EUROPEAN COMMISSION

Impact assessment of revisions to Regulation 95/93

Final report (appendices)

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Disclaimer:
This report includes a baseline scenario for traffic at each modelled airport. The purpose of this is to provide a reasonably realistic basis for testing policy options, but it is not a precise traffic forecast. No reliance should be placed on this scenario except by the European Commission, and no reliance should be placed on it by any party for any purpose other than testing the possible impact of policy options. Steer Davies Gleave does not accept any liability for use of this traffic scenario by parties, or for purposes, that it was not intended for.

1. APPENDIX 1: BASELINE SCENARIO ASSUMPTIONS

Introduction

1.1 The starting point for the impact assessment is the baseline scenario, which defines our assumptions about what is likely to happen over the period to be covered by the impact assessment if there is no change to the Regulation.

1.2 The most important element of the baseline for this impact assessment is the trend in demand and capacity for each of the sample airports. However, the baseline scenario is not in itself intended to be a traffic forecast for each airport, as might be produced (for example) for an airport business plan. The purpose of this analysis is to evaluate options for revisions to the Regulation: to do this, we need to be able to calculate the impacts of each option *relative* to a baseline scenario, and the baseline scenario needs to be realistic enough to allow this, but is not intended to be used for anything beyond this. There may be economic, market or competitive factors at each airport which mean the actual level of traffic at a specific airport could turn out quite differently.

1.3 This section provides a brief summary of the methodology underlying the baseline scenario, and a summary of its outputs for each of the case study airports. It describes:

- Classification and disaggregation of data;
- Background (unconstrained) demand forecasts;
- Capacity assumptions;
- Constrained initial slot allocation;
- Passengers and passenger-kilometres; and
- Outputs for each airport.

1.4 Some elements of the baseline scenario are different for the different airports in the sample, although the assumptions used for different airports are consistent with each other. In particular, it is assumed that secondary trading takes place in the baseline scenario at the London airports but not at other airports, and therefore the baseline scenario for Heathrow and Gatwick includes the impacts of secondary trading.

Unconstrained demand[1]

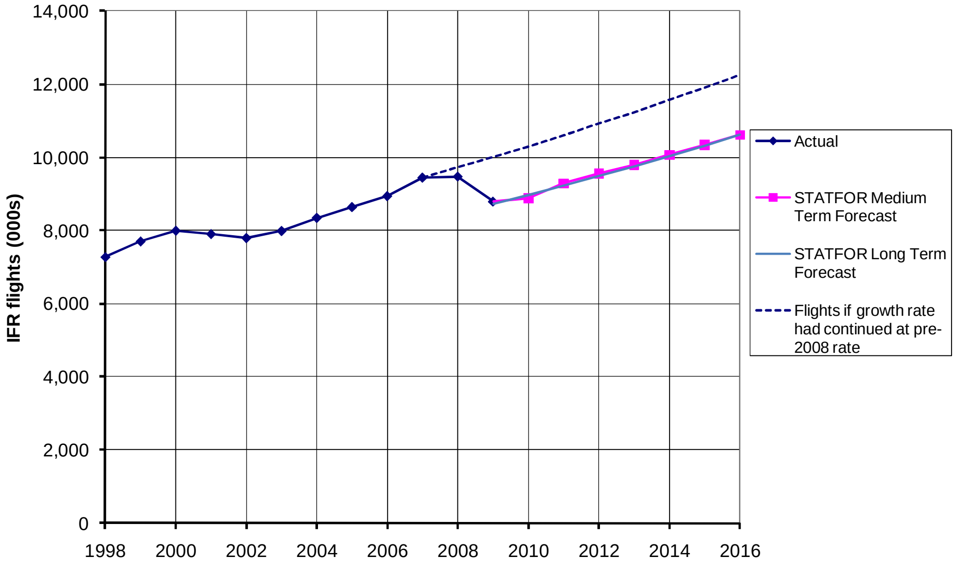
1.5 The baseline scenario includes unconstrained forecasts of both slot requests and allocations, grouped by time period (where relevant), carrier and service type. Forecasts begin from 2011, with the forecasts based on historic data for 2008-10 (to the extent available). The text below explains the rationale for the demand assumptions used to construct the baseline scenario.

1 **Unconstrained** growth means the extent to which traffic would grow if it was not limited by airport capacity constraints. **Constrained** growth means the extent to which traffic can grow given the constraints.

Recent demand trends

1.6 Figure 1.1 shows the trend in the number of flights in the EU27 States. The global financial crisis has caused a significant downturn in the demand for air transport. The number of flights in 2010 is projected to be 14% lower than it would have been if demand had continued to increase at the pre-2008 trend rate. The downturn in traffic has been much sharper than after 9/11.

FIGURE 1.1 TREND IN NUMBER OF FLIGHTS, EU27 STATES



Source: SDG analysis of EUROCONTROL STATFOR flight data; September 2010 Medium Term Traffic Forecast; January 2011 Long Term Traffic Forecast

1.7 At some Community airports, traffic has already started to increase again and, as shown above, the number of flights is expected to exceed 2008 levels by 2012. However, current forecasts indicate that traffic will not return to the pre-2008 trend, and almost five years' traffic growth has been lost as a result of the downturn.

1.8 Demand growth has, historically, been higher away from the largest hub airports (Table 1.1 below). Between 2003 and 2008, passenger numbers increased by 1.2% per year less at the five European hub airports with largest passenger throughput than at other main airports.

TABLE 1.1 DEMAND GROWTH RATES

Airports by size ranking	Annual growth rate 2003-8	
	Passengers	Flights
Top 5: London Heathrow, Frankfurt, Paris CDG, Amsterdam, Madrid	3.5%	1.9%
6th-20th: Gatwick, Munich, Barcelona, Rome, Orly, Stansted, Malpensa, Dublin, Palma de Mallorca, Manchester, Copenhagen, Vienna, Arlanda, Dusseldorf, Brussels	4.7%	2.4%
21st-50th	5.9%	3.5%
Total top 50 airports	4.7%	2.6%

1.9 This difference is partly due to capacity constraints at the major hubs. However, only two of these airports (Heathrow and Frankfurt) had demand higher than capacity throughout the day in this period, and one (Madrid) implemented a major capacity expansion and was able to accommodate substantial growth.

1.10 Therefore, capacity constraints cannot fully explain the difference in demand growth between the major airports and other airports. This is also the result of:

- **Growth of low cost airlines**: The fastest growing large European airlines are Ryanair and easyJet. Ryanair, and to a lesser extent easyJet, deliberately avoid use of the major airports due to longer turnaround times and higher charges at these airports. Even if there was sufficient capacity at the major hubs, these airlines would develop services at other airports where possible.
- **New direct services avoiding major hubs**: Long haul services have been developed from secondary airports. For example, in 2000, there were 11 scheduled routes to the USA from UK airports other than Heathrow and Gatwick, but by 2009 there were 19. Middle Eastern carriers such as Emirates and Etihad now serve many secondary European airports such as Glasgow, Geneva, Hamburg, Nice and Prague. In addition, most low cost airlines do not operate 'hub and spoke' models and therefore are not so dependent on the main hubs.
- **High speed rail**: There has been some limited mitigation in traffic growth at all of the biggest hubs due to expansion of high speed rail. For example, the number of flights on the Madrid-Barcelona route decreased 31% between 2007 and 2009, due to the completion of the high speed railway.[2] High speed rail lines have generally been constructed to/from the largest cities and so generally have the biggest impact at the biggest airports.

1.11 The average number of passengers per flight also increased during this period. Between 2003 and 2008, the number of passengers per aircraft at the 50 largest European airports increased by 2.0% per year. The trend was similar at the largest airports and at other airports, and does not appear to have resulted from capacity constraints: average aircraft size increased significantly at many major airports at which demand was not significantly constrained, including Madrid, Barcelona, London Stansted and Dublin. This has increased the number of passengers that can be transported within a given amount of runway capacity.

Independent demand forecasts

1.12 Most airports were not able to provide us with demand forecasts. Even if they had, demand forecasts for congested airports would be strongly impacted by the plans (or lack of plans) to expand capacity, and therefore do not necessarily indicate the trend in unconstrained demand, which we need for this study. Therefore, we have reviewed other sources for demand growth.

1.13 EUROCONTROL STATFOR publishes long-term forecasts for flights in European airspace. Forecasts for demand are also published by Airbus, however these are only provided for growth in passengers, not growth in air transport movements, which is

[2] Source: SDG analysis of AENA airport statistics

more relevant for this study. Airbus also produces forecasts for aircraft size mix, and we have therefore adjusted its passenger growth forecasts by its predicted trend in aircraft size, to calculate the implied air transport movement growth. Boeing also publishes traffic forecasts but these are for revenue passenger kilometres rather than passengers, and are therefore less useful for calculating number of flights (as it is not clear what assumptions are made about changes in average flight length). The forecasts are shown in Table 1.2.

TABLE 1.2 DEMAND FORECASTS

Size	Average annual growth rate 2010-2025	
	Passengers	Air transport movements
Eurocontrol STATFOR	-	2.7% (IFR flights)
Airbus	3.1% (intra-Europe) 5.0% (long haul)	2.0% (approximately)
Boeing	4.4% (revenue passenger kilometres)	-

1.14 Airbus's forecasts imply a level of flight growth lower than the Eurocontrol long term forecasts. There are two reasons for this:

- Demand growth was zero in 2009 and negative in 2010, and this period is included in the Airbus forecast but not in the Eurocontrol forecast.
- The STATFOR forecast is for IFR flights, rather than airport movements. As long haul traffic is growing faster than intra-European traffic, IFR flights will increase faster than airport movements: each long haul flight accounts for one movement at a European airport, whereas each short haul flight accounts for two.

1.15 Although the Airbus forecast is lower than the Eurocontrol forecast, the difference is relatively small when these factors are taken into account, and these forecasts are both consistent with an increase in flights at European airports of around 2-2.5%.

Demand growth forecasts

1.16 Overall these figures are consistent with passenger growth of 3.5-4.5% per year and flight growth of 2-2.5% per year. This implies that the average number of passengers per aircraft would increase by 1.5-2% per year, which is consistent with the trend 2003-8. For the reasons discussed above, the number of passengers and flights is likely to increase more slowly at the largest airports.

1.17 On the basis of these studies, we have developed forecasts for unconstrained demand growth (i.e. the amount by which demand would grow if it was not limited by capacity), for passengers and flights at the sample airports, shown in Table 1.3 below.

TABLE 1.3 UNCONSTRAINED DEMAND GROWTH BY AIRPORT SIZE

Airports	Projected growth in	
	Passengers	Movements
Overall European air market	4.0%	2.2%
London Heathrow	2.5%	1.7%
Other top 5 airports	3.3%	1.7%
6th-20th (other sample airports)	4.0%	2.1%

1.18 There will also be variation in growth resulting from type of market: long-haul and short-haul flights are forecast to grow at different rates. Based on the Airbus forecasts we assume that the number of long haul passengers and flights would increase by 2% more than the number of short haul passengers and flights.

1.19 In addition, where there is capacity for additional short haul flights to be accommodated, we would expect these to be mostly operated by low cost carriers: the low cost airlines Ryanair and easyJet have been the fastest growing European airlines in the last 10 years. For this reason all short haul growth is assumed to be on low cost services (except at Heathrow where there are currently almost no short haul low cost services).

Capacity

1.20 Current weekly capacity data was derived from airport capacity declarations. Where capacity varies between days, average peak week capacity was calculated, and where historically coordinators have allocated above capacity to account for non-use, this is also included in the model. Capacity values for future years are derived from information given in the airport and coordinator interviews and written submissions.

1.21 Our projections for the level of congestion at each of the sample airports are set out in section 3 and the airport summary fact sheets below. There will continue to be severe capacity constraints at four of the six modelled airports.

1.22 The current and forecast capacity parameters are used to produce a constrained baseline slot allocation and consequent forecasts of passengers and passenger-kilometres, summaries of which are provided in the airport fact sheets below. The methodology section explains the approach adopted in estimating the constrained forecast.

Secondary trading

1.23 In order to accurately forecast the effect of the proposed options for the two UK airports, we have explicitly modelled the underlying level of secondary trading (referred to as the 'UK baseline' scenario). The UK baseline starts with a scenario with no secondary trading and then makes the following assumptions for the impact of secondary trading at Heathrow and Gatwick (the rationale for these assumptions was discussed in section 11):

- **Annual proportion of slots traded:** Up to 3%; this is an estimate of the average percentage of slots secondary traded at Heathrow over the past three years.
- **Ratio of requests to capacity:** we assume that the 3% maximum is only reached during congested periods, and that secondary trading will not occur where the ratio of requests to capacity is less than 90% (although this is not the case for either airport or time period).
- **Aircraft size uplift:** our analysis of historic secondary trades (presented in Section 5) suggests that secondary trading has on average increased aircraft sizes by up to 33%. Part of this uplift derives from trading between short and long haul carriers, but in order to reflect trading within categories we apply an additional aircraft size uplift on all traded slots.

1.24 The approach adopted in the UK baseline scenario is discussed in detail in the methodology section.

Other factors

1.25 Assumptions about trends in other factors are shown below.

TABLE 1.4 OTHER BASELINE ASSUMPTIONS

Factor	Trend
Late handback	Continues as now, but where congestion gets worse, the impact of this increases, as it is more likely to prevent other airlines from acquiring slots.
Slot utilisation	Continues as now, but where congestion gets worse, the impact of low utilisation increases, as it is more likely to prevent other airlines from acquiring slots
Regional accessibility	Where congestion gets worse (e.g. Heathrow) regional services likely to be withdrawn. No impact where congestion does not get worse (e.g. Vienna)
Access for business aircraft	Where congestion gets worse, it will become increasingly difficult for business aviation to obtain access to coordinated airports. No impacts where congestion does not get worse.
CO2 emissions	Increases in line with traffic growth but with 1% per year improved efficiency
Noise	Increases in line with traffic growth
Employment	Increases in line with traffic growth
Economic benefits	Increases in line with traffic growth

1.26 In general, where there are issues with the operation of the current Regulation, such as late handback of slots and low utilisation at certain airports, these are likely to continue at the current level. However, the Regulation only has an effect to the extent that demand exceeds capacity: for example, at a congested airport, late handback of slots may lead to some airlines not being able to obtain slots that they could otherwise have used, whereas at an uncongested airport, late handback has no impact because it does not prevent any other airline from obtaining slots. Therefore, where airport congestion is expected to get worse, over time the problems which have been identified with the Regulation will have more impact, and options which address these problems will have greater benefits. In contrast, at airports where capacity is expanded, such as Frankfurt, the impact that these problems have will be reduced.

