outperformed the total sectors slightly with an increase of 11.7%. Relative to 1998, the fraction of employees in the air transportation sector remains stable at 0.21%.

Figure 9-1: Number of Employees in EU – Air Transport, national Economy

Source: EUROSTAT: Special Analysis of EU Labour Force Survey

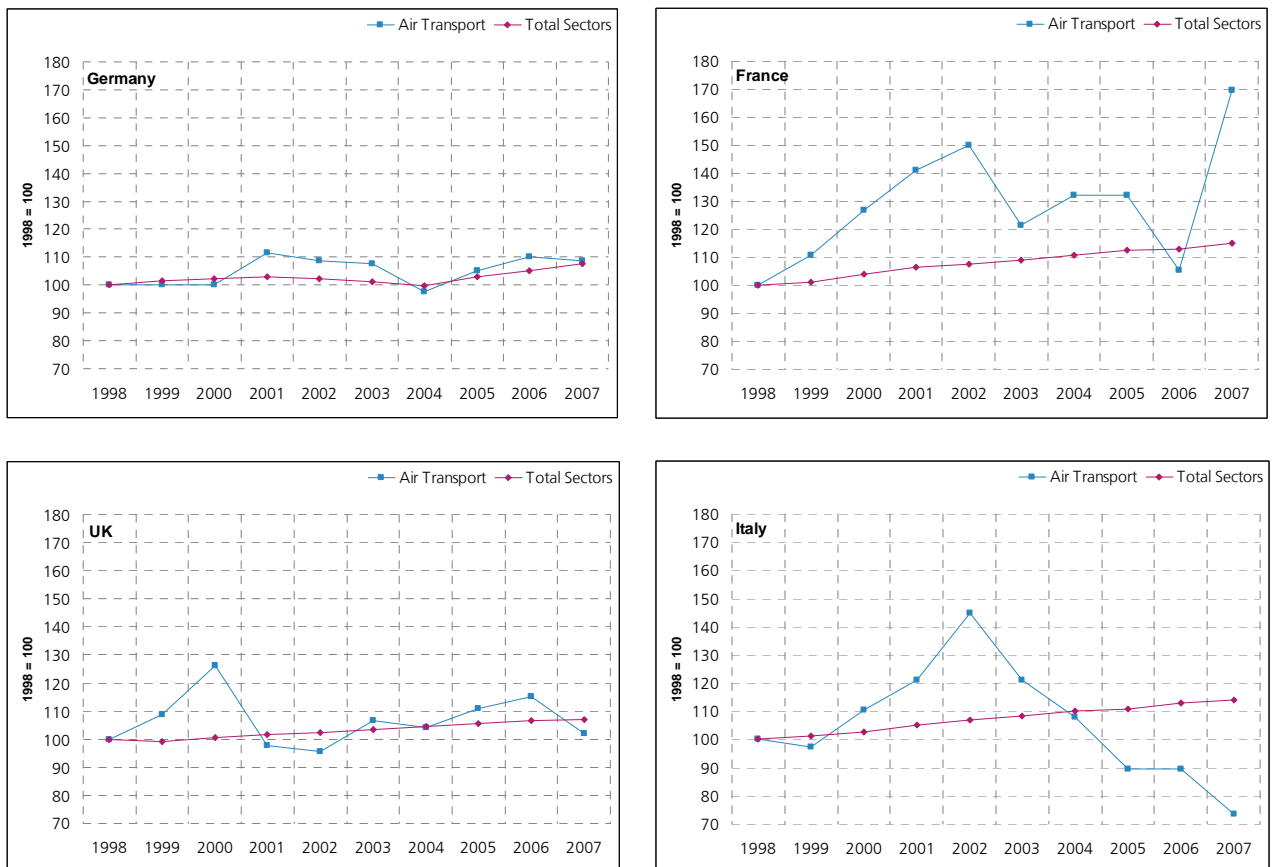


9.2 Employment trends in selected European countries

For a more detailed view on the aggregated numbers, a group of four countries, including Germany, France, the United Kingdom and Italy, was selected. In 2007, these four countries accumulate more than half of the total employees of both the air transport and the total sector of employees. While the development of the total number of employees since 1998 is similar for the four selected countries the development of air transport employees differs significantly. In general, the number of employees in Germany and in the United Kingdom performed similar to the total national employment rates. The last year (2007) shows a negative trend for both countries, while the numbers of employees in their total national economies still rise. In Italy, the significant growth over the last decade of total national employees by 14% was accompanied by a reduction of more than a quarter of employees since 1998 in the air transportation sector, alone 17% during the last year. The increase of employees in France considerably outperforms the national as well as the international developments. This situation positively affects the overall European employment rate in the air transport sector. Excluding France from the calculations, the absolute number of employees would have dropped from 381,000 to 363,000.

Figure 9-2: Number of Employees in selected European countries – Air Transport, national Economy

Source: EUROSTAT: Special Analysis of EU Labour Force Survey



10 Safety and Security

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 have become more crowded in the past years, due to the strong growth in air transport movements. The following chapter provides an overview of notable events in the area of air transport safety in 2008, complemented by statistical data related to safety and by an updated “black list” of airlines banned from EU airspace.

10.1.1 Notable events

In 2008, globally, the total number of fatalities in air transport has continued to decrease. Unlike the previous years, however, the two worst accidents in 2008 happened in geographical Europe: on August 20th, 149 passengers and 5 crew members were killed when a McDonnell-Douglas MD82 operated by Spanish carrier and Star Alliance member Spanair crashed on takeoff from runway 36L at Madrid Barajas Airport, coming to rest between runways 36R and 36L with the fuselage breaking into several pieces and exploding. Investigations are expected to be completed by 2010. A couple of weeks later, on September 14th, a Boeing 737-500 from Aeroflot-Nord, a regional subsidiary of Aeroflot Russian Airlines, crashed in difficult weather conditions when descending to land at Perm airport. All 88 people onboard, 82 passengers and 6 crew members, were killed.

In most other fatal accidents, smaller operators in Africa, America and Asia were involved.

The worst accident in terms of material damage was the first ever hull loss of a Boeing 777 aircraft. On 17th January 2008, British Airways flight 38 coming from Beijing crash landed approximately 300m short of runway 27L at Heathrow airport in London/UK and came to rest at the threshold markings. 13 of 152 people on board were reported to be injured. According to the interim report released by the Air Accidents Investigation Branch (AAIB) on 4 September 2008, a restriction of the fuel flow to both engines could have caused the accident, most probably resulting from ice within the fuel feed system.

10.1.2 Safety performance

Figure 10-1: Global passenger and crew fatalities in air transport accidents 1998-2008

Source: DLR Analysis based on Ascend Online Fleets

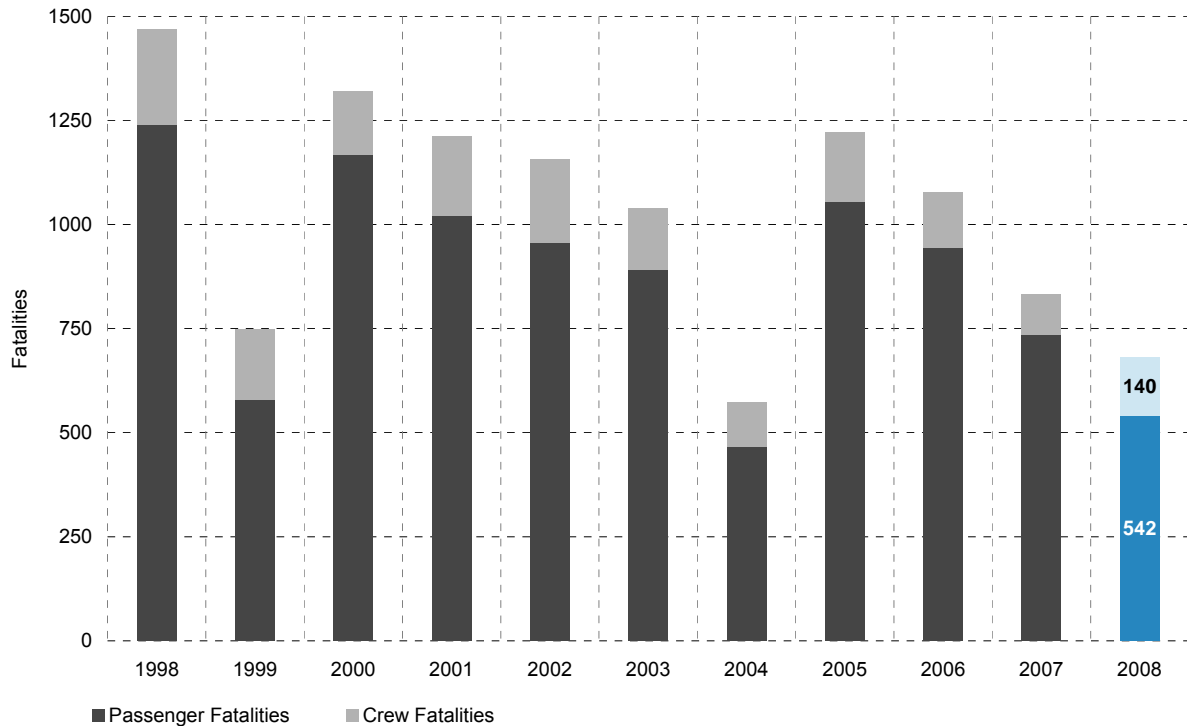


Figure 10-1 presents the long-term development of passenger and crew fatalities in air transport accidents since 1998. Like the years before, 2008 was a relatively safe year in comparison to the previous years. 682 people died in air transport accidents globally. This compares to an average of 905 annual fatalities between 1998 and 2007. Of those people killed in air transport accidents, 536 were passengers on commercial flights.

A common indicator for the analysis of air transport safety is the number of fatal accidents per million departures. However, as worldwide air transport statistics for 2008 are not yet available at time of writing, the respective figures for that year can not yet be calculated. For this reason, we provide data for 2007 instead: according to information provider ASCEND, 0.69 fatal accidents occurred 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 more than doubled, from 2,612 billion in 1990 to 5,324 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

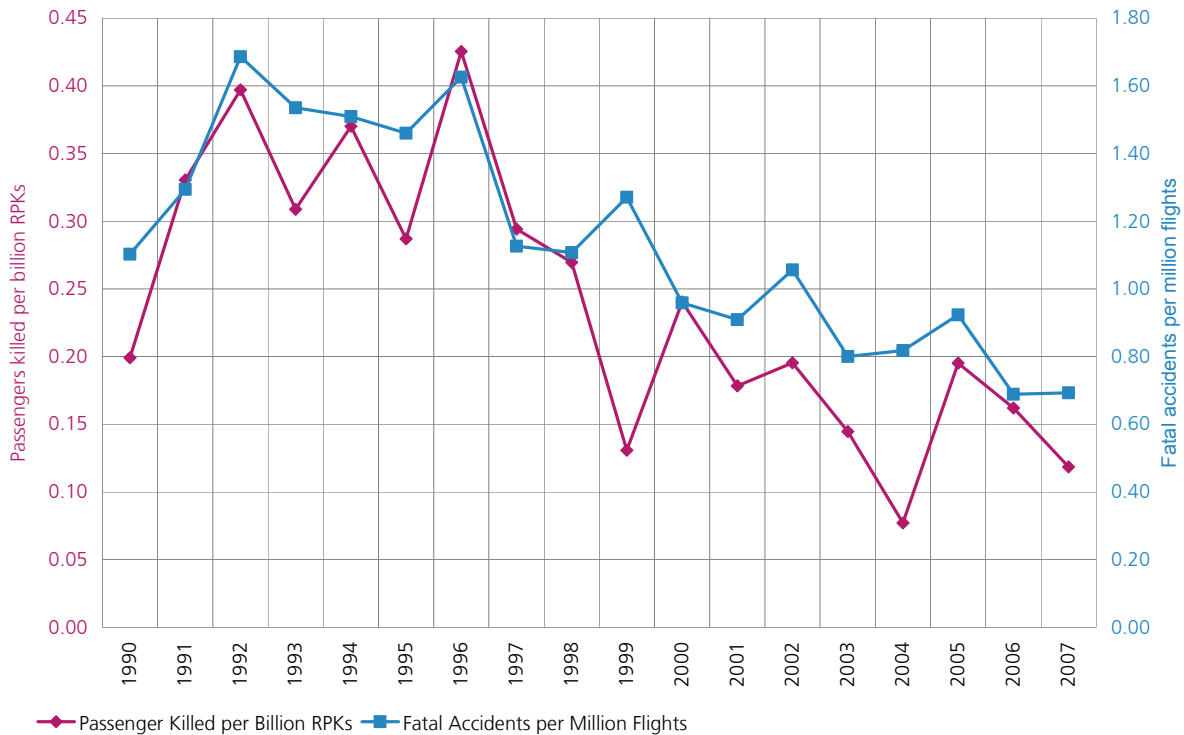
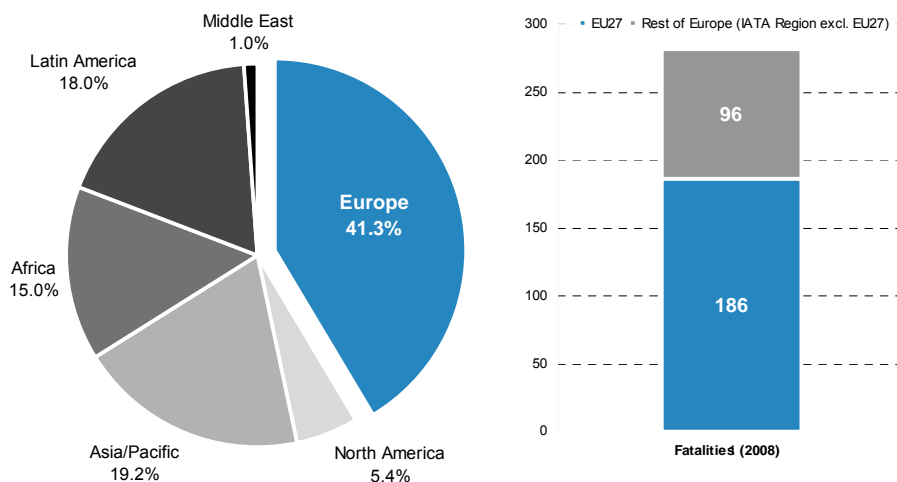