Outputs

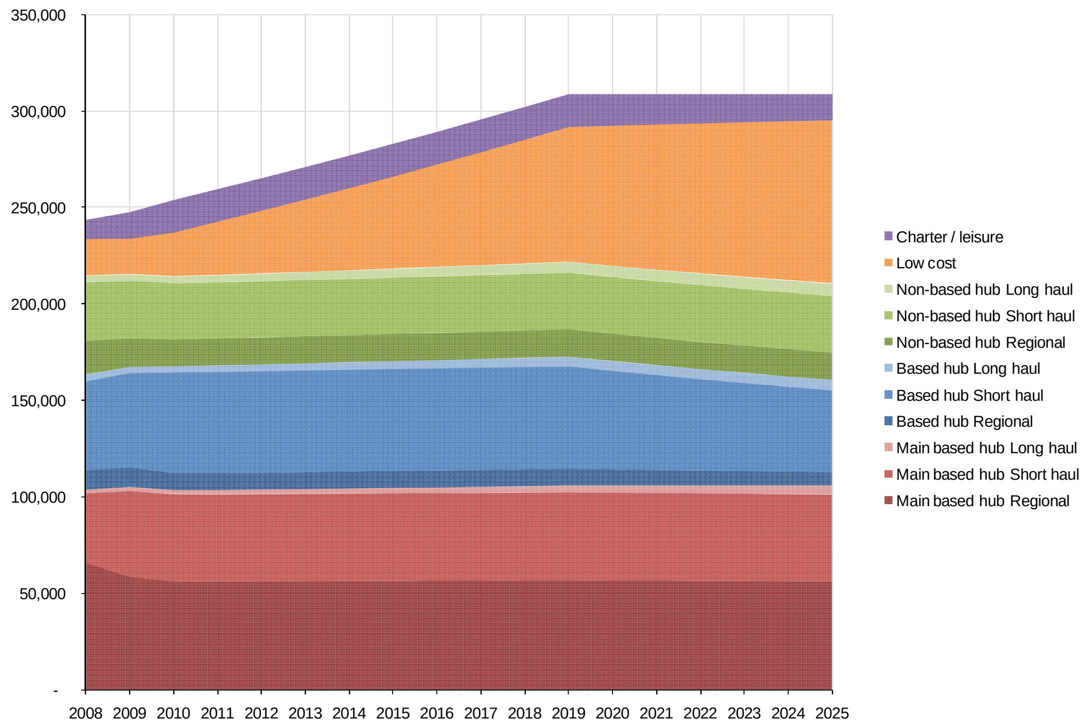
1.27 The following pages summarise the outputs of the baseline scenario calculations for each of the six airports modelled. For UK airports the outputs of the UK baseline scenario are presented.

1.28 At the end of this section the traffic assumptions for the other airports are summarised. The extrapolation to other airports is based on traffic and level of congestion, and therefore baseline assumptions other than traffic growth are not modelled. For more detail of the approach to extrapolation, including the current level of congestion, please see the discussion at the end of appendix 2.

Düsseldorf DUS

Inputs		2010	2012	2017	2025
Average hourly daytime capacity		45	45	50	50
Slot transfers through pool		5.0%	5.0%	5.0%	5.0%
Secondary trading		0.0%	0.0%	0.0%	0.0%
Slot utilisation		93.2%	93.2%	93.2%	93.2%
Annual totals		**2010**	**2012**	**2017**	**2025**
Slot requests		271,040	283,097	315,638	375,661
Initial slot allocation		253,664	264,948	295,403	308,596
Operated flights		236,303	246,815	275,186	287,476
Passengers		18,981,000	21,151,537	25,822,247	31,181,361
Passenger-kilometres (millions)		25,617	29,509	38,778	51,230
Rates		**2010**	**2012**	**2017**	**2025**
Capacity utilised		91.3%	95.4%	95.7%	100.0%
Average passengers per flight		80	86	94	108
Average kilometres per flight		1,350	1,395	1,502	1,643
Carrier market share		**2010**	**2012**	**2017**	**2025**
Category	**Main carriers**				
Main based hub	Lufthansa	41%	39%	36%	34%
Based hub	Air Berlin	25%	24%	22%	18%
Non-based hub	Air France, SAS, Turkish Airlines	18%	18%	16%	16%
Low cost	Flybe, TUI Fly, SunExpress	9%	12%	20%	27%
Charter/leisure	Blue Wings, Condor, Germania	7%	6%	6%	4%

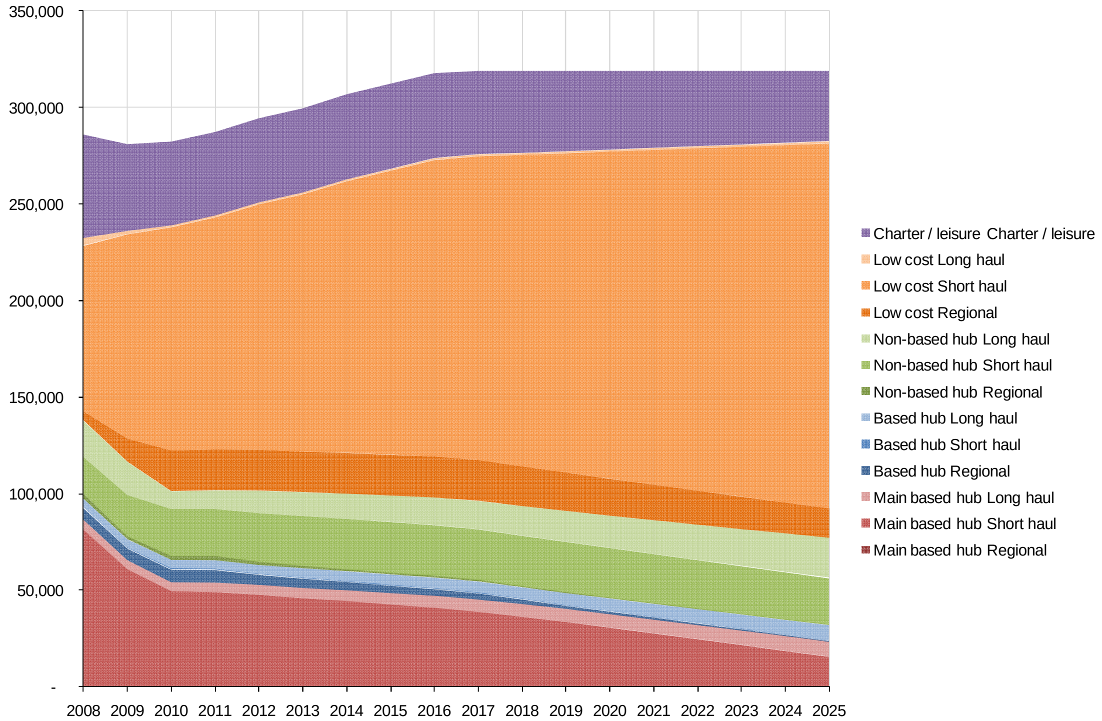
Constrained initial allocation by year, carrier and service type



London Gatwick LGW

Inputs		2010	2012	2017	2025
Average hourly daytime capacity		56	58	59	59
Slot transfers through pool		5.4%	5.4%	5.4%	5.4%
Secondary trading		3.0%	3.0%	3.0%	3.0%
Slot utilisation		91.6%	91.6%	91.6%	91.6%
Annual totals		**2010**	**2012**	**2017**	**2025**
Slot requests		310,560	324,375	361,662	430,437
Initial slot allocation		282,200	294,200	318,709	318,709
Operated flights		258,388	269,376	291,817	291,817
Passengers		31,348,100	33,428,401	38,607,789	43,473,437
Passenger-kilometres (millions)		73,163	78,809	92,553	110,734
Rates		**2010**	**2012**	**2017**	**2025**
Capacity utilised	Peak	100.0%	100.0%	100.0%	100.0%
	Off-peak	92.7%	92.8%	100.0%	100.0%
Average passengers per flight		121	124	132	149
Average kilometres per flight		2,334	2,358	2,397	2,547
Carrier market share					
Category	**Main carriers**	**2010**	**2012**	**2017**	**2025**
Main based hub	British Airways	19%	18%	14%	7%
Based hub	Virgin, Aurigny, Air Southwest	4%	3%	3%	3%
Non-based hub	Aer Lingus, TAP, Emirates	13%	13%	13%	14%
Low cost	easyJet, Flybe, Ryanair	49%	51%	56%	64%
Charter/leisure	Thomson, Thomas Cook, Monarch	15%	15%	14%	11%

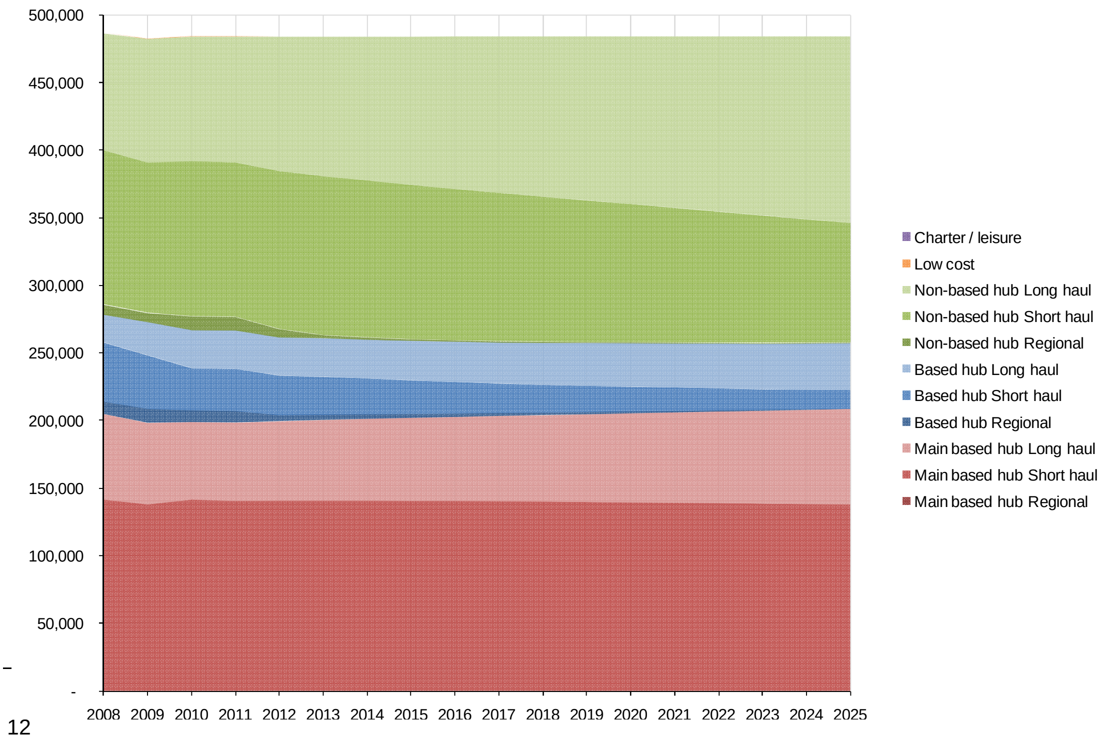
Constrained initial allocation by year, carrier and service type



London Heathrow LHR

Inputs		**2010**	**2012**	**2017**	**2025**
Average hourly daytime capacity		79	79	79	79
Annual movement cap		480,000	480,000	480,000	480,000
Slot transfers through pool		0.3%	0.3%	0.3%	0.3%
Secondary trading		3.0%	3.0%	3.0%	3.0%
Slot utilisation		96.3%	96.3%	96.3%	96.3%
Annual totals		**2010**	**2012**	**2017**	**2025**
Slot requests		523,613	541,567	589,192	674,256
Initial slot allocation		484,251	484,251	484,251	484,251
Operated flights		466,214	466,214	466,214	466,214
Passengers		65,746,910	68,199,954	74,795,002	85,301,445
Passenger-kilometres (millions)		291,939	309,958	361,554	448,418
Rates		**2010**	**2012**	**2017**	**2025**
Capacity utilised	Peak	100.0%	100.0%	100.0%	100.0%
	Shoulder	100.0%	100.0%	100.0%	100.0%
	Off-peak	100.0%	100.0%	100.0%	100.0%
Average passengers per flight		141	146	160	183
Average kilometres per flight		4,440	4,545	4,834	5,257
Carrier market share		**2010**	**2012**	**2017**	**2025**
Category	**Main carriers**				
Main based hub	British Airways	41%	41%	42%	43%
Based hub	BMI, Virgin	14%	13%	11%	10%
Non-based hub	Lufthansa, Aer Lingus, SAS	45%	46%	47%	47%
Low cost	Air Transat	0%	0%	0%	0%
Charter/leisure	-	0%	0%	0%	0%

Constrained initial allocation by year, carrier and service type



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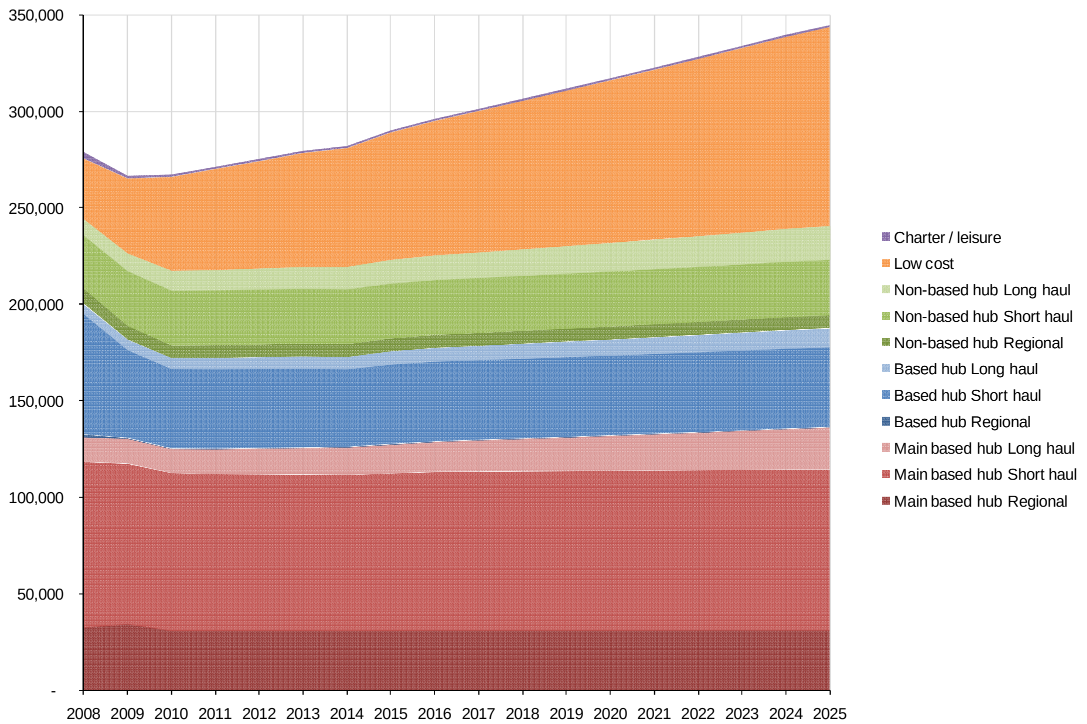
Madrid Barajas MAD

Inputs		2010	2012	2017	2025
Average hourly daytime capacity		96	96	108	118
Slot transfers through pool		6.8%	6.8%	6.8%	6.8%
Secondary trading		0.0%	0.0%	0.0%	0.0%
Slot utilisation		88.3%	88.3%	88.3%	88.3%
Annual totals		**2010**	**2012**	**2017**	**2025**
Slot requests		543,924	562,574	612,047	700,410
Initial slot allocation		534,132	550,396	602,286	689,022
Operated flights		471,600	485,960	531,775	608,356
Passengers		49,863,504	53,035,312	62,828,391	81,600,207
Passenger-kilometres (millions)		100,463	108,710	134,632	187,970
Rates		**2010**	**2012**	**2017**	**2025**
Capacity utilised	Peak	100.0%	100.0%	96.5%	97.7%
	Shoulder	94.7%	98.2%	95.4%	100.0%
	Off-peak	69.1%	71.8%	72.7%	79.2%
Average passengers per flight		106	109	118	134
Average kilometres per flight		2,015	2,050	2,143	2,304
Carrier market share		**2010**	**2012**	**2017**	**2025**
Category	**Main carriers**				
Main based hub	Iberia, Air Nostrum	47%	46%	43%	40%
Based hub	Spanair, Air Europa	18%	17%	16%	15%
Non-based hub	Lufthansa, TAP, Air France	17%	17%	16%	15%
Low cost	Ryanair, easyJet, Vueling	18%	20%	24%	30%
Charter/leisure	Air Pullmantur, AMC Airlines, Air Memphis	0%	0%	0%	0%

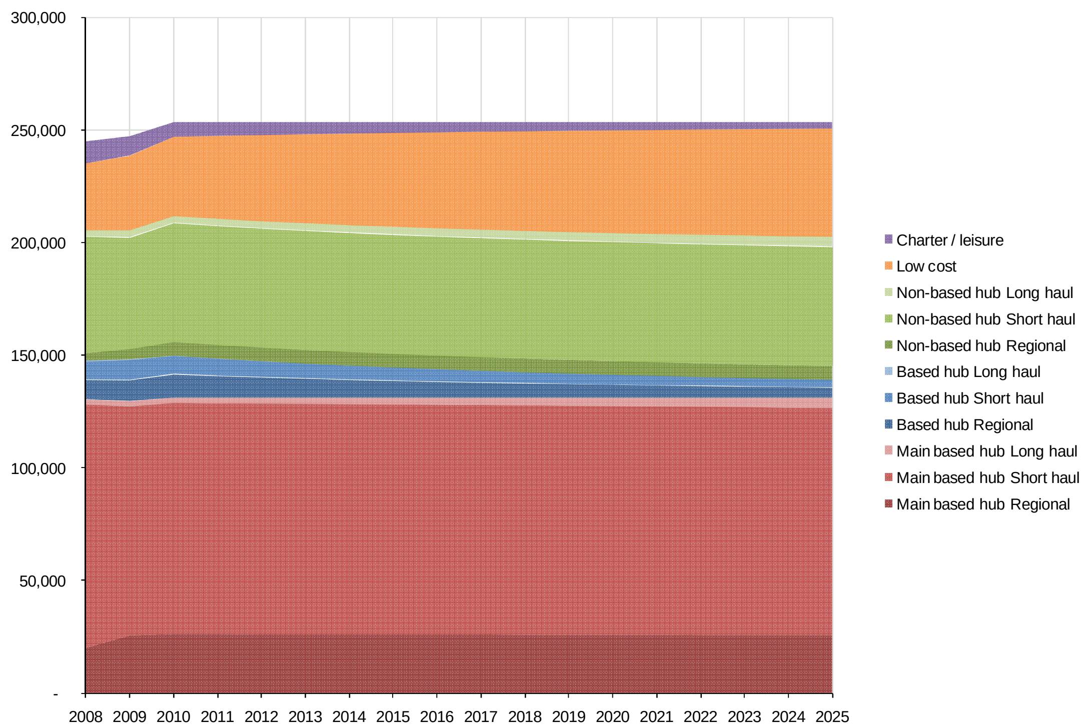
Constrained initial allocation by year, carrier and service type



Paris Orly ORY

Inputs		2010	2012	2017	2025
Annual allocation cap		250,000	250,000	250,000	250,000
Slot transfers through pool		1.1%	1.1%	1.1%	1.1%
Secondary trading		0.0%	0.0%	0.0%	0.0%
Slot utilisation		95.9%	95.9%	95.9%	95.9%
Annual totals		**2010**	**2012**	**2017**	**2025**
Slot requests		293,437	306,491	341,721	406,704
Initial slot allocation		253,360	253,360	253,360	253,360
Operated flights		243,016	243,016	243,016	243,016
Passengers		25,201,608	26,099,849	28,486,435	32,764,291
Passenger-kilometres (millions)		38,249	39,127	42,246	49,512
Rates		**2010**	**2012**	**2017**	**2025**
Capacity utilised		100.0%	100.0%	100.0%	100.0%
Average passengers per flight		104	107	117	135
Average kilometres per flight		1,518	1,499	1,483	1,511
Carrier market share		**2010**	**2012**	**2017**	**2025**
Category	**Main carriers**				
Main based hub	Air France and subsidiaries	52%	52%	52%	52%
Based hub	Aigle Azur, Airlinair, L'Avion	7%	6%	5%	3%
Non-based hub	Iberia, Royal Air Maroc, TAP	24%	24%	25%	25%
Low cost	easyJet, Transavia	14%	15%	17%	19%
Charter/leisure	Corsairfly, Air Mediteranee	3%	2%	2%	1%

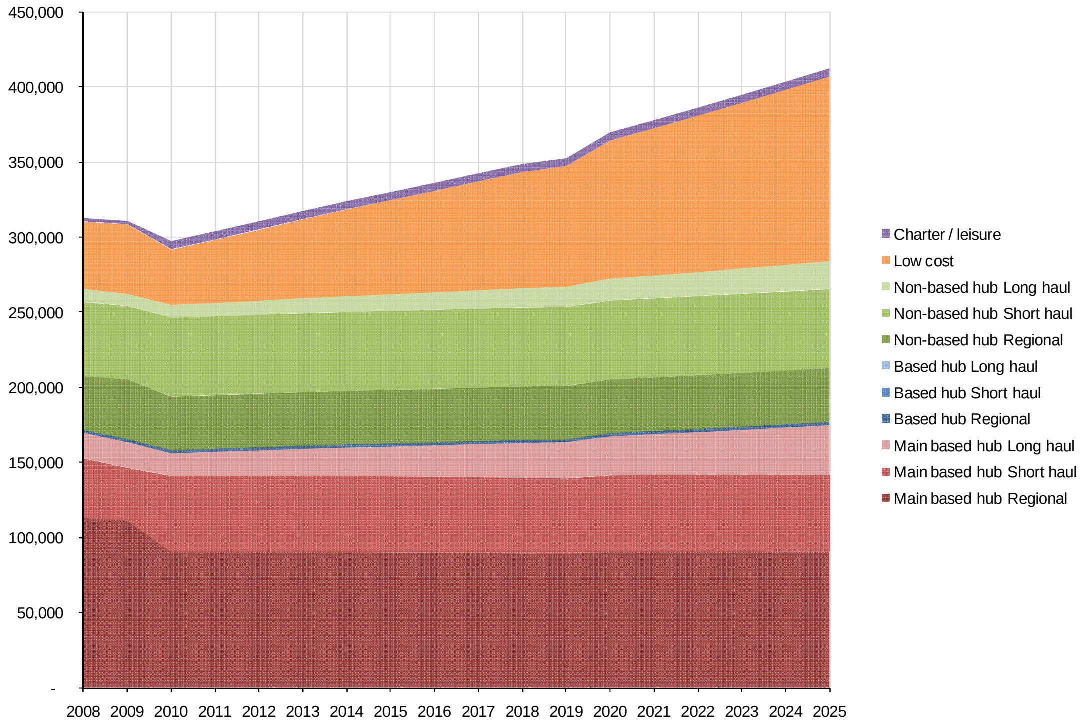
Constrained initial allocation by year, carrier and service type



Vienna VIE

Inputs		2010	2012	2017	2025
Average hourly daytime capacity		64	64	64	85
Slot transfers through pool		6.8%	6.8%	6.8%	6.8%
Secondary trading		0.0%	0.0%	0.0%	0.0%
Slot utilisation		90.9%	90.9%	90.9%	90.9%
Annual totals		**2010**	**2012**	**2017**	**2025**
Slot requests		298,018	311,275	347,055	413,053
Initial slot allocation		297,040	310,365	342,335	412,630
Operated flights		269,868	281,974	311,019	374,884
Passengers		19,725,401	21,358,097	25,749,325	35,800,097
Passenger-kilometres (millions)		29,676	33,027	42,614	65,093
Rates		**2010**	**2012**	**2017**	**2025**
Capacity utilised	Peak	94.5%	97.5%	100.0%	91.0%
	Shoulder	83.7%	87.6%	97.9%	88.3%
	Off-peak	59.3%	62.3%	70.5%	64.7%
Average passengers per flight		73	76	83	95
Average kilometres per flight		1,504	1,546	1,655	1,818
Carrier market share		**2010**	**2012**	**2017**	**2025**
Category	**Main carriers**				
Main based hub	Austrian	53%	51%	47%	42%
Based hub	InterSky	1%	1%	1%	1%
Non-based hub	Air Berlin, Lufthansa, Adria	33%	31%	29%	26%
Low cost	Niki, Germanwings, EasyJet	12%	15%	21%	30%
Charter/leisure	MAP, Germania, Nouvelair	2%	2%	2%	1%

Constrained initial allocation by year, carrier and service type



1.29 Table 1.5 shows projected traffic at other coordinated airports.

TABLE 1.5 PASSENGER NUMBERS (MILLIONS) OTHER AIRPORTS

State	Airport	2009	2016	2025
AT	Vienna	18.1	22.9	32.6
BE	Brussels National	17.0	21.5	30.6
CZ	Prague	11.6	14.7	21.0
DK	Copenhagen - Kastrup	19.7	24.9	35.5
DK	Billund	2.3	2.9	4.1
FI	Helsinki-Vantaa	12.6	15.9	22.7
FR	Paris CDG	57.7	70.1	93.9
FR	Paris Orly	25.0	31.6	45.0
FR	Nice Côte d'Azur	9.8	12.4	17.6
FR	Lyon Saint-Exupéry	7.6	9.6	13.6
DE	Frankfurt	50.6	61.5	82.4
DE	Dusseldorf	17.8	22.5	32.0
DE	Munich	32.6	41.3	58.8
DE	Stuttgart	8.9	11.3	16.0
DE	Berlin Tegel	14.2	17.9	25.5
DE	Berlin Schönefeld	6.8	8.6	12.2
IS	Keflavik International	1.7	2.1	3.0
IE	Dublin	20.5	25.9	36.9
IT	Venice - Marco Polo	6.7	8.4	12.0
IT	Lampedusa	0.2	0.2	0.3
IT	Rome Fiumicino	33.4	42.3	60.2
IT	Bergamo Orio al Serio	7.1	9.0	12.9
IT	Rome Ciampino	4.8	6.0	8.6
IT	Cagliari Elmas	3.3	4.2	6.0
IT	Catania Fontanarossa	5.9	7.5	10.6
IT	Firenze Peretola	1.7	2.1	3.0
IT	Milano Linate	8.3	10.5	14.9
IT	Milano Malpensa	17.3	22.0	31.2
IT	Napoli Capodichino	5.3	6.7	9.5
IT	Palermo	4.4	5.5	7.8
IT	Pantelleria	0.1	0.2	0.2
IT	Torino Caselle	3.2	4.1	5.8
NL	Amsterdam Schiphol	43.5	52.9	70.8
NL	Rotterdam	0.9	1.2	1.7
NL	Eindhoven	1.7	2.2	3.1
NO	Oslo Gardermoen	18.0	22.8	32.4
NO	Bergen Flesland	4.5	5.7	8.1
NO	Stavanger Sola	3.4	4.3	6.1
PT	Lisbon	13.2	16.8	23.9
PT	Oporto	4.5	5.7	8.1
PT	Faro	5.0	6.3	9.0
PT	Madeira	2.3	3.0	4.2
ES	Madrid-Barajas	48.4	58.9	78.8
ES	Almería	0.8	1.0	1.4
ES	Alicante	9.1	11.6	16.5
ES	Barcelona	27.4	34.7	49.4
ES	Bilbao	3.7	4.6	6.6
ES	Fuerteventura	3.7	4.7	6.7
ES	Gran Canaria	9.2	11.6	16.5
ES	Ibiza	4.6	5.8	8.2
ES	Jerez	1.1	1.4	1.9
ES	La Palma	1.0	1.3	1.9
ES	Lanzarote	4.7	5.9	8.5
ES	Málaga	11.6	14.7	20.9
ES	Menorca	2.4	3.1	4.4
ES	Palma de Mallorca	21.2	26.8	38.2
ES	Tenerife Norte	4.1	5.1	7.3
ES	Tenerife Sur	7.1	9.0	12.8

SE	Stockholm-Arlanda	16.1	20.3	28.9
SE	Stockholm-Bromma	2.0	2.5	3.5
CH	Geneva	11.3	14.3	20.4
CH	Zurich	22.0	27.8	39.6
UK	London Heathrow	65.9	80.1	107.3
UK	London City	2.8	3.5	5.0
UK	London Gatwick	32.4	40.9	58.3
UK	London Stansted	19.9	25.2	35.9
UK	Manchester	18.6	23.6	33.6

2. APPENDIX 2: METHODOLOGY AND ASSUMPTIONS FOR QUANTIFIED IMPACT ASSESSMENT

Introduction

2.1 This section provides further information on how we have undertaken the quantitative evaluation of the impacts of each the options. It explains:

- which of the options could be assessed in quantified terms;
- the process for estimating the base year data, and the baseline scenario, from the slot and traffic data provided by coordinators and airport management companies;
- how the operational impacts of each of these options have been assessed;
- how economic, social and environmental impacts have been calculated;
- the approach to extrapolation to other airports; and
- calculation of administrative cost/burden.

Which options could be assessed in quantified terms

2.2 Of the options initially evaluated, some were not progressed to a quantitative evaluation because, on the initial assessment, there was not a reasonable possibility that they would produce net benefits. Of those that were progressed, most were modelled in quantitative terms; however, a few either do not have quantifiable impacts, or the only quantifiable impacts are the direct implementation costs. Table 2.1 summarises which options quantitative modelling was undertaken for, and why.