Figure 10-3: Geographical distribution of air transport accident fatalities in 2008 (IATA regions)

Source: Ascend Online Fleets



The geographical distribution of fatal accidents in 2008 differs considerably from in previous years. 2008 was again a positive year – in terms of the total number of fatalities – for air transport in North America. In the European Union, however, the Spanair crash and three other fatal accidents led to a notable increase in the number of fatalities to 186. When widening the view to geographical Europe (in the definition of IATA Regions), a total of 282 fatalities occurred in 2008. This amounts to about 41% of all fatalities in the world. As in the previous years, some countries in Africa (15% of all fatalities), Asia (19.2%) and Latin America (18%) remain safety hotspots in the air transport sector. In Sudan alone, 65 persons died in four fatal aviation accidents.

Table 10-1: Air transport accidents with fatalities in 2008

Date	Aircraft type	Operator	Location	Service	Fat.
04.01.2008	Let 410	Transaven	off Isla los Roques,Venezuela	SP	14
14.01.2008	Beech 1900	Alpine Air Express	7 miles south of Lihue,USA	SC	1
23.01.2008	Casa C-295	Polish Air Force	Mirowslawiec Air Base, Poland	PR	20
26.01.2008	NC-212	Dirgantara Air Service	near Long Ampung,Indonesia	NC	3
01.02.2008	Cessna CJ1	Symons Living Trust	near West Gardner, USA	PR	2
18.02.2008	Cessna Citation	Scope Leasing Inc	near Anaco,Venezuela	PR	3
21.02.2008	ATR 42	Santa Barbara Airlines	near Merida,Venezuela	SP	46
26.02.2008	Eurocopter Super Puma	BHS	100km off Macae,Brazil	NP	5
04.03.2008	Cessna Citation	private	Oklahoma,USA	PR	5
15.03.2008	Beech 1900	Wings Aviation	near Obudu,Nigeria	F	3
30.03.2008	Cessna Citation	Relton Muse Aviation	Farnborough, United Kingdom	PR	5
03.04.2008	Antonov 28	Blue Wing Airlines	Benzdorp,Suriname	SP	19
08.04.2008	Antonov 26	Vietnamese Air Force	near Hanoi,Vietnam	TR	5
09.04.2008	Fairchild Metro III	Airtex Aviation	off Bundeena, Australia	NC	1
11.04.2008	Antonov 32	Kata Transportation Company	Chisinau,Moldova	F	8
15.04.2008	Douglas DC-9-51	Hewa Bora Airways	Goma,Congo (Democratic Republic)	SP	3
16.04.2008	Antonov 32	Government of Equatorial Guinea	Isla de Annobon,Equatorial Guinea	PR	11
02.05.2008	Beech 1900	Southern Sudan Air Connection	near Rumbek,Sudan	NP	21
23.05.2008	Beech 1900	Alpine Air Express	Logan International Airport,USA	NC	1
26.05.2008	Antonov 12	Moskovia Airlines	near Chelyabinsk,Russia	F	9
30.05.2008	Airbus 320-200	TACA International Airlines	Tegucigalpa,Honduras	SP	3
10.06.2008	Airbus 310-300	Sudan Airways	Khartoum,Sudan	SP	33
15.06.2008	Harbin Y-12 II	China Flying Dragon Aviation	near Chifeng,China	SY	3

Source: DLR Analysis, based on Ascend Online Fleets

18.06.2008	DHC-6 Twin Otter	Wiggins Airways	Barnstable Municipal Airport, Hyannis, USA	NC	1
26.06.2008	IPTN NC-212	Indonesian Air Force	near Bogar, Indonesia	PR	18
27.06.2008	Antonov 12	Juba Air Cargo	near Malakal, Sudan	NC	7
30.06.2008	Ilyushin 76	Ababeel Aviation	Khartoum, Sudan	NC	4
02.07.2008	DHC-6 Twin Otter	Chilean Air Force	near Cochamo, Chile	PR	3
06.07.2008	Douglas DC-9-15	USA Jet Airlines	Saltillo, Mexico	NC	1
10.07.2008	Beech 99	Inversiones Aeres Patagonia	Puerto Montt, Chile	SP	9
21.07.2008	Eurocopter Super Puma	Bolivian Air Force	near Colomi, Bolivia	F	5
31.07.2008	Bae HS 125	East Coast Jets Inc	Degneer Regional Airport, Owatonna, USA	NP	8
13.08.2008	Fokker 27-500	Fly540	near Mogadishu, Somalia	NC	3
18.08.2008	Cessna Citation	Corus Hardware Corp	off Santo Domingo, Dominican Republic	PR	1
20.08.2008	McDonnell-Douglas 82	Spanair	Madrid, Spain	SP	154
24.08.2008	Boeing 737-200	Itek Air	near Bishkek, Kyrgyzstan	SP	65
25.08.2008	Lockheed L-100	Philippine Air Force	off Davao City, Philippines	F	9
30.08.2008	Boeing 737-200	Conviasa	Patasacha, Ecuador	F	3
01.09.2008	Beech 1900	Air Serv International	near Bukavu, Congo (Dem. Rep.)	NP	17
01.09.2008	Convair 580	Air Tahoma	Lockbourne, USA	T	3
04.09.2008	Eurocopter AS.365	US Coast Guard	off Honolulu, USA	R	4
14.09.2008	Boeing 737-500	Aeroflot-Nord	near Perm, Russia	SP	88
19.09.2008	Learjet 60	Global Exec Aviation	Columbia, USA	NP	4
27.09.2008	Eurocopter AS.365	Maryland State Police	near Forestville, USA	M	4
08.10.2008	DHC-6 Twin Otter	Yeti Airlines	Lukla, Nepal	SP	18
15.10.2008	Bell 222	Air Angels Inc	Aurora, USA	M	4
04.11.2008	Learjet 45	Procuraduria General de la Republica Nacional	Mexico City, Mexico	PR	9
13.11.2008	Antonov 12	British Gulf Int. Airlines	near Fulluja, Iraq	NC	7
27.11.2008	Airbus 320-200	XL Airways Germany	off Canet-en-Roussillon, France	T	7
07.12.2008	Learjet 23	Gobierno del Estado de Tlaxcala	near Atlangatepec, Mexico	F	2
				Sum	682

Service types

SP	scheduled passenger	NC	non-scheduled cargo	T	test
NP	non-scheduled passenger	F	ferry	R	rescue
SC	scheduled cargo	PR	private/business/governmental	M	medical
		SY	survey / patrol, photographic	NO	non operational

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 2008, the total amount of hull losses and liabilities amounted to US-\$ 1.451bn according to aircraft insurance analysts Aon⁹⁶. This compares to US-\$ 1.967bn for the preceding year. Insurance premiums amounted to US-\$ 1.59bn and could therefore cover the losses. The following table provides a recount of the most expensive accidents in 2008 in terms of material damage.