TABLE 2.1 OPTIONS FOR QUANTITATIVE ASSESSMENT

Option	Description of option	Progressed beyond initial evaluation?	Quantitative assessment?
B1.1/ B1.2	Coordinator to be organisationally as well as functionally separate	Yes	Yes (implementation costs only – no operational impact)
B1.3	Limit the types of adjacent activities that a coordinator may develop	No	-
B1.4	Member States to ensure that coordinators adequately funded	Yes	Yes (implementation costs only – no operational impact)
B1.5	Financing of the coordinator must be shared between airlines and airports	Yes	Yes (implementation costs only – no operational impact)
B2.1	Coordinators to contribute data to online database	No	-
B2.2	Coordinators to have obligation to publish information online, including annual reports	Yes	Yes (implementation costs only – no operational impact)
B3.1	Slot reservation fees	Yes	Yes
B3.2	Penalties for late handback of slots	Yes	Yes
B3.3	Increased powers of enforcement for coordinators	Yes	No (primarily clarification)
B4.1	States to have right to reserve slots for business/general aviation	Yes	Yes

B4.2	Amend definition of business aviation	Yes	No (clarification only)
B5.1	Airport management body to have right to refuse a no-slot flight permission to land	No	-
B5.2	Clarification of Article 14(1)	Yes	No (clarification only)
B6	Coordinators to collect data for Network Manager	Yes	Yes (implementation costs only – no operational impact)
B7.1	Allow public authorities to purchase slots on secondary market	No	-
B7.2	Allow Member States to reserve slots for non-PSO regional services	No	-
C1	Define ownership of slots	No	-
C2.1	Secondary trading at all EU airports	Yes	Yes
C2.2	Limit on slot acquisitions by main incumbent	No	-
C2.3	Prohibit anti-competitive restrictive covenants	Yes	No (as no quantifiable impacts)
C2.4	Post trade transparency	Yes	Yes (implementation costs only – no operational impact)
C2.5	Pre trade transparency	Yes	Yes (implementation costs only – no operational impact)
C2.6	Blind auctions of slots	No	-
C3/4	States to have option of introducing auctions if new capacity available	Yes	Yes (through case study, as not applicable to most airports)
C5	Withdrawal of grandfather rights and auctions	Yes	Yes (at two airports only)
C7.1	Amend new entrant definition	Yes	Yes
C7.2	Limit on main incumbent being allocated new slots	No	-
C8.1A	Increase utilisation threshold to 85%	Yes	Yes
C8.1B	Increase utilisation threshold to 90%	Yes	Yes
C8.2	Increase minimum length of a series of slots	Yes	Yes

General assumptions

2.3 The impact assessment model covers every year from 2008 to 2025, although the impacts of the options are reported only for a selection of these years – usually 2012, 2017 and 2025, plus an average annual impact 2012-25.

2.4 All options are assumed to take effect in 2012, except the options evaluated using a case study of potential expansion of Heathrow, which is assumed to take place in 2017.

2.5 All economic and financial impacts are reported in real 2010 Euros at current exchange rates.

Calculation of baseline

2.6 This section explains the process followed to calculate the baseline scenario from the slot, capacity and traffic data provided by each coordinator and airport. Information on the key assumptions for the baseline scenario was provided in the previous section.

Classification and disaggregation of data

2.7 The baseline scenario and impacts of the options are modelled by carrier and service type. This enables the different impacts on short haul and long haul services, and types of operator, to be reflected. We model the following types of carrier at each airport (although note that at some airports there are few movements of some of these types):

- main based network carrier and subsidiaries (for example, British Airways for Heathrow and Air France for Orly);
- other based network carriers (for example, Virgin Atlantic at Heathrow and Gatwick, and Spanair at Madrid);
- network carriers which are not based at the airport concerned (for example, Lufthansa at Heathrow or Madrid, and British Airways at Dusseldorf) ;
- low cost carriers; and
- charter/leisure carriers.

2.8 We have also divided the services provided by network carriers into regional, short haul and long haul. At most of the airports modelled, virtually all low cost carriers operate short haul services with similar sized aircraft (usually the Boeing 737 or Airbus 319/320), and therefore we do not distinguish between types of low cost carriers. However, at Gatwick, there are low cost carriers operating smaller regional aircraft and at some points there have also been some low cost long haul services; therefore, at Gatwick low cost is also divided into regional, short haul and long haul.

2.9 Based hub carriers are defined as any network carriers registered in the same country as the airport. The main based hub is the largest of these carriers, measured in terms of slot holdings, and includes any subsidiaries (for example Brit Air and Regional are included within this category at Orly, as both are Air France subsidiaries).

2.10 Disaggregation into time periods is applied at the London airports, Madrid Barajas and Vienna to better reflect the variations in capacity and mix of services across the day. These periods are defined in the table and explained below.

TABLE 2.1 TIME PERIODS BY AIRPORT (LOCAL TIME)

Airport	Movements	Peak	Shoulder	Off-Peak
London Gatwick	Departures	06:00-08:59	-	00:00-05:59 09:00-23:59
London Heathrow	Arrivals	06:00-08:59	09:00-12:59	13:00-23:59
Madrid Barajas	Arrivals	10:00-10:59 14:00-14:59 18:00-18:59	09:00-09:59 11:00-13:59 17:00-17:59 19:00-19:59	00:00-08:59 15:00-16:59 20:00-23:59
Vienna	Total	09:00-10:59 19:00-19:59	11:00-11:59 16:00-18:59 20:00-20:59	00:00-08:59 12:00-15:59 21:00-23:59

2.11 Peak time periods at the London airports are based on demand at each of the airports, as outlined in our interview with ACL:

- Heathrow: At Heathrow, value of slots is determined by arrival time, as on most long haul routes the optimal arrival time is the early morning, but departures can be through most of the day. Pre 09:00 arrival slots are in particularly high demand, with slots in the period 09:00-13:00 being sought after to a lesser degree. Slots later in the afternoon and evening are generally not appropriate for long haul services and can sometimes be obtained from the pool, and therefore this is considered off-peak.
- Gatwick: The most sought-after slots at Gatwick are for early morning departures, primarily for low cost short-haul services. Obtaining these slots allows carriers to base an additional aircraft at the airport, and improves efficiency by maximising the number of rotations which can be operated in a given day. Slots at other times may be available through the pool and therefore this is considered off-peak. There is now relatively little long haul traffic at Gatwick and therefore this does not influence the peak/off-peak split.

2.12 The more dispersed peak periods at Madrid and Vienna reflect the 'banks' of long haul and connecting short haul services operated by the main based hub carriers. The peak periods at Madrid comprises the most congested three hours of the day (during which capacity utilisation exceeds 96%); and the shoulder period generally comprises hours adjacent to the peak periods in which capacity utilisation is over 80%. At Vienna, peak hours are defined as those during the daytime period (07:00-21:00 local time) for which capacity utilisation exceeds 95%; and the shoulder period comprises hours the five hours for which capacity utilisation exceeds 80%.

2.13 The data for Orly and Dusseldorf is not disaggregated because:

- at Orly, the main capacity constraint is the annual slot cap, and within this constraint airlines are generally able to operate at their preferred times – therefore there would be no value from further disaggregation at Orly;
- at Dusseldorf, the slot request and allocation data provided to us was not disaggregated by time.

2.14 We model the primary capacity constraint at each airport. At some airports this is the total number of movement that can be operated in any given period, whereas at others it may be either arrivals or departures. Where only arrivals or departures are modelled, total impacts are calculated by doubling the results. The rationale for this selection is as follows:

- at Orly, Vienna and Dusseldorf, the effective constraint is on total movements (per year at Orly, per hour at Vienna and Dusseldorf) and therefore we model total movements;
- at Heathrow, slot values are determined by arrival time, and therefore we model arrivals;
- at Gatwick, the main distinction in slot values is determined by departure time, and therefore we model departures; and
- at Madrid, there is slightly higher hourly departure capacity than arrival capacity, and therefore the main constraint is on arrivals, and hence we model arrivals.

Division into traffic type and time of day

2.15 The data provided by the coordinators for the London airports, Madrid and Vienna was sufficiently detailed to allow totals for each traffic type and each time of day to be calculated by a simple classification of the seasonal slot data, which was then aggregated into years for modelling purposes. The data provided by the French and German coordinators showed slot requests and allocations between carriers, but OAG schedule data had to be used to estimate the breakdown between service types.

Slot requests and unconstrained demand

2.16 The first stage in the calculation of the baseline scenario is the estimation of slot demand and the unconstrained allocation (i.e. allocation unconstrained by capacity), both using historic data with future years forecast using the growth rates set out in the previous section.

2.17 However, the unconstrained forecasts only provide a realistic estimate of actual demand at airports and time periods for which there is no congestion. In other cases the demand forecast has to be constrained to take account of the limitations in capacity available.

Constrained initial baseline slot allocation

2.18 Capacity is expressed in the model as a weekly value, disaggregated by time period where appropriate (except at Orly, where the capacity constraint is the annual slot cap). To assess the degree to which capacity constrains demand, the unconstrained annual allocation forecast is converted to a peak week equivalent, using the current ratio between the annual total allocation and allocation during the busiest week of the year at each of the airports. The total constrained allocation for the airport and time period is then the minimum of the capacity and the unconstrained forecast. The constrained peak week allocation is then converted back to an annual value, after which any further annual movement or slot caps are applied.

2.19 In order to reflect the extent of slot transfers through the pool at each of the airports, the constrained total slot allocation is then disaggregated between an estimated slot pool and slots which are retained as historics, with the disaggregation between the two categories based on the current ratio between new and total slot allocations at each airport (reduced to reflect the likelihood that fewer slots will be returned to the pool than in the base period which was impacted by the economic crisis). Retained (historic) slots are allocated between service types on the basis of historic allocations, but the main based carrier is permitted to transfer slots between its own service types based on its unconstrained demand. Transferring (pool) slots are allocated in proportion to unconstrained requests. Where it is not realistic that an airline would give up slots, given the characteristics of demand from the specific airlines at each airport, the model is constrained so that this does not happen.

2.20 The forecast transferring and retained slots are then summed to give the forecast constrained initial allocation for the airport, details of which were provided in the airport summary fact sheets in section 1 above.

2.21 In order to provide an indication of slots actually operated, the forecast initial allocation is multiplied by the historic airport utilisation. The estimate of operated slots forms the basis of the passenger forecast, and is the measure used to compare the impact of the options with the baseline scenario.

Passengers and passenger-kilometres

2.22 All the case study airports were able to provide us with historic passenger data, but this was not always disaggregated by carrier and route. The same short/long haul route classification is applied, and disaggregation between time periods is calculated in proportion to allocated seats. The same approach is used to separate regional from total short haul passengers, as the regional classification is based on aircraft seats and cannot be reliably derived directly from the passenger data.

2.23 Where the data was less detailed some further assumptions were required. Madrid provided passenger data by carrier only, so the data on allocated seats was also used to estimate the share of passengers between the service types. Düsseldorf and Orly provided only total passengers, so for these airports the disaggregation between carrier and service types was estimated on the basis of OAG schedule data.

2.24 Total passenger numbers for each airport were estimated by growing historic passengers by the growth in slots operated, and growth in passengers per operated slot. A first estimate of passengers by carrier and service types is calculated assuming constant passengers per operated slot, the totals of which are used to calculate the growth in passengers per slot required to reach the predicted airport total.

2.25 Passenger-kilometres are calculated using the same approach as for passengers described above. This produces values for average kilometres per flight for each carrier and service type. Passenger-kilometres are therefore calculated by multiplying the forecast passengers by the historic kilometres per flight.

Secondary trading

2.26 As discussed in the previous section, we produce an additional baseline scenario for the UK airports, which includes the amount of secondary trading which is assumed to happen. The process followed to estimate the impact of secondary trading is described below under option C2.1.

Calculation of operational impacts of options

2.27 This section explains how we have estimated the operational impacts of each of the options, the latter in terms of impacts on the number and type of flights operated, passengers transported and flight length. From these results, economic, environmental and social impacts are calculated; the approach to this is discussed further below.

2.28 This section explains the technical process that has been followed and the main assumptions. It does not seek to duplicate the discussion of the impacts of options in sections 10 and 11 of the main report, and the rationale for these impacts, and therefore should be read in parallel with this.

2.29 Options can impact on:

- the percentage of airport capacity for which slots are allocated;
- the percentage of allocated slots which are operated; and/or
- the types of flights to which slots are allocated (airline type, aircraft size, or route length).

Impact of congestion on effects of options

2.30 For each airport, year and time period, we calculate the expected ratio between demand for slots and capacity (congestion) in the peak week of the year. This is important because it determines to what extent each option has an impact. Projected levels of congestion are shown in appendix 1.

2.31 The options have their maximum operational impacts where the number of allocated slots equals capacity. Initially, this applies at all times at Heathrow and Orly, and during peak periods at Gatwick.

2.32 Where initial requests for slots are less than capacity, airlines can get the slots that they want within approximately the time that they want. Therefore, the options have no operational impact. For example, late handback of slots should have no operational impact if requests are less than capacity, because it does not impact on the ability of other airlines to gain slots at their preferred times; as a result, introduction of a slot reservation fee may reduce late handbacks but does not increase the number of slots that can be allocated to other airlines, or the amount of traffic that can be handled.

2.33 To allow for the fact that there is some variation in demand between times within periods which it is not practical to model, and therefore it is possible that there could be constraints at some times within a period even if overall there are not, the threshold below which options are assumed to have no impact is set where initial requests are 90% of capacity. Initially, during off-peak and shoulder periods at Vienna and Madrid, the number of initial requests is less than 90% of capacity and therefore options have no operational impact.

2.34 At some airports at certain times (for example, initially at Dusseldorf; during peak periods at Vienna and Madrid; and off-peak at Gatwick), the number of initial requests for slots exceeds 90% of capacity, but the number of slots ultimately allocated is less than capacity. In these cases the options are assumed to have some, but partial impact, with the impact increasing as demand gets closer to capacity.

Option B3.1: Slot reservation fees

2.35 Slot reservation fees are assumed to result in a 50% reduction in the net impact on slot allocation of late handback. This results in an increase in the proportion of airport capacity for which slots are actually allocated: where there is currently late handback and this prevents other requests for slots being granted by the coordinator, it is assumed that slots can be allocated to some of these, and therefore some additional flights can be scheduled and operated. It has no impact on slot utilisation or type of flight operated. The impact varies depending on the extent to which the airport is congested.

Option B3.2: Penalties for late handback

2.36 Penalties for late handback are assumed to result in a 25% reduction in the net impact on slot allocation of late handback. This results in an increase in the proportion of airport capacity for which slots are actually allocated, where the airport is congested: where there is currently late handback and this prevents other requests for slots being granted by the coordinator, it is assumed that slots can be allocated to some of these, and therefore some additional flights can be scheduled and operated. It has no impact on slot utilisation or type of flight operated. The impact varies depending on the extent to which the airport is congested. There is no impact at Dusseldorf or Madrid, as penalties for late handback are already available.

Option B4.1: Allocation of 1% of slots to business aviation

2.37 Allocation of 1% of slots to business aviation impacts as follows:

- Utilisation at the airport is reduced: The slots allocated to business aviation are utilised 80% of the time, whereas the slots allocated to other flights are used 90-95% of the time (depending on the airport)
- The number of slots allocated is reduced: Except at Orly (where there is not a physical capacity constraint), every business aviation slot replaces 1.5 regular slots, due to greater separation requirements.
- Aircraft sizes are reduced: The business aviation flights carry 2.4 passengers on average, much less than the regular flights. Given that data on business aviation flights at our case study airports is limited, we have derived this estimate from 2009 traffic figures for Madrid Torrejón, which is used primarily by general and business aviation.

2.38 There is no impact at Dusseldorf, as there is in effect already capacity reserved for business aviation, and no impact at Madrid, as business aviation is largely excluded from the airport by a traffic distribution rule.

2.39 As for the other options, the impact varies depending on the extent to which the airport is congested.

Option C2.1: Secondary trading

2.40 Secondary trading is modelled twice:

- the underlying level of secondary trading at Heathrow and Gatwick, which is part of the baseline scenario; and
- secondary trading at other airports and a slightly increased level at Heathrow and Gatwick (option C2.1).

2.41 The process that is followed to estimate these impacts seeks to replicate actual experience of secondary trading at Heathrow and Gatwick adjusted at the other airports for airport-specific characteristics of the traffic (as discussed in section 11). However, it is not possible to maintain constant assumptions, because airlines' willingness to buy and sell slots depends on a number of factors, including the extent to which they have demand for slots which is unaccommodated, the extent to which they have slots to sell, and the extent to which they can obtain slots in any case through the pool. For example, at Heathrow, the 'based short haul' airline (BMI) has sold slots in the past, but it does not have enough slots left to continue to sell slots at the same rate throughout the impact assessment period. Therefore, the process of estimating the impact of secondary trading is more complex than a simple replication of actual experience – but it is calibrated to have the same effect (at least initially).

2.42 The process starts with an assumption for the number of trades which take place each year. This is based on the number that has historically taken place at Heathrow and Gatwick, but is reduced where the airport is less congested and therefore airlines can acquire slots through the pool. At times where the airport is not congested (for example, shoulder and off-peak periods at Vienna and Madrid), secondary trading has no impact.

2.43 The next stage is to identify the types of airlines which may buy or sell slots. This is based on the assumptions described in section 11. However, this may change over time, because some types of airlines may end up with few slots left to sell, or all demand for slots for a particular type of flight may be met. Therefore:

- airlines' willingness to purchase slots is calculated in relation to unaccommodated demand for slots at that time for that type of flight; and
- airlines' willingness to sell slots is calculated in relation to their existing slot holdings.

2.44 To reflect the fact that airlines will have more capability to pay for slots for flights which transport more people for greater distances, willingness to purchase slots is based on unaccommodated passenger kilometres. Willingness to sell slots is based on existing slot holdings divided by passenger kilometres transported with these slot holdings.

2.45 Weighting factors are then applied to airlines' willingness to buy or sell, so that the initial results are consistent with actual experience. An iterative process is necessary to ensure that the required number of transactions take place but that airlines cannot purchase more slots than they have unaccommodated demand, or sell more slots than they have.

2.46 As a result of this, there are changes in the types of flights that are operated, which in turn lead to changes in passengers and passenger kilometres. However, airlines which buy and sell slots do not necessarily have average characteristics for their category of traffic, and part of the change in passengers and passenger-kilometres results from trading between airlines of the same type. To reflect this, average aircraft sizes are uplifted in relation to the number of trades which occur.

Option C5: Withdrawal and auction of slots

2.47 The calculation of operational impacts follows the same process as the calculation of the operational impacts of secondary trading (C2.1). However, there are some differences:

- the number of transactions is significantly greater; and
- as all slots are withdrawn and auctioned, there is no calculation of airlines' willingness to give up slots – all slots are eventually sold, in proportion to airlines' holdings of slots.

2.48 As the number of transactions is greater, the impact of each individual transaction is less. This is reflected in lower aircraft size increases than in option C2.1 and the UK baseline.

Options C3/C4 and C7.1: Case study of expansion of capacity at Heathrow

2.49 A case study of expansion of capacity at Heathrow is used to assess options C3/C4 (auction of new capacity) and option C7 (revision to the new entrant rule).

2.50 Therefore, three scenarios are tested:

- administrative allocation, with the existing new entrant rule;
- administrative allocation, with the revised new entrant rule; and
- an auction.

2.51 For the existing new entrant rule, it is assumed that slots are allocated to airlines in proportion to unaccommodated requests for slots. The number of slots allocated to the main based network carrier and other based network carriers is limited, to reflect the fact that 50% of slots have to be allocated to new entrants. The utilisation and load factors for slots allocated to new entrants is reduced, reflecting actual experience.

2.52 For the existing new entrant rule, it is also assumed that slots are allocated to airlines in proportion to unaccommodated requests for slots. However, whilst there is a limit on the number of slots allocated to the main based network carrier (British Airways) and also other based network carriers for short haul services (i.e. BMI), there is no limit on the proportion of slots allocated to other based network carriers for long haul services, as Virgin Atlantic would generally be considered a new entrant with the revised rule. In addition, the number of slots that can be allocated to British Airways is slightly increased, as it would account for a higher proportion of new incumbent requests if some of the other airlines otherwise applying for new incumbent slots were able to apply for new entrant slots. The utilisation and load factors for slots allocated to new entrants is reduced, but by half as much as with the existing new entrant rule.

2.53 If slots are allocated by an auction, a similar process is followed to allocate these slots, as for slots purchased in options C2.1 and C5. In particular, it is assumed that during peak periods, given the high market prices for slots, airlines would only buy additional slots for long haul services. At other times of the day we assume that other carriers would be willing to buy slots, albeit to a lesser extent. Again, we assume that carriers purchasing slots will tend to operate larger aircraft.

2.54 All three of the Heathrow capacity expansion options converge to the same mix of traffic by 2025, as secondary trading occurs at a greater extent in the administrative allocation options in order to move these towards an auction.

Option C8.1A and C8.1B: Increase utilisation threshold

2.55 These options increase slot utilisation at the airport, and impacts are calculated by adjusting the slot utilisation data provided by the coordinators to reflect the impact of the new thresholds. The assumptions are:

- C8.1A (85% threshold): Each series with 80-84% utilisation increases utilisation by one flight, and half of the series with 85-89% increase utilisation by one flight.
- C8.1B (90% threshold): Each series with 80-84% utilisation would have two additional flights operated; each series with 85-89% utilisation would have one additional flight operated; and half of the series with 90-94% utilisation have an additional flight operated.

2.56 We assume that there will be no impact at Heathrow due to its annual movement and the fact that the coordinator allocates more slots than the capacity of the airport, reflecting expected cancellations. At other airports the impact is dependent on the extent the airport is congested at the time of day concerned; there is no impact where the airport is not congested as the possibility of withdrawal of a series is not an incentive.

2.57 For Option C8.1B we also consider the impact of increased series withdrawals, modelled as an increase in airline operating costs.

Option C8.2: Increase minimum length of a series of slots

2.58 The new minimum series length adopted for the summer season is 15 weeks and it is assumed that, where carriers have series shorter than this in the peak summer, these are replaced as follows:

- half are replaced with 15 week series; and
- half are returned to the pool, and replaced with year-round services.

2.59 Again, this only happens to the extent that the airport is congested at the time of day concerned. If the airport was not congested carriers would be able to obtain slots for short series in the peak summer from the pool, and this would not prevent operation of other services.

2.60 We calculate the additional slot allocations generated, by assuming that the average slots allocated across each of the peak 15 weeks increases by the difference between the number of slots in the peak week, and the average number of slots allocated across the peak 15 weeks. This means that any short series falling within the peak week are extended. For example, if the current number of slots allocated during the peak week is 6,000 and the average across the peak 15 weeks is 5,500 per week; we assume that 6,000 slots are allocated in each of the peak 15 weeks – an average weekly increase of 500 slots. Slots in the remaining 37 weeks of the year are assumed to increase by half this amount (i.e. a weekly increase of 250 slots in the above example).

2.61 The numerical increase in slot allocation is expressed as a percentage increase on the current annual total. The percentage increase applied for Düsseldorf is the average across the other five airports, as the data provided by the coordinator does not allow us to calculate allocations on a weekly basis. As for the other options these increases are maxima which are reduced for less congested airports and time periods.

Calculation of economic, environmental and social impacts

2.62 Economic, environmental and social impacts are calculated as multiples on the change in passenger numbers and/or passenger kilometres due to the operational results of the options, adjusted to use different values depending on the type of service. Changes in air fares are also calculated from the changes in traffic.

Economic impacts

2.63 Aviation industry representatives argue that air travel generates significant economic benefits. Economic benefits from increased air travel arise primarily from increased business activity. IATA recently published a report which argued that a 10% rise in connectivity to the international air transport network would increase a country's labour productivity by 0.07%, and hence its GDP.

2.64 In principle there could also be economic benefits from increased leisure travel (tourism). However, spending on tourism is likely to displace other types of spending on leisure activities, and spending on air travel for tourism purposes is likely to displace other types of transport (for example domestic road and rail), so there is not necessarily an overall economic gain. The net impact will also vary substantially between Member States: tourism is clearly a net economic benefit to destination countries such as Spain or Greece, but may generate a net economic outflow for origin countries such as the UK or Belgium. As a result many studies on the economic benefits of aviation only attribute economic benefits to business travel.

2.65 There is no consensus as to how significant the economic benefits of increased air travel could be. We have not identified any cross-European studies of the economic benefits of air travel but have identified the following figures:

- The US FAA estimates that the value to the US economy in 2007 of air transport was US$1,315 billion, equivalent to €1,210 per passenger journey; most of this is accounted for by induced economic activity, with the direct economic impact being approximately €230 per passenger.[3]
- A report by Oxford Economics for the aviation industry estimated that the wider

[3] FAA (2009): The economic impact of civil aviation on the US economy

economic benefits from expansion of Heathrow airport would be equivalent to €240-267 per additional passenger, and the overall benefits in the UK of airport expansion would equate to €140 per additional passenger.[4]

- The UK Department for Transport estimated economic benefits of €35 per additional passenger from UK airport expansion; its figure is much lower than OEF's because DfT assumed most incremental passengers travelled for leisure. This value was not specific to expansion of Heathrow and we would expect a higher value than this for measures focussed on expansion of the most congested hub airports: increasing this value consistent with the ratio of Heathrow and UK-wide values from the Oxford Economics study referred to above implies economic benefits of Heathrow expansion of around €60 per passenger.
- The Air Transport Action Group (ATAG), a lobby group funded by the aviation industry, estimated that in 2008 the global air transport industry generated US$408 billion in direct economic activity and total economic activity generated (including induced effects such as trade) was US$3,557 billion; this is equivalent to direct economic benefits of €132 per passenger and total economic benefits of €1,154 per passenger. These figures are also based on analysis undertaken by Oxford Economics.[5]
- The British Chamber of Commerce estimated in 2009 direct economic benefits from expansion of Heathrow of £400 million per year, and wider economic benefits of £595 million per year (total €1,144 million); this equates to around €68 per incremental passenger, or €61 if improved punctuality and reliability are excluded (as these are related to the additional spare capacity to be created at Heathrow, not allocation/use of that capacity, which is what is relevant for this study). This report was also funded by organisations campaigning for the expansion of Heathrow.[6]

2.66 For this study we use a value based on the DfT figure, at the lower end of this range, but adjusted to take into account that economic benefits will be higher at the most congested hub airports such as those to be modelled for the study (applying the ratio of the OEF estimates for Heathrow expansion and for expansion of UK aviation as a whole gives a value of €60 per passenger). The rationale for use of this figure is that this is most likely to be representative of the marginal impact of policy changes. If capacity is less than demand due to slot restrictions, fares should increase, but as business travellers are the least price sensitive, they are most likely still to travel. These are the passengers that generate the most economic benefits. Therefore, we would expect marginal passengers who travel (or do not travel) as a result of policy changes to be disproportionately leisure passengers, who will generate lower economic benefits. In addition, this lower estimate is the only estimate we have found that was not generated by or on behalf of the aviation industry, and therefore it is most likely to be neutral.

2.67 The studies that we have reviewed of the economic benefits of air transport have calculated economic benefits per passenger. However, some of the options switch passenger traffic between different market segments (for example, resulting in an

4 OEF (2006): The economic contribution of the aviation industry in the UK

5 ATAG (2008): The economic and social benefits of air transport 2008

6 British Chambers of Commerce (2009): Economic impacts of hub airports

increase in long haul but a decrease in short haul passengers). We would expect that long haul would generate greater economic benefits as the price of the ticket is higher and therefore passengers would only travel if the trip had greater value; however, we have not found any quantification of this. A further issue is that most of the published research on marginal economic benefits has related to Heathrow and therefore may not apply directly at other airports where the mix of traffic, particularly the rate of short haul and long haul traffic, is different.

2.68 We allocate the economic benefits of aviation calculated for Heathrow between long and short haul, on the basis of typical fares and hence revenue for long and short haul flights, to give values for economic benefits of short haul and long haul traffic that can be applied at Heathrow and other airports[7]. This gives the following values for economic benefits per passenger:

- Short haul: €23/passenger
- Long haul: €92/passenger

Impacts on fares

2.69 The options will have different impacts on fares on different routes. For example, if the introduction of secondary trading means capacity and competition on short haul routes are reduced, but capacity and competition on long haul routes are increased, the result will be higher fares on short haul routes and lower fares on long haul. However, overall if more passengers can travel there is likely to be a reduction in air fares.

2.70 The overall change in fares will be calculated using a price elasticity of demand: so, if it is estimated that the number of passengers that can travel increases by 1%, the change in fares calculated will be what is necessary to achieve this. The price elasticity of air transport varies by market segment; however, for a study such as this we need to use a total market elasticity[8].

2.71 IATA estimates a route-level elasticity of -1.4, a national-level elasticity of -0.8 and a supra-national elasticity of -0.6[9]. The higher route-level elasticity partly reflects the switching between routes that would be expected if a prices on one route change relative to another.

2.72 To reflect the overall impacts at an airport of changes to slot allocation, we use a value mid-way between the national-level elasticity and the route-level elasticity (i.e. -1.1). The use of an elasticity mid-way between these values is to reflect the fact that under some circumstances, it is possible for passengers to switch between airports. For example, the ability of airlines to increase prices at Orly reflecting the capacity constraint there is limited by the fact that passengers can switch to CDG.

7 We assume revenue per passenger of €100 for short haul, based on a sample of short haul airlines, and €400 for long haul, based on Virgin Atlantic (the only major EU long haul only airline)

8 Canada Department of Finance; Air Travel Demand Elasticities, Concepts, Issues and Measurement

9 IATA economic briefing 09

Social impacts

2.73 The ATAG report referenced above estimated that 1.5 million people were directly employed in the European air transport industry, of which 748,000 were employed by airlines and 464,000 on site at airports. These equate to:

- 0.70 airport employees per 1000 passengers; and
- 1.13 airline and handling agent employees per 1000 passengers

2.74 Changes in airport employment will be calculated in relation to changes in the number of passengers handled. Trends in airline employment will be calculated relative to changes in passenger kilometres rather than passengers, as long haul flights will generate much more airline employment per passenger. Based on ICAO figures for global passengers and passenger kilometres, we estimate that airline employment is around 0.62 employees per million passenger kilometres.

2.75 Where a policy results in a significant change in the proportion of slots held by EU and non-EU airlines, we have estimated the employment that moves to (or from) the EU. This is the net result of any change in:

- the number of people employed by the airline type 'non based long haul' (i.e. long haul carriers not based at the airport concerned – which would, by definition, almost always be non-EU carriers); and
- the number of people employed by the other airline types (all based carriers, and almost all short haul/regional carriers, will be EU airlines).