Table 10-2: Accidents with highest monetary aircraft damages in 2008

Source: Ascend Online Fleets

Date	Aircraft Type	Operator	Fatalities	Estimated Damage in US-\$	Accident Location	Service
17.01.2008	Boeing 777-200ER	British Airways	0	83,250,000	London, United Kingdom	SP
27.11.2008	Airbus 320-230	XL Airways Germany	7	36,300,000	off Canet-en-Roussillon, France	T
03.08.2008	Boeing 747-400	ANA - All Nippon Airways	0	33,200,000	Bangkok, Thailand	NO
30.05.2008	Airbus 320-230	TACA International Airlines	3	27,650,000	Tegucigalpa, Honduras	SP
29.07.2008	Boeing 777-200ER	Vietnam Airlines	0	24,700,000	Tokyo, Japan	SP
28.06.2008	Boeing 767-200SF	ABX Air	0	17,100,000	San Francisco, California, USA	SC
10.06.2008	Airbus 310-320	Sudan Airways	33	10,900,000	Khartoum, Sudan	SP
14.03.2008	Boeing 737-800	Air Algerie	0	9,725,000	Setif, Algeria	SP
07.07.2008	Boeing 747-200SF	Centurion Air Cargo	0	8,900,000	(near) Madrid, Colombia	SC
20.12.2008	Boeing 737-500	Continental Airlines	0	8,800,000	Denver, Colorado, USA	SP

Service types

SP	scheduled passenger	NC	non-scheduled cargo	T	test
NP	non-scheduled passenger	F	ferry	R	rescue
SC	scheduled cargo	PR	private/business/governmental	M	medical
		SY	survey / patrol, photographic	NO	non operational

⁹⁶ AON, airline insurance market news, January 2009, London.

10.1.3 List of airlines banned within the EU

Based on Regulation (EC) No 2111/2005⁹⁷, which came into force in January 2006, the Commission, in close cooperation with the authorities responsible in the Member States, has the right to ban operators from operating into EU airspace should common safety criteria be violated. In 2008, this list was updated three times.

On 11 April 2008, the seventh update of the “blacklist” was adopted. Ukraine Cargo Airways was the third Ukrainian carrier to be banned from EU airspace, joining Volare and Ukrainian Mediterranean Airways. In addition, Congolese airline Hewa Bora Airways, which was previously allowed to operate one single aircraft into the EU, became completely blacklisted, like all other carriers from the Democratic Republic of Congo. At the same time, the Commission announced ongoing dialogues with affected countries in order to help them resolve safety deficits. TAAG Angola and Mahan Air from Iran were explicitly mentioned in this context.

Three months later, on 24 July 2008, the Commission announced its decision to annul the ban imposed on Mahan Air, as significant progress by the carrier had been monitored on site inspections performed by EU officials in Iran. As a result, Mahan Air was able to resume services to Düsseldorf in autumn 2008. Gabon was blacklisted in July 2008, with the exception of existing flights of Gabon Airlines and Afrijet.

On 14 November 2008, the Commission adopted the ninth update of the blacklist, imposing bans on Siem Reap Airways International from Cambodia and on all carriers certified in Angola. Bans on all operations of Ukraine Mediterranean Airlines, Ukraine Cargo Airways and Volare were maintained as successful implementation of corrective actions for the permanent resolution of previously detected safety deficiencies could not be performed on time. The Ukraine was urged to strengthen the enforcement of safety standards.

At year’s end, all carriers from Angola, the Democratic Republic of Congo (DRC), Equatorial Guinea, Gabon (except for Gabon Airlines and Afrijet subject to strict restrictions), Indonesia, the Kyrgyz Republic, Liberia, Sierra Leone and Swaziland were banned. In addition, all operations of Air Koryo from the Democratic People's Republic of Korea, Air West from Sudan, Ariana Afghan Airlines from Afghanistan, Siem Reap Airways International from Cambodia, Silverback Cargo Freighters from Rwanda, Ukraine Cargo Airways, Ukraine Mediterranean Airlines and Volare Aviation from Ukraine have remained on the blacklist.

The EU blacklist is now not only used by authorities in Europe, but also by those in Japan and Saudi-Arabia.

⁹⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:344:0015:0022:EN:PDF>

10.1.4 OPS (EU Operations)

Following Regulation (EC) 1899/2006⁹⁸, EU Operations (EU-OPS) have been added to Regulation (EC) 3922/1991 as a new Annex III, replacing Joint Aviation Requirements Operation JAR-OPS 1 applicable to commercial transportation by airplanes. Annex III became effective on 16 July 2008 and was amended twice in the same year by Commission Regulations (EC) No. 8/2008⁹⁹ and 859/2008¹⁰⁰.

10.1.5 The European Community SAFA Programme

The "SAFA (Safety Assessment of Foreign Aircraft) Directive" (Directive 2004/36/EC)¹⁰¹ provides a legal requirement for EU Member States to perform ramp inspections on third-country aircraft landing at airports located in the Member States. Inspections are performed by the Member States, and all reported data is stored centrally in a computerized database set up by EASA. The prioritisation of these ramp inspections on aircraft using Community airports is ruled in Commission Regulation (EC) No 351/2008¹⁰² which implements the abovementioned Directive.

On January 1, 2008, Albania was the 15th non-EC country to join the SAFA-programme in a Working Agreement, bringing the total number of participating states to 41.

In August 2008, the Commission published its report on the European Community SAFA programme for the year 2007¹⁰³. According to this report, 8,594 aircraft inspections on 984 operators of 132 states were performed in 2007, leading to 12,073 findings. This equals 1.4 findings per inspection, compared to 1.67 findings/inspection in 2006. In 1,318 cases, corrective actions had to be undertaken before flight authorization was given, while 22 aircraft were grounded.

10.1.6 The European Aviation Safety Agency (EASA)

The European Aviation Safety Agency is, in addition to the Commission and the Member States, another centrepiece of the European Union's strategy for aviation safety. The aim is to promote the highest common standards of safety and environmental protection in civil aviation at the European level. The agency works hand in hand with the national authorities which continue to carry out many operational tasks, such as certification of individual aircraft or licensing of pilots.

In April 2008, Regulation (EC) No 216/2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency (repealing Council Directive 91/670/EEC,

⁹⁸ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006R1899:EN:HTML>

⁹⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:010:0001:0206:EN:PDF>

¹⁰⁰ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:254:0001:01:EN:HTML>

¹⁰¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:143:0076:0086:EN:PDF>

¹⁰² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:109:0007:0008:EN:PDF>

¹⁰³ See European Commission (2008), Report from the Commission, European Community Safa Programme, C(2008) 4405, Brussels, 19.08.2008.

Regulation (EC) No 1592/2002 and Directive 2004/36/EC¹⁰⁴) entered into force (hereinafter referred to as "the Basic Regulation"). This regulation extends the tasks of EASA concerning the common safety rules to air operations, pilot licensing and, within the limits set by the Chicago Convention, the safety of third-country aircraft. It also aims to strengthen inspections and penalties in the event of non-compliance with these rules.

In June 2008 and as the safety element of the Single European Sky policy, the Commission published a proposal for a regulation amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Council Directive 06/23/EEC¹⁰⁵. The proposal seeks to extend the EASA's competences to the remaining key safety fields of aerodromes, air traffic management and air navigation services in order to improve safety in these subjects. This would ensure precise, uniform and binding rules, as well as sound oversight of their implementation by Member States, and therefore establish a single safety framework. An impact assessment accompanying the Proposal¹⁰⁶ arrives at the conclusion that the very prominent option to meet the current and future safety challenges faced by the European aviation is to extend the scope of EASA's competence. This conclusion is in line with the Community policies in aviation safety and the "total system approach" to be taken to support internal market principles and to reduce the burden on regulated organisations.

The proposal is currently discussed in the co-decision procedure. When adopted, Europe will benefit from a fully integrated aviation safety system covering all aspects of aviation activities with all actors having clear commitments and responsibilities allocated to them in accordance with the principle of maximising efficiency and effectiveness. The proposal provides also for satisfactory integration of the safety element into the Single European Sky initiative to ensure that the de-fragmentation of the sky, the expected increase of capacity of the aviation system and the consequent potential traffic growth will have no negative impact on accident rates.

Also in 2008, several Commission Regulations were adopted:

- Commission Regulation (EC) No 287/2008 on the extension of the period of validity of referred to in Article 2c(3) of Regulation (EC) No 1702/2003¹⁰⁷,
- Commission Regulation (EC) No 1056/2008 amending 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 tasks¹⁰⁸,

¹⁰⁴ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:079:0001:0049:EN:PDF>

¹⁰⁵

http://ec.europa.eu/transport/air_portal/traffic_management/ses2/doc/communication/com_2008_0390_1_proposal_regulation_en.pdf

¹⁰⁶

[http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/sec/2008/2086/COM_SEC\(2008\)2086_EN.pdf](http://www.europarl.europa.eu/registre/docs_autres_institutions/commission_europeenne/sec/2008/2086/COM_SEC(2008)2086_EN.pdf)

¹⁰⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:087:0003:0004:EN:PDF>

¹⁰⁸ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:283:0005:0029:EN:PDF>

- Commission Regulation (EC) No 1057/2008 amending Appendix II of Annex to Regulation (EC) No 1702/2003 concerning the Airworthiness Review Certificate¹⁰⁹.

The agency prepares drafts, in the form of opinions in order to assist the European Commission in its preparation of proposals for basic principles, applicability, essential requirements and implementing rules. The agency also adopts certification specifications and guidance material relating to the application of implementing rules as set out in Article 18 of the Basic Regulation. In 2008 and in accordance with the agency's rule-making procedure, six opinions have been submitted to the European Commission¹¹⁰.

All agency measures¹¹¹ according to Article 18 of the Basic Regulation and notices of proposed amendments (NPAs) are collected on the EASA website¹¹².

10.2 Air transport security

Air security aims at the prevention of illegal acts in the field of aviation. As seen in recent decades, air transport is a strategic target for terrorists and for terrorist organisations. To protect the travelling public, citizens and businesses and to maintain the confidence in secure and safe air transport, control techniques and procedures are necessary despite all inconveniences. The Commission has a key role to play in establishing security standards and controlling the correct and full implementation of these measures at all Community airports by a system of inspections. Facilitation is a permanent challenge for the work at the European level to replace the current restrictions. Therefore, significant improvements are expected from a new generation of screening equipment, for example new technologies to detect dangerous liquids.

The recent adoption of a framework regulation for civil aviation security has created better possibilities for simplifying rules and for phasing out some duplication.

Europe's internal one-stop security system means that passengers departing from an EU airport do not need to undergo additional controls if they connect at another EU airport for the second part of their journey. It is intended that this system be extended to flights to non-EU countries.

10.2.1 EU security regulations

The following table summarises and explains the most important EU security directives enacted in civil aviation.

¹⁰⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:283:0030:0031:EN:PDF>

¹¹⁰ http://www.easa.eu.int/ws_prod/g/rg_opinions_main.php#2008

¹¹¹ http://www.easa.eu.int/ws_prod/g/rg_agency_measures.php

¹¹² http://www.easa.eu.int/ws_prod/r/r_npa.php

Table 10-3: Some important EU security Directives in civil aviation¹¹³

Source: DG TREN

Enactment Date	Directives	Explanation
16.12.2002	(EC) 2320/2002	To define and implement relevant regulations on a European level to prevent illegal intervention in civil aviation security. This is to be achieved by: <ul style="list-style-type: none"> o defining common basic standards for measures in the field of aviation security; o creating suitable procedures to monitor conformance to the regulations Switzerland is also involved in the program.
04.04.2003	(EC) 622/2003	To define measures to implement common basic standards in aviation security. This regulation dealt with carrying forbidden items in security areas and on board aircraft – has since been lifted
28.07.2003	(EC) 1217/2003	For common specifications for national quality control programs in civil aviation security which are to be implemented in all Member States. This also includes common requirements on quality control programs, a common methodology for the planned audits and common requirements for the auditors
22.08.2003	(EC) 1486/2003	To define procedures for implementing Commission aviation security inspections in the field of civil aviation
15.01.2004	(EC) 68/2004	To define forbidden items: <ul style="list-style-type: none"> – forbidden items in checked-in baggage¹¹⁴, – forbidden items on board <ul style="list-style-type: none"> o guns, firearms, weapons o pointed/sharp weapons and sharp objects o blunt instruments o explosives and flammable substances o chemical and toxic substances came into force on 5 th February 2004, first amendment to the Directive (EC) 622/2003 (to prevent illegal intervention - the

¹¹³ http://ec.europa.eu/transport/air/security/security_en.htm

		defined measures are not published)
01.10.2006	(EC) 1546/2006	Amendments to the Directive (EC) 622/2003 on defining measures for implementing the common basic standards for aviation security (carrying liquids onto the plane and the introduction of a size restriction for hand luggage)
11.01.2008	(EC) 23/2008	Amendments to the Directive (EC) 622/2003 on defining measures for implementing the common basic standards for aviation security. The Directive (EC) 23/2008 agrees technical standards for the use of Threat Image Projection
11.03.2008	(EC) 300/2008	The Directive (EC) 300/2008 on common regulations in the field of civil aviation security came into force in April 2008 after an agreement on the wording was reached in the arbitration commission. The Directive (EC) 2320/2002 was consequently replaced by the new Directive in order to achieve a simplification, harmonisation and clarification of the existing regulations, plus the improvement of the security level at airports. Directive 300/2008 replaces the Directive 2320/2002 from the time point stated in the implementation regulations which are enacted in accordance with the procedures named in Article 4 Sections 2 and 3, at the latest however 24 months after their coming into force
22.04.2008	(EC) 358/2008	To amend the Directive (EC) 622/2003 on defining measures for implementing the common basic standards for aviation security. The measures laid down in Directive (EC) 622/2003 were to be re-worked taking into account the technical developments, the operational effects at airports and the consequences for passengers. Further analyses have shown that the benefits of a regulation on the size of hand luggage do not outweigh the operational effects at airports and the consequences for passengers. The corresponding regulation, which would come into force on 6 th May 2008, should therefore be cancelled
08.08.2008	(EC) 820/2008	In this Directive, measures for the implementation and the technical adaptation of common basic standards in aviation security are defined which are to be integrated into national security programs for civil aviation in accordance with Article 5 of the Directive (EC) 2320/2002. The Directive (EC) 622/2003 is replaced by Directive (EC) 820/2008

¹¹⁴ Directive (EG) 2320/2002 of the European Parliament and Council on defining common regulations for civil aviation security (16th December 2002)

10.2.1.1 Regulation (EC) No 300/2008

The enacting of the Directive (EC) 2320/2002 by the EU Parliament and the Council on 16th December 2002 on the definition of common regulation on security in civil aviation was the first reaction following the events of 11th September 2001.