Environmental impacts

2.76 For CO_2 emissions, we use weighted average emissions for short and long haul flights. We use weighted average emissions calculated from the principles set out in the European Environment Agency CORINAIR emissions inventory guidebook[10] by UK DEFRA. Emissions per passenger kilometre are calculated as:

- Domestic (regional): 175.3 gCO_2 per passenger km
- Short haul: 98.3 gCO_2 per passenger km
- Long haul: 110.6 gCO_2 per passenger km[11]

2.77 For short haul, we adapted the CO_2 emissions by passenger kilometre to reflect the differences in load factor between network and low cost airlines. The DEFRA figures use a load factor for short haul of 81.2%, but this is based on the UK short haul market which is dominated by low cost carriers. We adapted this to use a higher load factor (84%) for low cost carriers but a lower load factor (72%) for network airlines.[12]

2.78 CO_2 emissions from each airport take into account weighted average flight lengths for

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10 European Environment Agency (2006): CORINAIR Emissions Inventory Guidebook, Air traffic

11 Department of Environment, Food and Regional Affairs (2008): 2008 Guidelines to Defra's GHG Conversion Factors

12 easyJet full year load factor 2009 86%, Ryanair 82% - compares to British Airways short haul load factor 72%

regional, short haul and long haul flights. This is calculated from slot data where possible, and where not possible given the data we have, from the OAG.

Other assumptions

2.79 CO_2 emissions will increase more slowly than air traffic, as aircraft become more fuel efficient and through improved operations (for example, more direct routings). The energy intensity of air transport reduced by 60% between 1970 and 2000[13] and the Advisory Council for Aeronautics Research in Europe (ACARE) set an objective of reducing fuel consumption and hence CO_2 emissions per seat KM by 50% relative to 2000 levels in 2020. However, this seems quite optimistic given the time that is taken to replace the aircraft fleet: the typical operating life of an aircraft is 25 years. We have assumed that fuel consumption and hence CO_2 emissions reduce by 1% per year[14].

2.80 We assume that economic impacts and employment increase in line with traffic growth.

Extrapolation to other airports

2.81 The model produces results for six airports, including four of the airports at which demand exceeds capacity for most or all of the day. In order to make an approximate estimate of the overall impacts of each option, it is necessary to extrapolate these results to other European airports.

2.82 This is done as follows:

- European airports are classified first as to whether they are fully coordinated or not, based on the full list of coordinated airports published by EUACA
- These airports are then classified based on whether:
    - demand exceeds capacity throughout most or all of the day;
    - demand exceeds capacity for part of the day (in which case the airport is subdivided into low or high congestion); or
    - demand rarely or never exceeds capacity.
- Taking this into account, we select comparators for each of the airports. For most of the airports two comparators are selected and an average is used, to limit the impact of airport-specific factors. Where demand does not exceed capacity, the options have no impact.
- Impacts are calculated based on the comparator airports. Where impacts are calculated in absolute terms, this is based on the ratio between passenger numbers at the airport and at the comparator modelled airport (for example if an airport had 2 million passengers and the modelled airport had 20 million, the impact would be one tenth of the amount).

13 Source: International Energy Agency (2009)

14 See Committee on Climate Change (2009) Aviation Report, for review of various forecasts for fuel efficiency improvements

2.83 For most airports we were able to find information on the extent to which demand exceeded capacity from the coordinator websites, the OCS database or from other information which had been provided to us by coordinators in the course of this project. However, for some regional airports in Spain, Norway and Greece, we were not able find any information, and our approach has been as follows:

- the regional airports in Greece have been excluded, as these airports are generally small airports on islands and we were not able to find any information at all (even passenger numbers) upon which to make the extrapolation;
- for regional airports in Spain, we have assumed 50% of the impact at Madrid, pro-rated for the difference in traffic volumes (we are aware that some of these airports are congested, but often in summer only); and
- for Bergen airport we have assumed no impacts.

2.84 UK airports are not used as comparators for non-UK airports, because on the information available it appears that secondary trading only takes place to any significant extent in the UK.

2.85 The approach to extrapolation is intended to give a reasonable estimate of the EU-wide impact of options; it is not, however, intended to provide an estimate of the impact of options at each individual European airport.

2.86 Table 2.3 lists the comparators which have been used for each coordinated airport.

TABLE 2.3 COMPARATORS FOR EXTRAPOLATION

State	Airport	Congestion - future if known otherwise current	Comparators
AT	Vienna	Demand exceeds capacity peak hours (low)	Vienna
BE	Brussels National	Demand exceeds capacity peak hours (low)	Vienna, Madrid
CZ	Prague	Demand exceeds capacity peak hours (low)	Vienna, Madrid
DK	Copenhagen - Kastrup	Demand does not exceed capacity	No impact
DK	Billund	Demand does not exceed capacity	No impact
FI	Helsinki-Vantaa	Demand does not exceed capacity	No impact
FR	Paris CDG	Demand exceeds capacity peak hours (high)	Madrid, Dusseldorf
FR	Paris Orly	Demand exceeds capacity all day	Paris Orly
FR	Nice Côte d'Azur	Demand does not exceed capacity	No impact
FR	Lyon Saint-Exupéry	Demand exceeds capacity peak hours (low)	Vienna, Madrid
DE	Frankfurt	Demand exceeds capacity peak hours (low)	Vienna, Madrid
DE	Dusseldorf	Demand exceeds capacity all day	Dusseldorf
DE	Munich	Demand exceeds capacity peak hours (low)	Madrid, Dusseldorf
DE	Stuttgart	Demand does not exceed capacity	No impact
DE	Berlin Tegel	Demand exceeds capacity peak hours (low)	Vienna, Madrid
DE	Berlin Schönefeld	Demand does not exceed capacity	No impact
IS	Keflavik International	Demand does not exceed capacity	No impact
IE	Dublin	Demand does not exceed capacity	No impact
IT	Venice - Marco Polo	Demand exceeds capacity peak hours (low)	Madrid, Vienna
IT	Lampedusa	Demand does not exceed capacity	No impact
IT	Rome Fiumicino	Demand exceeds capacity peak hours (high)	Madrid, Dusseldorf
IT	Bergamo Orio al Serio	Demand does not exceed capacity	No impact
IT	Rome Ciampino	Demand exceeds capacity all day	Dusseldorf, Paris Orly
IT	Cagliari Elmas	Demand does not exceed capacity	No impact
IT	Catania Fontanarossa	Demand exceeds capacity peak hours (low)	Madrid, Vienna
IT	Firenze Peretola	Demand does not exceed capacity	No impact
IT	Milano Linate	Demand exceeds capacity all day	Paris Orly
IT	Milano Malpensa	Demand does not exceed capacity	No impact
IT	Napoli Capodichino	Demand exceeds capacity peak hours (low)	Madrid, Vienna
IT	Palermo Falcone-	Demand exceeds capacity peak hours (low)	Madrid, Vienna

	Borsellino		
IT	Pantelleria	Demand does not exceed capacity	No impact
IT	Torino Caselle	Demand does not exceed capacity	No impact
NL	Amsterdam Schiphol	Demand exceeds capacity peak hours (low)	Vienna, Madrid
NL	Rotterdam	Demand exceeds capacity peak hours (low)	Vienna, Madrid
NL	Eindhoven	Demand exceeds capacity peak hours (low)	Vienna, Madrid
NO	Oslo Gardermoen	Demand exceeds capacity peak hours (low)	Vienna, Madrid
NO	Bergen Flesland	No information	No impact
NO	Stavanger Sola	Demand does not exceed capacity	No impact
PT	Lisbon	Demand exceeds capacity peak hours (high)	Madrid, Dusseldorf
PT	Oporto	Demand exceeds capacity peak hours (low)	Vienna, Madrid
PT	Faro	Demand exceeds capacity peak hours (high)	Madrid, Dusseldorf
PT	Madeira	Demand exceeds capacity peak hours (low)	Vienna, Madrid
ES	Madrid-Barajas	Demand exceeds capacity peak hours (high)	Madrid
ES	Almería	No information	50% of Madrid
ES	Alicante	No information	50% of Madrid
ES	Barcelona	Demand exceeds capacity peak hours (low)	Madrid
ES	Bilbao	No information	50% of Madrid
ES	Fuerteventura	No information	50% of Madrid
ES	Gran Canaria	No information	50% of Madrid
ES	Ibiza	No information	50% of Madrid
ES	Jerez	No information	50% of Madrid
ES	La Palma	No information	50% of Madrid
ES	Lanzarote	No information	50% of Madrid
ES	Málaga	No information	50% of Madrid
ES	Menorca	No information	50% of Madrid
ES	Palma de Mallorca	Demand exceeds capacity peak hours (low)	50% of Madrid
ES	Tenerife Norte	No information	50% of Madrid
ES	Tenerife Sur	No information	50% of Madrid
SE	Stockholm-Arlanda	Demand does not exceed capacity	No impact
SE	Stockholm-Bromma	Demand does not exceed capacity	No impact
CH	Geneva	Demand exceeds capacity peak hours (low)	Vienna, Madrid
CH	Zurich	Demand exceeds capacity peak hours (high)	Madrid, Dusseldorf
UK	London Heathrow	Demand exceeds capacity all day	London Heathrow
UK	London City	Demand exceeds capacity peak hours (high)	London Gatwick, Vienna
UK	London Gatwick	Demand exceeds capacity all day	London Gatwick
UK	London Stansted	Demand exceeds capacity peak hours (low)	50% of Gatwick
UK	Manchester	Demand exceeds capacity peak hours (low)	50% of Gatwick

Administrative cost/burden

2.87 The only option which generates an information obligation is option B2, relating to the information coordinators have to collate and publish online. For this option administrative costs/burden are calculated using the Standard Cost Model and this calculation is included in appendix 4. For several other options there are implementation costs which are not information obligations; the methodology and assumptions for estimating these are described in sections 10 and 11.

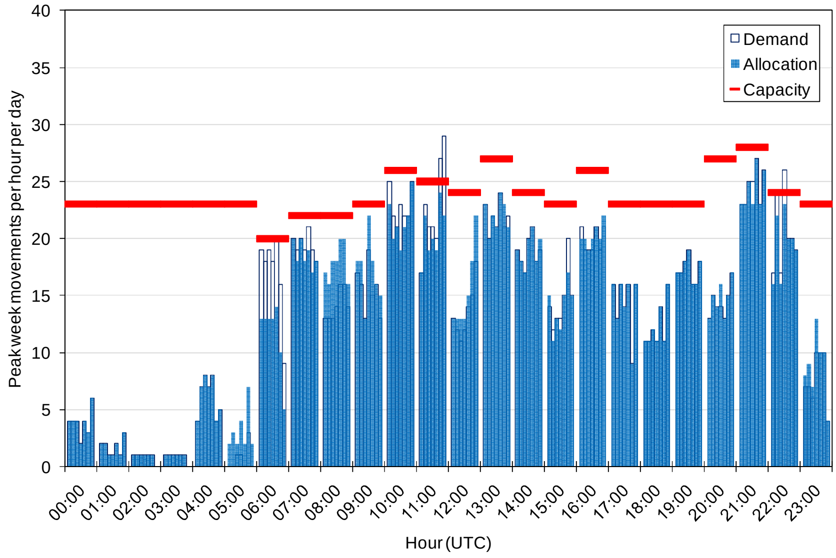
2.88 The pay rates used for the administrative cost/burden calculation are standard pay rates for professional staff. These tariffs were used as a basis for the calculation of administrative costs in the context of the Action Programme for reducing administrative burdens in 2008-2009. They are based on standardised ESTAT data (the four-yearly Labour cost survey and the annual updates of labour cost). The pay rate that has been used is an average of those States in which there are coordinated airports.

3. APPENDIX 3: OTHER OPERATIONAL DATA

Summer 2008 demand and capacity graphs (where available)

FIGURE 3.1 DUBLIN SLOT REQUESTS AND ALLOCATION

S08 Arrivals:



S08 Departures:

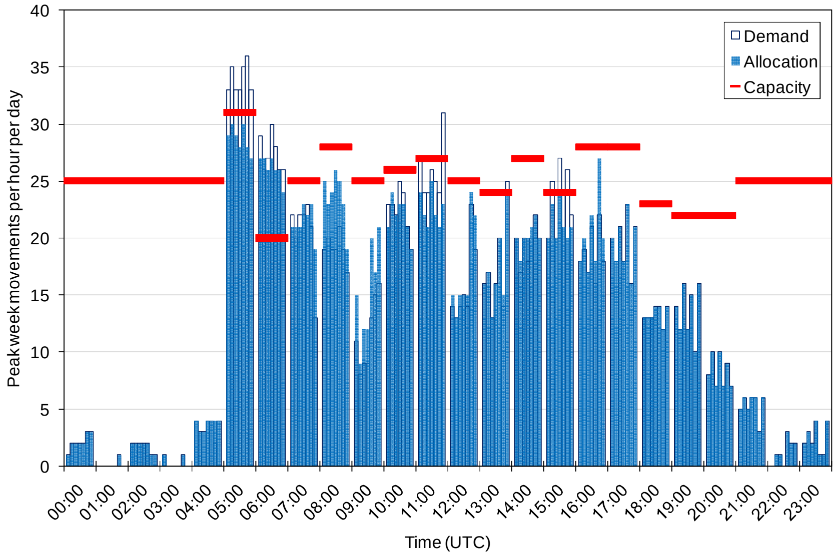
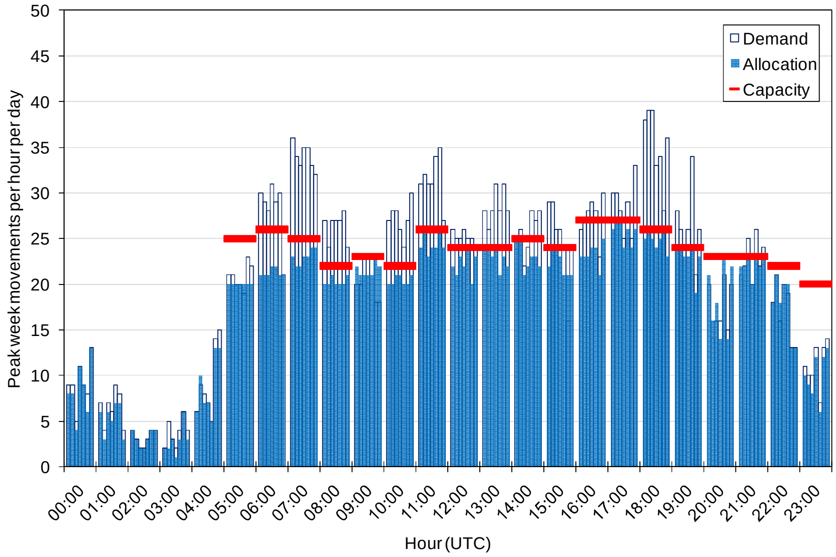


FIGURE 3.2 GATWICK SLOT REQUESTS AND ALLOCATION

S08
Arrivals:



S08
Departures
:

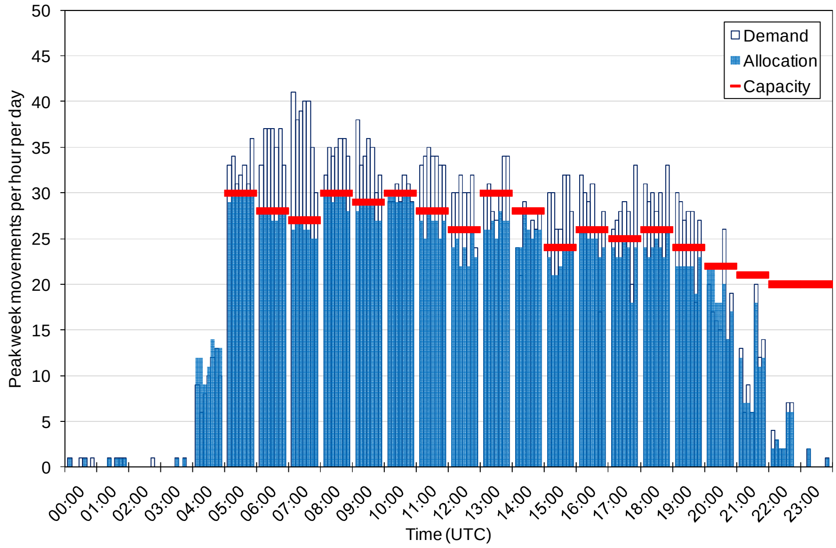
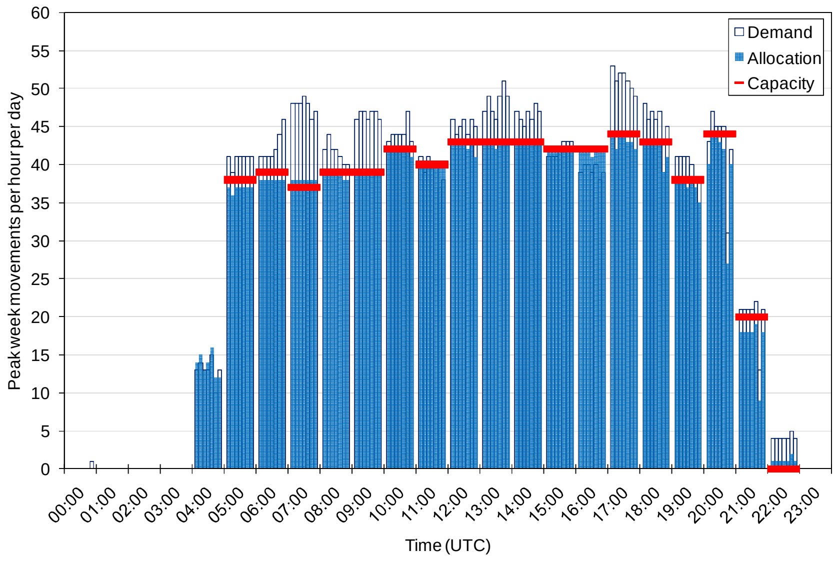


FIGURE 3.3 HEATHROW SLOT REQUESTS AND ALLOCATION

S08 Arrivals:



S08 Departures:

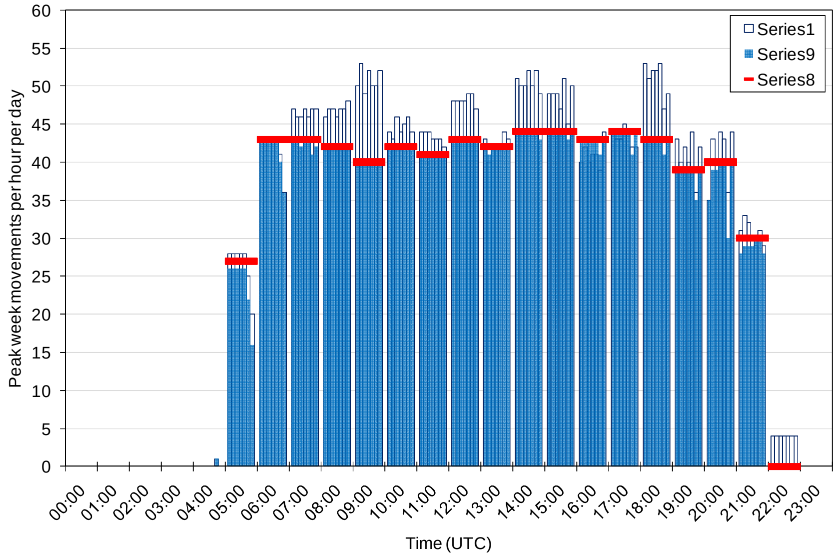
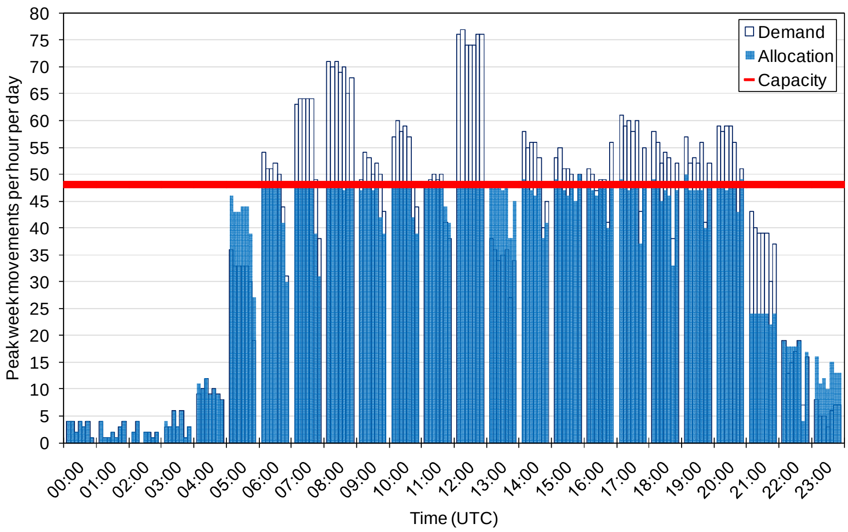


FIGURE 3.4 HEATHROW SLOT REQUESTS AND ALLOCATION

S08 Arrivals:



S08
Departures
:

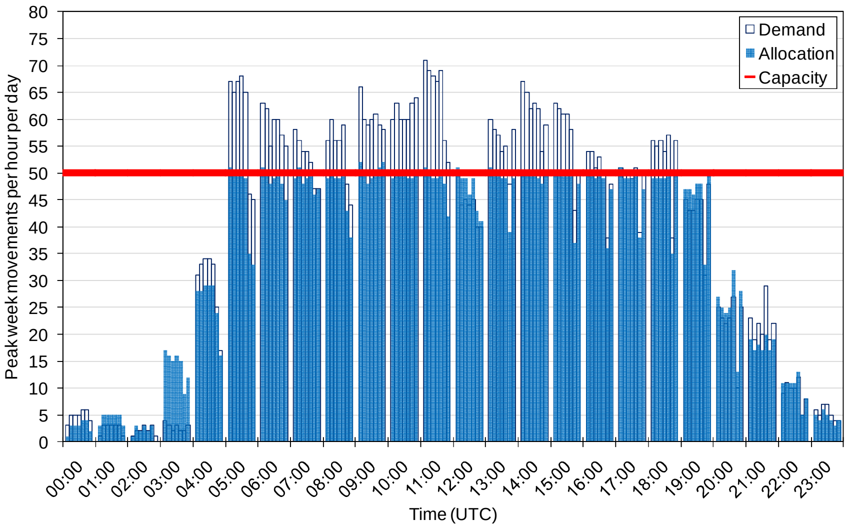
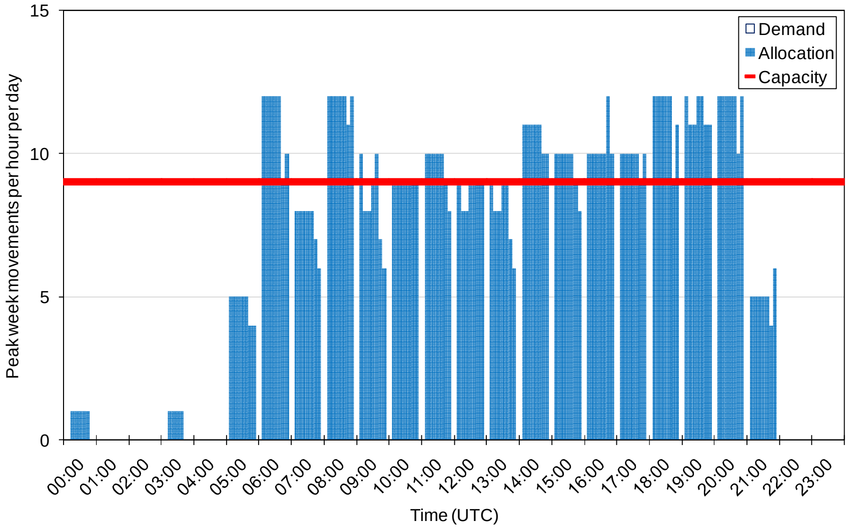


FIGURE 3.5 MILAN LINATE SLOT ALLOCATION[15]

S08
Arrivals:



[15] Requests not available

S08 Departures:

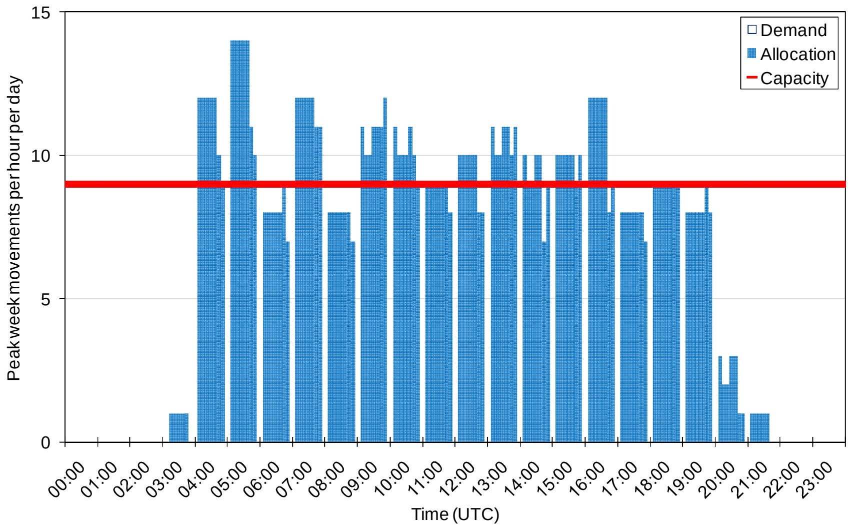
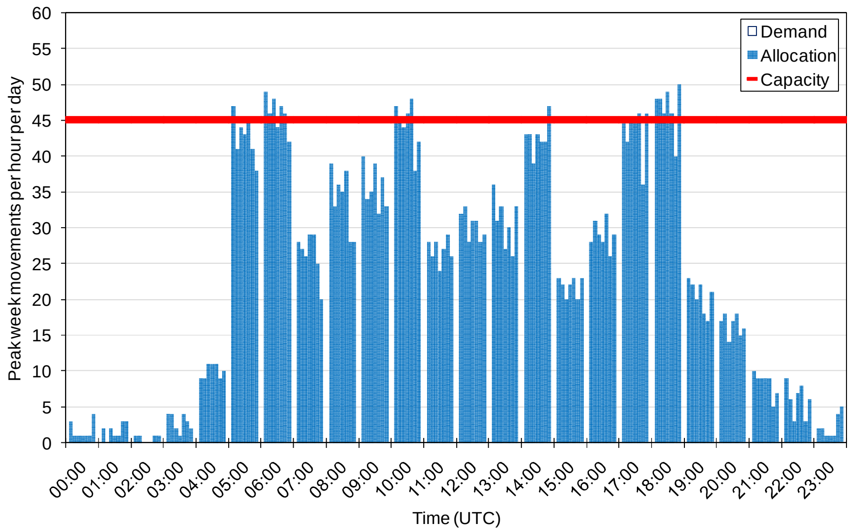


FIGURE 3.6 ROME FIMUCINO SLOT ALLOCATION[16]

S08 Arrivals:



[16] Requests not available

S08 Departures
:

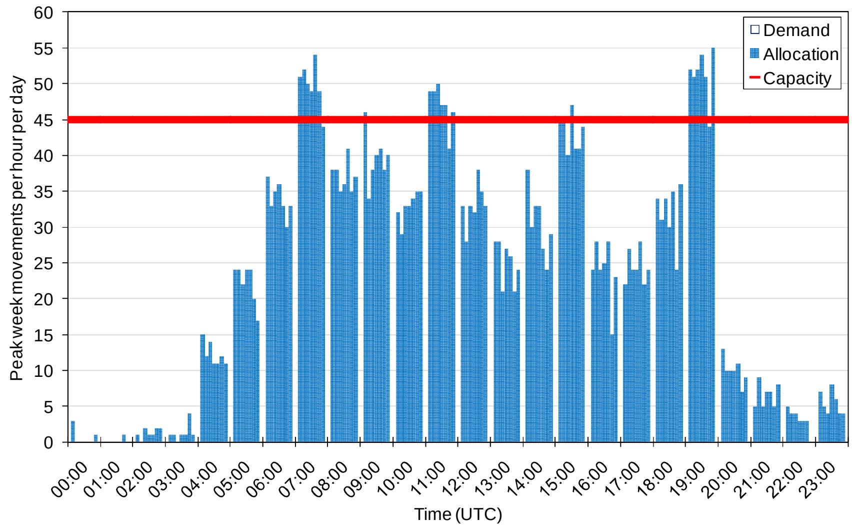
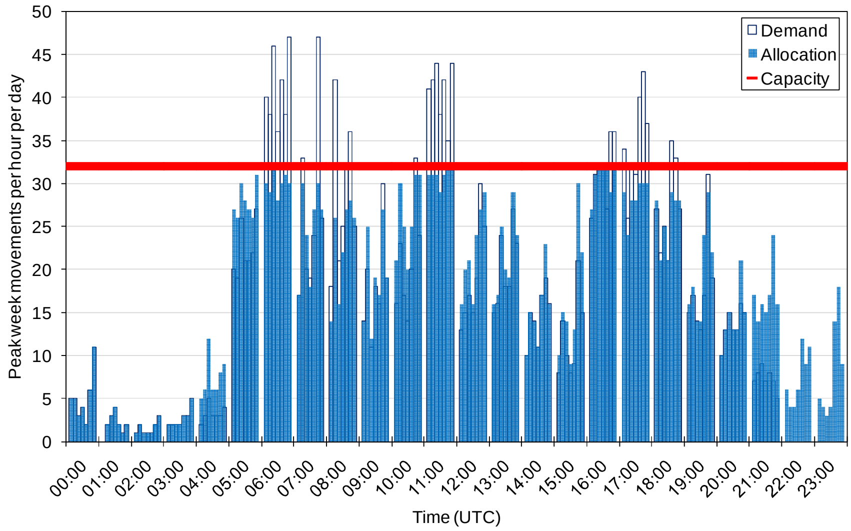