The Directive (EC) 300/2008¹¹⁵ on common regulations in the field of civil aviation security came into force in April 2008 after an agreement on the wording was reached in the arbitration commission. The Directive (EC) 2320/2002 was consequently replaced by the new Directive (EC) 300/2008 in order to achieve a simplification, harmonisation and clarification of the existing regulations, plus the improvement of the security level at airports. This Directive comes into force on the twentieth day following publication in the EU Official Journal or from the time point stated in the implementation regulations which are enacted in accordance with the procedures named in Article 4 Sections 2 and 3, at the latest however 24 months after their coming into force.

The Commission, acting in cooperation with the appropriate authority in the Member State concerned, shall conduct inspections in order to monitor the application of this Regulation by Member States and, as appropriate, to make recommendations to improve aviation security. Also, the Commission shall present a report to the European Parliament, the Council and the Member States informing them of the application of this Regulation and of its impact on improving aviation security every year.

According to Article 8 of this Regulation, the Commission and the International Civil Aviation Organisation (ICAO) signed a Memorandum of Cooperation regarding aviation security audits/inspections and related matters in September 2008. This cooperation is to avoid duplicate monitoring of Member States' compliance with Annex 17 (Security) to the Chicago Convention on International Civil Aviation.

According to Article 22 of the abovementioned Regulation, the Commission will report on the principles of financing the costs of civil aviation security measures to ensure that security charges are used exclusively to meet security costs, to improve the transparency of such charges and to safeguard undistorted competition between airports and between air carriers. If appropriate, the Commission report will be accompanied by a legislative proposal.

10.2.1.2 Commission Regulation (EC) No 358/2008

Before entering into force, legal limits at European level on the size of carry-on cabin baggage (proposed maximum permitted size 56 cm x 45 cm x 25 cm) in airplanes were withdrawn by Commission Regulation (EC) No 358/2008 of 22 April 2008¹¹⁶.

¹¹⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:097:0072:0084:EN:PDF> (09.04.2008)

¹¹⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:111:0005:0006:EN:PDF>

Further studies arrived at the conclusion that the effectiveness of the planned legislation does not justify the additional costs and inconvenience to airline passengers. The operational implementation of Regulation (EC) No 622/2003 and (EC) No 1546/2006 would have led to considerable inconvenience for passengers and airports. The queues at passenger checkpoints would have become longer. A more frequent use of electronic check-ins would have meant that the security personnel would also have had to check the size of the hand luggage. The result would have been less time remaining for the actual task of identifying dangerous items. Further, the airports' baggage conveyors would have had to have been adapted for the additional hand luggage to be handed in. The implemented security measures, including the ban on liquids, have led to an up to 30% reduction in throughput at checkpoints at airports. The withdrawal of the hand luggage size limitation has avoided an overregulation which would not have brought any real security improvement. The EU Member States still have the right to implement stricter regulations if they are necessary due to local situations or as a reaction to a terrorist threat. There is also no change on taking liquids in the hand luggage. Here - as in the entire EU - only 100 millilitre bottles are allowed. They must be kept in a transparent plastic bag which measures a maximum of 20 by 20 centimetres and has a volume of one litre.

10.2.1.3 Commission Regulation (EC) No 820/2008

“The Commission is required, by virtue of Article 4(2) of Regulation (EC) No 2320/2002, when necessary, to adopt measures for the implementation of common basic standards for aviation security throughout the Community. Commission Regulation (EC) No 622/2003 of 4 April 2003 laying down measures for the implementation of the common basic standards on aviation security (2) was the first act laying down such measures”.

In August 2008, Commission Regulation (EC) No 820/2008 laying down measures for the implementation of common basic standards on aviation security¹¹⁷ was adopted and therefore repealed the existing Commission Regulation (EC) No 622/2003 and its subsequent amendments.

This Regulation is intended to enable differentiation between airports with regard to local risk evaluations. The Commission should therefore be informed about airports at which the level of risk is considered lower or higher. The EU allows sufficient room to manoeuvre in the implementation of specific measures in order to guarantee a uniform level of security. The Commission should be informed whenever compensatory measures are applied in order to guarantee a similar security level.

Based on Articles 1 and 3 of Commission Regulation (EC) No 820/2008, measures for the implementation and technical adaptation of common basic standards are set out in the Annex. This publication of the EU list of prohibited articles will make it easier for passengers to know

¹¹⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:221:0008:0022:EN:PDF>

what they can – and cannot – take on board an aircraft, while increasing transparency of EU rules in this domain.

Another Commission Decision keeps certain measures secret which are deemed too sensitive to be placed in the public domain. Member States shall make these rules on aviation security available to parties on a 'need-to-know' basis.

10.2.1.4 (EC) Reference No – IP/08/1372

In September 2008, the EU Commission took action against Greece in the field of aviation security¹¹⁸. As a result, Greece was requested to make a statement as it had not appropriately implemented the EU regulations¹¹⁹ on aviation security. The objections particularly concern the requirements placed on airports and aviation businesses for national measures to monitor conformance to the provisions.

It was required of Greece that the necessary measures be taken, so that these requirements be fully conformed to within the set period in order to avoid legal proceedings before the court on this issue.

10.2.2 Commission inspection

10.2.2.1 Overview

In accordance with (EC) 2320/2002, the Commission is obliged to monitor the necessary quality checks for implementing the common regulations for civil aviation security and their classification and conformance by the Member States, and therefore conducts

- inspections of the responsible national authorities
- airport inspections and
- follow-up inspections to check the implementation of corrective action.

The Commission carried out a total of 141 inspections between February 2004 and December 2008. 24 of these were in the twelve months of the reporting period. The inspection team consists of 11 aviation security inspectors, who collaborate with the Member States' 71 nominated national inspectors. Switzerland has also joined the community program. Norway and Iceland have been inspected by the EFTA monitoring authority since December 2005 on the basis of corresponding provisions.

¹¹⁸

<http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/1372&format=HTML&aged=0&language=EN&guiLanguage=fr>

¹¹⁹ Directive (EC) 2320/2002 of the European Parliament and the Council of 16th December 2002 on the definition of common regulations on security in civil aviation and Directive (EC) 1217/2003 of the Commission of 4th July 2003 on the definition of common specifications for national quality control programs for civil aviation security.