FIGURE 3.7 PALMA DE MALLORCA SLOT REQUESTS AND ALLOCATION

S08 Arrivals:



S08 Departures:

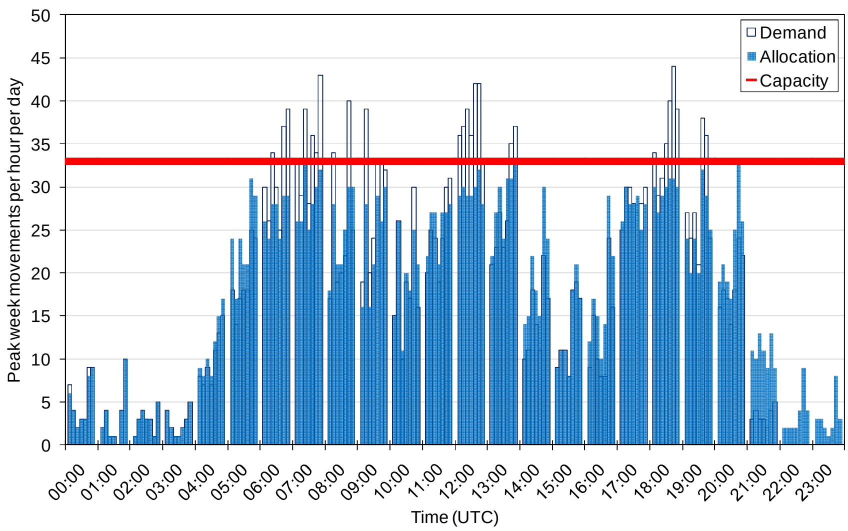
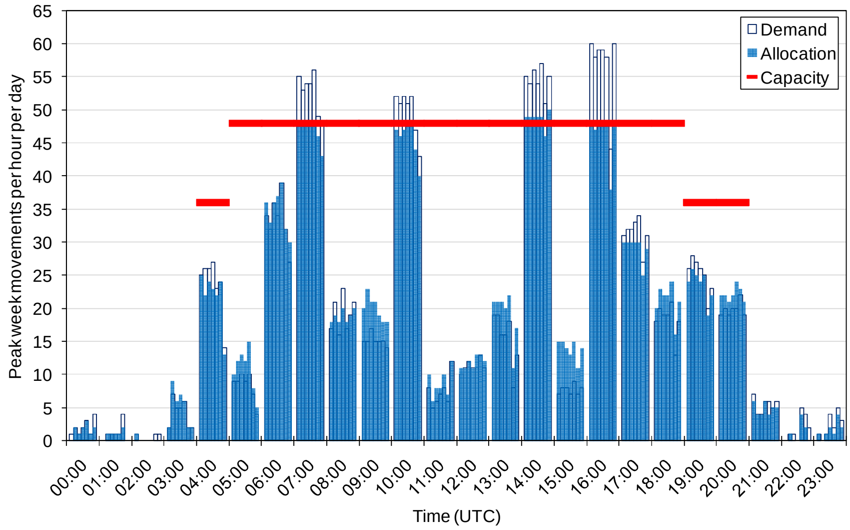
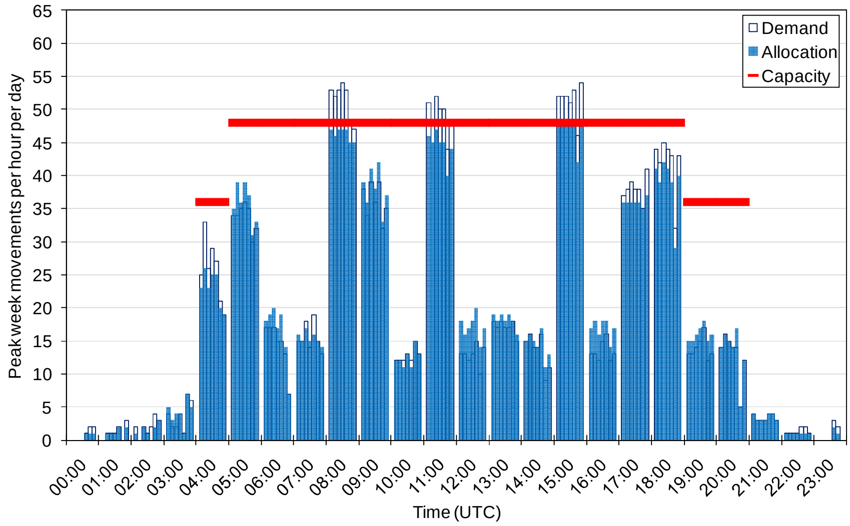


FIGURE 3.8 VIENNA SLOT REQUESTS AND ALLOCATION

S08 Arrivals:



S08 Departures:



4. APPENDIX 4: ADMINISTRATIVE BURDEN CALCULATION

Option B2.2

Type of obligation	Required actions (category)	Action	Target groups	Tariff (€ per hour)	Time (hours)	Price	Frequency (per year)	Number of entities	Total number of actions	Equipment and outsourcing costs (€)	Total admin-istrative costs (€)	Business as usual costs (%)	Total admin-istrative burden (€)
Non-labelling information for third parties	Retrieving relevant information from existing data	Prepare demand, capacity and utilisation charts for each airport	Coordinator	39	14	553	2	88	176	0	97,249	70%	29,175
Non-labelling information for third parties	Retrieving relevant information from existing data	Prepare utilisation charts for each airport	Coordinator	39	7	276	2	88	176	0	48,625	20%	38,900
Submission of (recurring) reports	Designing information material	Write text	Coordinator	39	28	1,105	1	18	18	0	19,892	40%	11,935
Submission of (recurring) reports	Designing information material	Review document	Coordinator	39	7	276	1	18	18	0	4,973	40%	2,984
Submission of (recurring) reports	Submitting the information	Upload to website	Coordinator	39	7	276	1	18	18	0	4,973	20%	3,978
Submission of (recurring) reports	Submitting the information	Check and upload local rules, demand and capacity charts, and capacity parameters	Coordinator	39	3.5	138	2	88	176	0	24,312	70%	7,294

Total administrative costs (€)	**200,024**
% business as usual	53%
Total administrative burden (€)	**94,265**

Notes and assumptions:

Some tasks are per coordinator, others are per airport. The number of States with fully coordinated airports is 18; the current number of fully coordinated airports is 88.

Hourly pay rate based on average rate for professional staff for States with coordinated airports, and include 25% overhead

steer davies gleave

Option B6

Type of obligation	Required actions (category)	Action	Target groups	Tariff (€ per hour)	Time (hours)	Price	Frequency (per year)	Number of entities	Total number of actions	Equipment and outsourcing costs (€)	Total admin-istrative costs (€)	Business as usual costs (%)	Total admin-istrative burden (€)
Non-labelling information for third parties	Retrieving relevant information from existing data	Collect information from airlines in accordance with IATA processes	Coordinator	39	70	2,763	2	162	324		895,134	20%	716,107
Non-labelling information for third parties	Retrieving relevant information from existing data	Maintain and update database	Coordinator	39	7	276	2	162	324		89,513	20%	71,611
Non-labelling information for third parties	Inspecting and checking	Analyse total capacity implications of demand	Coordinator	39	7	276	2	162	324		89,513	20%	71,611
Non-labelling information for third parties	Inspecting and checking	Check data quality	Coordinator	39	14	553	2	162	324		179,027	20%	143,221
Non-labelling information for third parties	Retrieving relevant information from existing data	Provide data feeds to interested parties	Coordinator	39	7	276	2	162	324		89,513	20%	71,611
Non-labelling information for third parties	Retrieving relevant information from existing data	Other overheads (IT systems etc)	Coordinator					162		5,500	891,000	20%	712,800

Total administrative costs (€)	**2,233,701**
% business as usual	20%
Total administrative burden (€)	**1,786,961**

Notes and assumptions:

Assumed that the Network Manager designates as Network Airports 162 level 1 airports, of which 20% are in States such as UK or Spain where these tasks are already undertaken by coordinator

Hourly pay rate based on average rate for professional staff for States with coordinated airports, and include 25% overhead

Option C2.4

Type of obligation	Required actions (category)	Action	Target groups	Tariff (€ per hour)	Time (hours)	Price	Frequency (per year)	Number of entities	Total number of actions	Equipment and outsourcing costs (€)	Total admin-istrative costs (€)	Business as usual costs (%)	Total admin-istrative burden (€)
Submission of (recurring) reports	Designing information material	Check trade information notified by carriers	Coordinator	39	7	276	2	48	96		26,522	10%	23,870
Submission of (recurring) reports	Submitting the information	Upload to website	Coordinator	39	7	276	2	48	96		26,522	10%	23,870
Submission of (recurring) reports	Buying (IT) equipment & supplies	External cost of designing and hosting website	Coordinator							11,143	11,143	10%	10,029

Total administrative costs (€)	**64,188**
% business as usual	10%
Total administrative burden (€)	**57,769**

Notes and assumptions:

Estimated that secondary trading could occur at 48 (of the 88) coordinated airports; websites would need to be set up by 13 coordinators.

Hourly pay rate based on average rate for professional staff for States with coordinated airports, and include 25% overhead

Option C2.5

Type of obligation	Required actions (category)	Action	Target groups	Tariff (€ per hour)	Time (hours)	Price	Frequency (per year)	Number of entities	Total number of actions	Equipment and outsourcing costs (€)	Total admin-istrative costs (€)	Business as usual costs (%)	Total admin-istrative burden (€)
Submission of (recurring) reports	Designing information material	Check information and manage website	Coordinator	39	7	276	2	48	96		26,522	10%	23,870
Submission of (recurring) reports	Buying (IT) equipment & supplies	External cost of designing and hosting website	Coordinator							12,536	12,536	10%	11,282

Total administrative costs (€)	**39,058**
% business as usual	10%
Total administrative burden (€)	**35,152**

Notes and assumptions:

Estimated that secondary trading could occur at 48 (of the 88) coordinated airports; websites would need to be set up by 13 coordinators.

Hourly pay rate based on average rate for professional staff for States with coordinated airports, and include 25% overhead

5. APPENDIX 5: GLOSSARY

Glossary

Code	Name	Description
ACI	Airports Council International	Airport association
ACDM	Airport Collaborative Decision Making	Concept which aims to improve efficiency by reducing delays, improving the predictability of events and optimising the utilisation of resources.
ACL	Airport Coordination Limited	Slot coordinator for UK and Ireland
ADR	Aeroporti di Roma	Operator of Rome Fiumicino and Ciampino airports
ACD	Airport Coordination Denmark	Slot coordinator for Denmark and Iceland
ACS	Airport Coordination Sweden	Slot coordinator for Sweden
ADP	Aéroports de Paris	Operator of airports in Île-de-France
AEA	Association of European Airlines	European airline association
AENA	Aeropuertos Españoles y Navegación Aérea	Air navigation service provider, airport operator and slot coordinator for Spain
AESA	Agencia Estatal de Seguridad Aérea	Spanish aviation safety department
AIR-21	Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (2000)	US legislation
ANA	Aeroportos de Portugal	Portuguese airport operator and slot coordinator
ANSP	Air navigation service provider	-
AOC	Air operator certificate	-
ATA	Air Transport Association of America	Airline association
ATC	Air traffic control	-
ATFM	Air traffic flow management	-
BA	Business aviation	-
BAA	BAA Ltd	Operator of several UK airports
BAF	Bundesaufsichtsamt für Flugsicherung	German aviation regulator
CAA	Civil Aviation Authority	UK aviation regulator
COHOR	Association pour la Coordination des Horaires	Slot coordinator for France
CDG	(Paris) Charles de Gaulle	-
CFMU	Central Flow Management Unit	Operational unit of Eurocontrol
DCCA	Danish Competition and Consumer Authority	-
DfT	Department for Transport	UK Ministry of Transport
DGAC	Direction Générale de l'Aviation Civile	French aviation regulator
DGAC	Dirección General de Aviación Civil	Spanish aviation regulator

DSNA	Direction des Services de la Navigation Aérienne	French air navigation service provider
EBAA	European Business Aviation Association	Business aviation association
ECTAA	European Travel Agents and Tour Operators Association	Travel asssociation
EEA	European Express Association	Association of express delivery companies
ELFAA	European Low Fares Airline Association	Low cost airline association
ENAC	Ente Nazionale per l'Aviazione Civile	Italian aviation regulator
ENAV	Ente Nazionale di Assistenza al Volo	Italian air navigation service provider
EPF	European Passenger Federation	Public transport user group
ERA	European Regions Airline Association	Intra-European airline association
ETF	European Transport Workers' Federation	Trade union organisation
EUACA	European Union Airport Coordinators Association	Slot coordinators' association
FHKD	Flughafenkoordination Deutschland	Slot coordinator for Germany
FAA	Federal Aviation Administration	US aviation regulator
FNAM	Fédération nationale de l'aviation marchande	French aviation association
GA	General aviation	-
GAO	US Government Accountability Office	US audit, evaluation and investigative authority
HDR	High Density Rule (1968)	US legislation on slot allocation
IACA	International Air Carrier Association	Leisure airline association
IAOPA	International Council of Aircraft Owner and Pilot Associations	General aviation association
IATA	International Air Transport Association	Airline association, publisher of Worldwide Scheduling Guidelines and organiser of Schedules Conference
JFK	(New York) John F Kennedy	Airport
LBA	Luftfahrt-Bundesamt	German aviation safety regulator
NATS	National Air Traffic Services	UK air navigation service provider
NERA	NERA Economic Consulting	Consultancy
NEXTOR	National Center of Excellence for Aviation Operators	Alliance of US research institutions established by FAA
OCS	Online Coordination System	Online slot coordination tool
OFT	Office of Fair Trading	UK economic regulator
PANSA	Polish Air Navigation Services Agency	Polish air navigation service provider
PANYNJ	Port Authority of New York and New Jersey	Operator of airports in New York and New Jersey
PPR	Prior permission required	-
PSO	Public service obligation	-

SACN	Stichting Airport Coordination Netherlands	Slot coordinator for the Netherlands
SCA	Schedule Coordination Austria	Slot coordinator for Austria
SCM	Standard Cost Model	-
SCR	Schedule Clearance Request/Reply	Standard message used by airlines and coordinators for the clearance of flights at coordinated airports
SES	Single European Sky	-
SHD	Slot Handback Deadline	15th January / 15th August
SITA	Société Internationale de Télécommunications Aéronautiques	Air transport communications and IT company
SRD	Slot Return Deadline	31st January / 31st August
SSIM	IATA Standard Schedules Information Manual	IATA manual establishing common standard for external information exchanges
STATFOR	Statistics and Forecast Service	Eurocontrol subsidiary
UTC	Universal Time Coordinated	Also referred to as Z or GMT. All slots are expressed in UTC, unless agreed procedures allow for the use of local time
WSG	IATA Worldwide Scheduling Guidelines	Scheduling process guidelines

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