10.2.2.2 Inspections by the responsible national authorities

Each Member State has to enact a national aviation security program and appoint someone for its coordination and monitoring to the responsible authority. These inspections were introduced by all 27 Member States and concern the evaluation of:

- the national civil aviation security program [(EC) 300/2008, Article 10];
- the national civil aviation security quality control program [(EC) 300/2008, Article 11];
- the national training program and
- airport and airline security program [(EC) 300/2008, Article 12/13] .

The content of the Member States' **national aviation security programs** generally reflect the requirements of European law. However, the updating of the programs to account for legal amendments does not always occur as quickly as could be desired.

Most Member States have created satisfactory national **quality control programs** in which recruiting, training, duties and authority of the national inspectors are clearly described including the priorities and methodology of the inspection program. In some cases however, the programs do not fulfil all requirements, for example they do not stipulate a test program or they do not say how frequently monitoring activities have to take place. There are good arguments for exchanging best practices in this field and implementing a greater harmonisation of the national programs in general.

Airport security programs are largely up-to-date and are monitored by the Member States. **Aviation businesses' security programs** often do not fulfil the regulations and are less well monitored, especially in the case of aviation businesses registered outside the EU, particularly for control and searching procedures.

National programs for security training generally fulfil the requirements. The most common shortcoming is the lack of provisions concerning the training of general security awareness for personnel not directly involved with security tasks and the lack of specifications on regular further training to keep security personnel up-to-date on the latest developments.

In 2008, the Commission inspected nine of these responsible authorities. Documentation was checked in these inspections, interviews carried out and checks were done at an airport which applies the national measures. The results of these 9 inspections corresponded to those of previous checks and mainly resulted in the following:

- in 7 states, a high level in conformance to the regulations was achieved;
- the implementation of the measures was evaluated as unsatisfactory in 2 states.

In 2008, the Commission carried out 10 airport inspections for risk analysis (including follow-up inspections) for the first time. In each case, the inspections involved an evaluation of the implementation of security related standards.

The Commission's working program for 2009:

- Completion of the implementation of the new legal requirements
- Looking for better solutions regarding threats of liquid explosives
- Promotion of the one-stop security agreements with third party countries
- Continuation of the inspection program (including participation as an observer in some inspections in the USA)
- Supporting the Member States in improving and harmonising the national quality control
- Finishing weighing up the body scanner issue
- Analysing the results of studies
- Considering the most suitable financing concept for aviation security.

10.2.3 Current topics

Two aspects of the aviation security regime gave rise to particular comment in the media – and the European Parliament – during 2008. These were the on-going issue of liquids carried in hand luggage and the use of body scanners for screening staff and passengers.

10.2.3.1 Body scanners at airports

The Commission proposed to include so-called body scanners into the list of allowable screening methods in order to enable decisions on implementing rules for using such machines. The EU Parliament protested sharply against a Europe-wide approval of the scanners, which are already in use in Amsterdam, Zurich and London have been in testing in Germany since Dec. 2008¹²⁰. The Parliament was, however, of the opinion that a series of questions still have to be answered before they could be accepted. This met for the first time in December 2008 and set the parameters for an initial study.

This consultation took place in the light of an acceptance of a resolution by the European Parliament on 23rd October 2008 on the effects of the aviation security measures and body scanners with regard to human rights, privacy, personal dignity and data protection¹²¹.

The EU Parliament resolution requested the following from the Commission:

- an estimation of the consequences for human rights;
- a hearing of the European Data Protection Supervisor (EDPS), the Article 29 Data Protection Group and the Agency for Fundamental Rights (FRA);
- a scientific and medical evaluation of possible effects on health through using such technologies;
- an economic, commercial and cost-benefit analysis and its effects.

¹²⁰ <http://www.spiegel.de/politik/deutschland/0,1518,593549,00.html> (As of: 29.11.2008)

¹²¹ http://ec.europa.eu/transport/air/consultations/2009_02_19_body_scanners_en.htm (As of: 22.12.2008)

At the same time, the EU Commission is remaining open on the use of body scanners at airports and points out that, in the case of an EU-wide regulation, EU Member States have a choice¹²² and that this will not be imposed on EU Member States under any circumstances [120]. Furthermore, the EU Commission will submit corresponding draft legislation, on the basis of a comprehensive effects analysis, on how body scanners are to be used [122].

The Federal Police began trials to check flight passengers in December 2008, but initially only in the laboratory. The tests should establish whether it is technically possible to detect objects hidden on the body without making naked pictures of passengers recognisable on the screen. If it came to an EU-wide regulation, the so-called body scanners would be an additional security measure to which EU Member States could agree but would not be forced to agree. Should an EU Member State decide to use body scanners at airports, the Commission will ensure that this takes place with full regard to the health, security, privacy and data protection rules. It is already certain that the Commission will not approve a mandatory body scanner against the will of the passengers. It will also not make body scanners an obligation at European airports. Should body scanners be added to the list of possible security technologies, the Commission will submit a corresponding law proposal, based on a comprehensive estimation of the consequences, on how body scanners are to be deployed.

The Commission accordingly amended the draft legislation to disallow their use before establishing a task force to consider the issues. This met for the first time in December 2008 and set the parameters for an initial study.

10.2.3.2 Liquids regulation

The liquids restrictions were introduced following the discovery in the UK of an apparent planned terrorist attack involving their use. There can be no doubt that these restrictions involved considerable inconvenience for passengers, although these have lessened over time as travellers become more used to the requirements.

The European Parliament took the view that technological solutions should be available to address the liquids problem by April 2010 and that restrictions should therefore be lifted from that date. Consciousness of this deadline stimulated intense research and international co-operation, as detailed in the relevant sections. The Commission has suggested that the issue might be tackled in two stages, first putting new arrangements in place for travellers from outside the EU transferring at Community airports and secondly implementing a more general solution. There was also a clear awareness that entirely different solutions might be more appropriate at small airports than at major international hubs.

¹²² http://ec.europa.eu/deutschland/press/pr_releases/8103_de.htm (As of: 27.10.2008)

10.2.3.3 UK to ease restrictions on the size of hand baggage for passengers

Due to security concerns, the Commission introduced the strict Regulation (EC) No 1546/2006 (a maximum of one piece of hand luggage per person) in December 2006. The British government lifted this Regulation early on 07 January 2008 for 22 airports in the country before the Commission decided on 22 April 2008 with Regulation (EC) No 358/2008 to lift the tightened security regulation, too.

Regulation (EC) No 1546/2006 was handled strictly - not even ladies' handbags were allowed to be additionally taken on board. The requirement was then lifted for airports including London Heathrow, City and Stansted and Birmingham, Cardiff, Edinburgh, Glasgow, Manchester and Newcastle according to the British Ministry of Transport. At other airports - including London Gatwick and Luton - the restriction to one piece of hand luggage is to remain for the time being. There, the means of checking baggage still required improvements, explained Visit Britain.

But the tourist office Visit Britain in London states that the opportunity to again take more hand luggage on board can be applied differently by the airlines. The airlines handle the changes differently. British Airways (BA) now allows two pieces of hand luggage of which one has a maximum size of a briefcase or laptop case. Lufthansa acts similarly. British Midland (BMI) has lifted the restriction for guests in the Business and Premium Economy classes, according to Visit Britain. And the low-cost carrier easyJet maintains the maximum of one piece of hand luggage per passenger.

10.2.3.4 Biometric fingerprint for checking persons and baggage

Passengers on the Scandinavian airline SAS Sweden's domestic flights have been able to identify themselves by biometric fingerprint since 30 January 2008. This further simplifies the automatic clearance of passengers on the ground. Checking in and boarding without an ID card check will soon be possible at the airports Arlanda in Stockholm and Landvetter in Gothenburg. Taking part in the biometric processing is of course completely voluntary, since the alternative of using normal means of identification is still possible. The data protection requirements are fulfilled, since passengers' biometric data is deleted from the system after the end of the journey. The system has already been successfully introduced at all SAS Swedish domestic destinations since 2006 with the exception of Stockholm, Gothenburg and Örnköldsvik.¹²³

An estimated 50% of all passengers on Swedish domestic flights with SAS Scandinavian Airlines travel with baggage. Matching pieces of baggage to people is a legal requirement and is currently done with normal proofs of identity. Thus, these passengers could be in a position to use the biometric solution. The biometric system is already being used in the baggage system at

¹²³ <http://www.airliners.de/safety/nachrichten/artikelseite.php?articleid=14183> (30.01.2008)

several smaller Swedish airports. The introduction on international routes is planned for a later time.¹²⁴

10.2.3.5 Automated hold screening at Frankfurt airport

Since the beginning of 2003, Commission Regulation (EC) 622/2003¹²⁵ has regulated the "one hundred percent" security checks of travel baggage which is checked in at airports within the European Union or reloaded from flights coming from a state outside the EU. This screening process is completely integrated into the baggage conveyance system at Frankfurt airport. A multi-stage, automatic procedure caters for maximum security and replaces the conventional air security screening instruments which were previously used in front of the check-in counters and at the pick-up points of the baggage conveyance systems.

The multi-stage travel baggage screening system (mehrstufige Reisegepäckkontrollanlage - MRKA) was developed and financed as a joint project by the Federal Ministry of the Interior and the airport operator (Fraport AG). The Federal Police, as the supervisory authority for aviation security checks, carries all the investments and costs connected with the screening equipment and was significantly involved in the implementation process. Fraport AG, as the contracted company, bears the costs for necessary infrastructure developments and the adaption of the baggage conveyance system. The first part of the MRKA was activated in January 2006. Since then, transfer baggage from non-EU countries has been automatically screened. In January 2007, the new screening logistics were extended to Terminal 2 and the baggage checked in there. Following extensive planning and building measures, the system also replaces the interim solution of mobile screening equipment in the Terminal 1 check-in area in 2008.

On peak days, almost 120,000 pieces of baggage are cleared at Frankfurt airport. According to EU regulations, around 80,000 of these must be screened. The MRKA, which is now integrated into the baggage conveyance system, helps minimise the additional processing time and cost while improving security standards and service quality.

10.2.3.6 Disclosure (Identification) when boarding

The Austrian Airlines Group implements a requirement of the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) from the start of 2008 on the basis of which the identity of all departing passengers is checked when boarding. In the interest of a high level of security, passengers must hold their boarding cards and photographic identification ready at the boarding gate. This check ensures that:

- the boarding card was not passed on to a third party and
- is really used by the person who has a contract with the airline.

¹²⁴ <http://www.airliners.de/safety/nachrichten/artikelseite.php?articleid=14196> (31.01.2008)

¹²⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32003R0622:EN:HTML>

A driving license provides sufficient identification for flights within Austria. International flights, i.e. to Schengen and non-Schengen countries, require a valid travel document (passport or ID card).

10.2.3.7 Additional data exchange between the EU and the USA (PNR)

With the Agreement between the European Union and the United States of America¹²⁶, the forwarding of passenger data (Passenger Name Records – PNR) by EU airlines on transatlantic flights to the US Department of Homeland Security (DHS) was agreed.

Now the United States wants the data of passengers who are only flying over the USA from the EU in addition to the agreed PNR data. This had already been refused by the EU in 2007. Also, the US government expects certain EU Member States to deploy more so-called air marshals on transatlantic flights. In order to achieve fulfilment of this demand (flight security measures) the USA is negotiating with specific EU Member States and using its visa policy as leverage.

10.2.3.8 Future

The Commission has a clear working program for 2009:

- Completion of the implementation of the new legal requirements
- Looking for better solutions regarding threats of liquid explosives
- Promotion of the one-stop security agreements with third party countries
- Continuation of the inspection program (including participation as an observer in some inspections in the USA)
- Supporting the Member States in improving and harmonising the national quality control
- Finishing weighing up the body scanner issue
- Analysing the results of studies
- Considering the most suitable financing concept for aviation security.

¹²⁶ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:204:0018:0025:EN:PDF>

11 Annex

11.1 Abbreviations

€	Euro
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
ATM	Air Traffic Management
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
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
GVA	gross value added
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
MRKA	mehrstufige Reisegepäckkontrollanlage (multi-stage travel baggage screening system)
No	Number
NO _x	Nitrogen Oxide
Pax	Passenger
pkm	passenger kilometre
PRC	People's Republic of China
PNR	Passenger Name Record
RPK	revenue passenger kilometre
TFCs	taxes, fees and charges
TFTK	total freight tonne kilometre
UK	United Kingdom
USA	United States of America
USD, US-\$	United States dollar

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 actual	EEA 1994	ESRA 2002	ICAO Europe
<i>composition valid from</i>	<i>2004</i>	<i>2007</i>	<i>actual</i>	<i>1994</i>	<i>2002</i>	
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	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

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DLR at a glance

DLR is Germany's national research center for aeronautics and space. Its extensive research and development work in Aeronautics, Space, Transportation and Energy is integrated into national and international cooperative ventures. As Germany's space agency, DLR has been given responsibility for the forward planning and the implementation of the German space program by the German federal government as well as for the international representation of German interests. Furthermore, Germany's largest project-management agency is also part of DLR.

Approximately 5,700 people are employed in DLR's 29 institutes and facilities at thirteen locations in Germany: Koeln (headquarters), Berlin, Bonn, Braunschweig, Bremen, Goettingen, Hamburg, Lampoldshausen, Neustrelitz, Oberpfaffenhofen, Stuttgart, Trauen and Weilheim. DLR also operates offices in Brussels, Paris, and Washington D.C.

DLR's mission comprises the exploration of the Earth and the Solar System, research for protecting the environment, for environmentally-compatible technologies, and for promoting mobility, communication, and security. DLR's research portfolio ranges from basic research to innovative applications and products of tomorrow. In that way DLR contributes the scientific and technical know-how that it has gained to enhancing Germany's industrial and technological reputation. DLR operates large-scale research facilities for DLR's own projects and as a service provider for its clients and partners. It also promotes the next generation of scientists, provides competent advisory services to government, and is a driving force in the local regions of its field centers.



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